*Instead of claiming there is just one policy response to a given issue, scientists should provide a range of options for policymakers.*

# When Scientists Politicize Science

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In recent years and in different countries, combatants on opposing sides of highly contentious debates related to the environment, medicine, and even national security have frequently asserted that science compels their favored political perspective. Whether the subject is global warming, genetically modified organisms, or even the existence of weapons of mass destruction, it is not surprising to observe advocates selectively using and misusing "science" to advance their firmly held positions. What perhaps is surprising, at least to some observers of the scientific enterprise, is that scientists increasingly seem to be joining the political fray by equating particular scientific findings with political and ideological perspectives.

For example, when a 2003 paper in the journal *Climate Research* argued that twentieth century climate variations were unexceptional in millennial perspective, advocacy groups opposed to the Kyoto Protocol on climate change hailed the research as "sound science," while advocacy groups in support of the Protocol called the paper "junk science." In this case, more troubling than the selective use of scientific results by advocates is that many scientists' evaluations of the paper's scientific merit correlated perfectly with their public expressions of support or opposition to the Kyoto Protocol. Acceptance of the paper's conclusions was equated with opposition to Kyoto and, correspondingly, rejection of the paper's findings was equated with support for Kyoto. For example, one prominent climate scientist (on record supporting Kyoto) suggested in testimony before the U.S. Congress that the paper must be bad science because the editor who oversaw its publication had been critical of the Intergovernmental Panel on Climate Change and the Kyoto Protocol. And the editor (a social scientist who is on record opposing Kyoto) of a different journal that published a second version of the controversial paper commented, "I'm following my political agenda—a bit, anyway, but isn't that the right of the editor?"

If scientists evaluate the research findings of their peers on the basis of their political perspectives, then "scientific" debate among academics risks simply becoming political debate in the guise of science. From the perspective of the public or policymakers, scientific debate and political debate on many environmental issues already have become indistinguishable. Such cases of conflation limit the role of science in the development of creative and feasible policy options. In many instances, science—particularly environmental science—has become little more than a mechanism of marketing competing political agendas, and scientists have become leading members of the advertising campaigns.

One example of this dynamic that received considerable media attention was the controversy over the 2001 Bjørn Lomborg book *The Skeptical Environmentalist*, published by Cambridge University Press. Heated debate and controversy are the norm insofar as environmental issues are concerned, but reaction to this book spilled over from the environmental community onto pages of leading newspapers and magazines around the world, and has thus come to occupy the attention of scholars who study science in its broader societal setting.

## SCIENCE AS POLITICAL BATTLEFIELD

A focus on the intersection of politics and science is not new and has been studied for decades. What may be new, or at least

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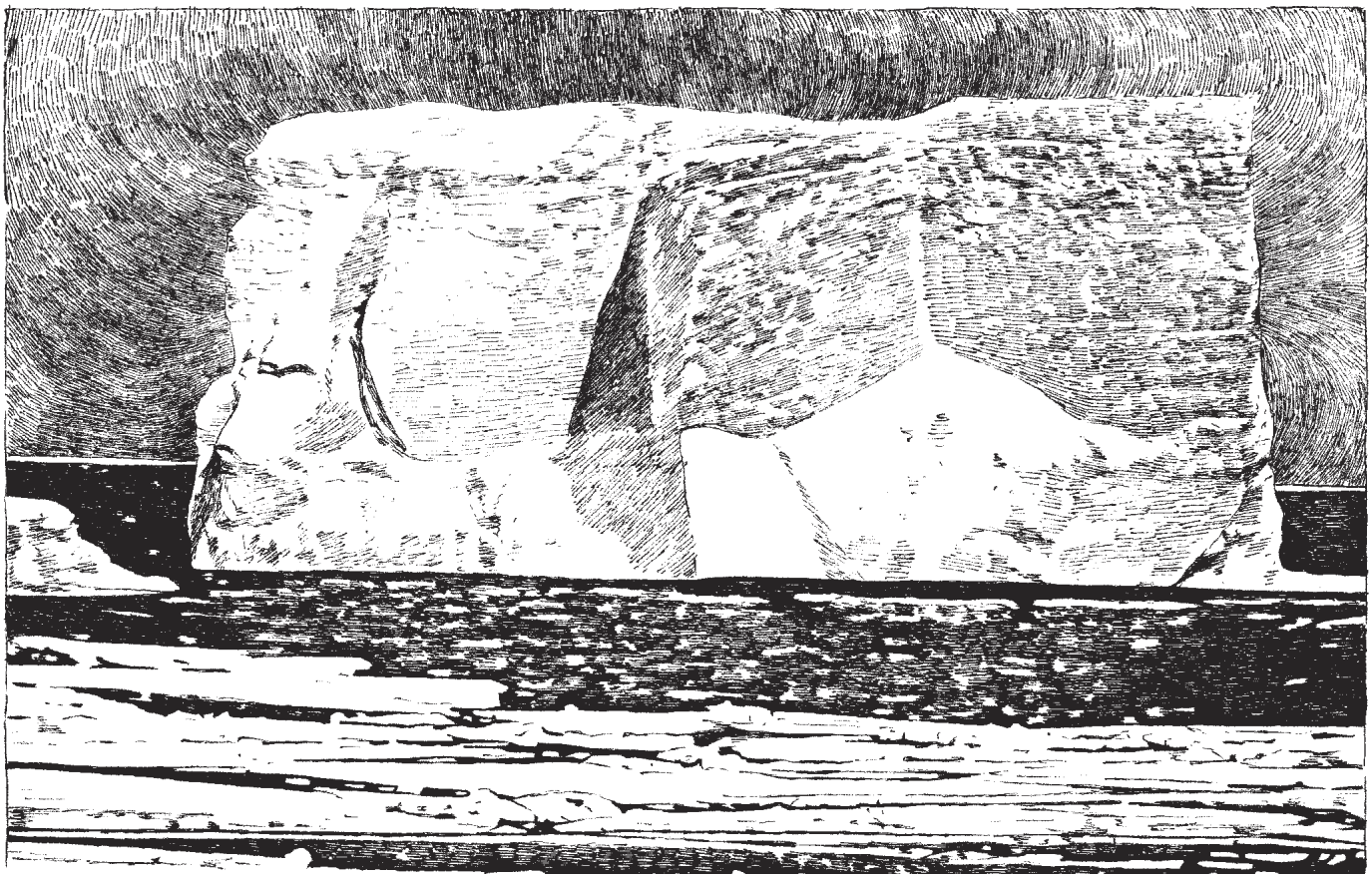

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more meaningful than in the past, is the degree to which scientists themselves encourage political conflict through science. Examples abound in areas as diverse as international whaling, cloning and stem cells, sex education, and drug approval, to list just a few. The debate that followed publication of *The Skeptical Environmentalist* saw an unprecedented mobilization of not just environmental groups, but many scientists against the book, its author, and its publisher.

In the book, Lomborg, a Danish statistician by training and a self-described environmentalist, advances a view popularized by Julian Simon, the late economist and Cato Institute scholar, that environmental problems are not as severe as advertised by environmental groups. Instead, Lomborg argues, some combination of business-as-usual and incremental change will be sufficient for children born today to "get more food, a better education, a higher standard of living, more leisure time and far more possibilities—without the global environment being destroyed."

Reaction to the book was both quick and diverse. *The Economist* wrote, "This is one of the most valuable books on public policy—not merely on environmental policy—to have been written for the intelligent reader in the past ten years." *Rolling Stone* gave a similarly positive review: "Lomborg pulls off the remarkable feat of welding the techno-optimism of the Internet age with a lefty's concern for the fate of the planet." In contrast, *Scientific American* wrote, "The book is a failure," and the Internet-based *Grist Magazine* concluded that the book "is C-minus stuff, as straight-forward and lackluster as a 10th-grade term paper."

In light of its favorable reception in some quarters, *The Skeptical Environmentalist* must have seemed to many environmental advocates like a declaration of war. Environmental groups such as the World Resources Institute and the U.S.-based Union of Concerned Scientists began an aggressive public campaign seeking to discredit Lomborg and Cambridge University Press. Lisa Sorensen of the Union of Concerned Scientists justified the offensive as a preemptive political strategy: "This book is going to be misused terribly by interests opposed to a clean energy policy."

It is not a surprise to see an organized campaign among environmental groups to advance their own causes by discrediting the book. To a lesser degree, it is also not surprising to see the organized support of Lomborg by economic interests who favor the book's message. As self-identified special interests, it is the job of these groups to push their agenda, and the book provided a visible symbolic touchstone for exploitation on both sides of environmental debates. The attention with which Lomborg's book was greeted provided a convenient resource for advocates to hitch their agendas to—using the book in both positive and negative fashion.

In this context, a number of respected scientists saw fit to enter the political fray over *The Skeptical Environmentalist*, and largely in support of environmental advocates. It would be easy to dismiss the politicization of science by scientists as the province of industry-supported scientists-*cum*-consultants whose credentials support their "hired-gun" role in issue advocacy. But the controversy surrounding Lomborg's book shows this caricature to be too simplistic.

That some scientists engage in political activities is neither new nor problematic; they are citizens, after all. But a problem exists when, in the case of their opposition to *The Skeptical Environmentalist*, scientists implicitly or explicitly equate scientific arguments with political arguments, and in the process reinforce a simplistic and misleading view of how science supports policy. In the process, they damage the potential positive contributions of their own special expertise to effective decision-making. Scientists seeking political victories through science may find this strategy expedient in the short term, but over the long run it may diminish the constructive role that scientific expertise can play in the policy process.

It is crucial to observe that the debate over Lomborg's book focused not on specific policy alternatives, but instead on the overarching political implications putatively compelled by the book. In other words, the debate over *The Skeptical Environmentalist* focused on the advantages or disadvantages the book supposedly lent to opposing political perspectives, with only a rare nod toward the particular policy recommendations associated with those perspectives. The absence of policy debate related to the book is troubling because science alone cannot determine who wins and who loses in political battle.

A number of well-known scientists, many from the United States, roundly criticized *The Skeptical Environmentalist*, Lomborg, and Cambridge University Press. Much of the opposition took the form of critiques of the book and of Lomborg himself. But some scientists went further, threatening Cambridge University Press with boycotts and other sanctions. Most all of the debate over the book occurred in the popular media and on the Internet, rather than in technical journals, which shows very clearly that many of the critical scientists perceived the stakes to be not simply a battle over findings, methods, epistemology, or disciplines that often characterize scientific debates within the academic enterprise. Instead, the debate was about who should have authority and power to decide what sort of world we collectively wish to live in. The debate was about politics, not policy.

## LINEAR RELATION

Critics of *The Skeptical Environmentalist* argued that Lomborg's science is wrong, and therefore the politics (and crucially, not policies, because policies largely were not discussed in the book or by its critics) of those who accept his scientific arguments must also be wrong. In other words, the scientific facts should first be established, and they, in turn, will lead to a policy response—a notion that is sometimes referred to as the "linear model" because it views getting the science right as a prerequisite to policymaking.

This view underlies the frequent invocations of "junk science" and "sound science" in contemporary debates involving science. Under the linear model, invoking the phrase "junk science" means that one believes that political agendas following from that science must be ill-conceived and not deserving of support. Invoking the phrase "sound science" means that one believes that political agendas following from that science are right, just, and deserving of support. Battles take place over whether science is sound or junk instead of debating the value or practicality of specific policy alternatives.

Under the linear model, science supposedly matters because it dictates which policies make sense and which do not. But reality does not conform to the linear model. This is reflected in the debates over forests and climate in *The Skeptical Environmentalist*, two of the rare cases in which both Lomborg and his critics actually discussed policy options. In the debate over forests, Lomborg and his critics agreed on what policy options make sense, but they disagreed on the underlying science. Here, disagreement on science did not preclude a consensus on what actions make sense. Conversely, in the case of climate change, Lomborg and his critics largely agreed on the science but came to different conclusions about the worth and practicality of the Kyoto Protocol. In this instance, general agreement on science did not preclude opposing views on action.

Statements by many of Lomborg's scientist-critics reinforce a linear view of science and politics because they suggest that getting the science "right" is either necessary or sufficient (or both) for action. From this perspective, certain political outcomes would be favored over others based on the resolution of scientific issues. For those with scientific expertise, it consequently makes perfect sense to wage political battles through science because it necessarily confers to scientists a privileged position in political debate.

Lomborg himself appears to accept the linear model when he writes, "Getting the state of the world right is important because it defines humanity's problems and shows us where our actions are most needed." Lomborg further writes, "Indeed, there is no other basis for sound political decisions than the best available scientific evidence." And, "thus, with this assessment of the state of the world I wish to leave to the individual reader the political judgment as to where we should focus our efforts. Instead, it is my intention to provide the best possible

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information about how things have progressed and are likely to develop in the future, so that the democratic process is assured the soundest basis for decisions." And so those who, like Lomborg, suggest *The Skeptical Environmentalist* compels certain political actions because of the book's "correctness" also are invoking the linear model.

For those who accept the linear model, Lomborg could not have been any more provocative. For those who reject the linear model, Lomborg may seem to be no more threatening than any other member of the large set of people and groups from across the political spectrum seeking to advance their agendas selectively using science to make the best possible case in support of their arguments. This may help to explain why some scientists who hold political views opposite of Lomborg's reacted to his book with venom while others reacted with indifference.

One great irony of the debate over *The Skeptical Environmentalist* is that its fame owes more to its critics than to any fundamental insights of the book. Consider that its sales quadrupled with the publication of a very critical January 2002 issue of *Scientific American*. Surely there is a lesson in this experience for the practicality of invoking the linear model in pursuit of political ends. Looking back with the advantage of hindsight, it seems clear that *The Skeptical Environmentalist* did not motivate dramatic reform in environmental policies, nor did opposition to it motivate a renaissance of progressive ideals. Instead, environmental policy debates in recent years have played out very much as politics-as-usual and—if anything—the Lomborg affair resulted in a loss of standing of science in political debates.

Despite ample evidence that the linear model cannot explain the relationship of science and policy, it continues to shape discussion and debate on science-related issues, arguably because it is both convenient in political debate and elevates the stature of scientists. But if the linear model fails to represent accurately the relationship of science and decision-making, then following it in practice serves mainly to bring politics into science rather than science into policy.

## DISTINGUISHING POLITICS AND POLICY

In its extreme forms, the use of science by scientists as a means of negotiating for desired political outcomes—the politicization of science by scientists—threatens the development of effective policies in contested issues. Such politicization occurs in spite of the considerable expertise in, and understanding of, the broader social and political context of science, including the causes and consequences of the politicization of science in political settings. The politicization of science by scientists is an issue worth addressing because at risk are the positive contributions science offers to politics and policy. More fundamentally, in its extreme forms, the politicization of science by scientists presents a threat to the institutions of science and democracy. Because science, politics, and policy are inextricably intertwined, a challenge exists for developing practical strategies for decision-makers to use science effectively. Utopian views of cleanly separating science from politics and facts from values are not helpful.

An alternative to the linear, get-the-facts-then-act model would start with the scientific community itself assuming a greater responsibility for addressing the significance for policy of scientific results. Addressing the significance of science for decision-making requires an ability to distinguish policy from politics. For science, a *policy perspective* implies increasing or elucidating the range of alternatives available to decision-makers by clearly associating the existing state of scientific knowledge with a range of choices. The goal is to enhance freedom of choice. By contrast, a *political perspective* seeks to decrease the range of alternatives (often to a single preferred option) available to policymakers, i.e., to limit the scope of choice—for example, support of, or opposition to, the Kyoto Protocol.

Often, when scientists who are asked to contribute to policy discussions eschew considerations of policy and focus only on "the facts," they set the stage for the politicization of science. It may seem ironic, but one way that scientists can contribute to decision-making is to more fully engage policy in their advisory work—a notion that I will discuss later in this article. Excluding considerations of policy merely reinforces the linear perspective on the relation of science and decision-making, thereby allowing political considerations to be smuggled into debates putatively about science.

## BEYOND LOMBORG

The case of debate over *The Skeptical Environmentalist* is an example of a general problem: through their actions, many scientists encourage the mapping of established interests from across the political spectrum onto science and then use science as a proxy for political battle over those interests. As Chuck Herrick and Dale Jamieson observe, "The imprimatur of science is being smuggled into deliberations that actually deal with values and politics." This is a familiar strategy for those undergraduates in Public Policy 101 who make an argument and then seek out scientific references in support of their political view. Most of Lomborg's critics were more subtle than beginning students because they focus their arguments on "science," even as they must recognize that certain scientific views are associated with certain political outcomes.

The dynamics of the debate over Lomborg's book were not unique. Examples abound in which scientists engage in what Robert Lackey of the Environmental Protection Agency calls "stealth issue advocacy" by seeking political outcomes through science. Consider the following two examples:

Dr. Leon Kass, Addie Clark Harding Professor in the Committee on Social Thought and the College at the University of Chicago and Hertog Fellow in Social Thought at the American Enterprise Institute, served as chairman of the President's Council on Bioethics from 2001 to 2005. During his tenure but independent of his work leading the council, Kass helped to craft a conservative "bioethics agenda" for President Bush's second term. According to the agenda drafters, "We have today an administration and a Congress as friendly to human life and human dignity as we are likely to have for many years to come. It would be tragic if we failed to take advantage of this rare opportunity to enact significant bans on some of the most

egregious biotechnical practices." According to the *Washington Post*, while he was to be involved in lobbying Congress in support of this agenda, Kass asserted "that his effort to craft a new legislative agenda on cloning, stem cells and related issues was independent of his role as chairman of Bush's bioethics council and that no federal resources have been used by the group, which he said has no name."

Kass's effort to wear two hats at once raises some difficult questions about the role of the bioethics council. For example, is it a mechanism for the president to receive independent guidance from a diversity of bioethics experts? Or is it a vehicle for the president to promulgate or promote the White House's political agenda? In this situation, Kass was clearly politicizing both the council and his role as chairman. That is, he was using his position as the chair of an expert advisory committee, putatively working to serve common interests, as a resource for political gain of special interests.

Another example is offered by Rajendra Pachauri, who has been the chairman of the Intergovernmental Panel on Climate Change (IPCC) since 2002. The IPCC is an international organization of scientists under the auspices of the United Nations, tasked with providing "policy neutral" guidance to policymakers around the world on climate science, impacts, and economics. In his capacity as chairman, Pachauri has engaged in a range of political advocacy on climate policy, from calling for support of the Kyoto Protocol on climate change to endorsing a report prepared by a number of environmental advocacy groups calling for specific changes to energy policies. Just as in the case of Leon Kass, Pachauri has been clearly using his position to advance a political agenda. In other words, he is politicizing the IPCC and his chairmanship.

**INCREASINGLY POLITICAL** How one evaluates the cases of Kass and Pachauri reflects one's views about the role of experts in society and their relationship to policy and politics. What seems clear is that the answers to these questions ought to be grounded in something other than whether or not one supports the policy goals advocated by Kass and Pachauri. But all too often, this sort of partisanship is exactly how many observers assess questions related to the politicization of science. If one has concerns about the effective use of science in decision-making, then there should be concern that many scientists (and other experts) are increasingly engaging in overt political advocacy. Why does this matter?

For issues in which policy options are clearly defined and the political lines are drawn, it may not matter much. Abortion politics provides a good example of this type of situation; the issue is a values debate about which science can offer little. But in cases where policy options are unclear or poorly formed and the politics are subject to change, the politicization of science by scientists may stunt policy development on important issues in which science has a positive role to play.

Consider the case of stratospheric ozone depletion over 20 years ago. Many scientists associated with industry and environmental groups were involved in arguing for or against the regulation of chlorofluorocarbons, while other scientists were hard at work on inventing technological substitutes for CFCs. The subsequent successful invention of economically and technologically viable substitutes helped to alter the political dynamics of the ozone issue by helping to foster industry support for regulation. Imagine if the scientists working on substitutes had instead spent their energies engaging in the regulation debate. The politics may never have changed and the ozone debate may have raged unchanged for much longer than it did.

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The CFC counter-factual illustrates how policymaking may suffer when scientists politicize science in the form of overt political advocacy. And this is exactly the sort of trend that we see in a number of contemporary areas of political debate related to science. Instead of working to develop new policy options that might transform political debates, many scientists are simply falling in line behind existing political agendas that are already in gridlock, which serves to reinforce existing political battles. That is exactly how the debate over *The Skeptical Environmentalist* has played out over the past five years.

This trend has been noticed by a number of scholars. For example, in his perceptive study of think tanks in politics, Andrew Rich writes, "At the beginning of the twenty-first century, research is frequently evaluated more in terms of its ideological content and accessibility to audiences than by the quality of its content." And various concerns have been expressed by observers of the Bush administration's efforts to stack scientific advisory panels, as evidenced by the Natural Resources Defense Council's revelations about a National Research Council panel on the health effects of perchlorate. These concerns suggest that science is indeed becoming increasingly viewed as a battleground for power politics—and not just by politicians but by scientists as well.

The politicization of science by scientists occurs not just in high-stakes settings involving conflicts between the political left and right; it appears in more subtle ways as well. For instance, a 2004 panel of the National Research Council was asked to pro-

vide guidance on the future of the Hubble Space Telescope. The resulting, widely cited report recommended that NASA use the limited resources of the space shuttle to extend the life of the telescope. This recommendation is suspect when one looks into the panel's composition and finds that many of the members have a professional self-interest in extending the life of the telescope. Did the committee consider other options? And on what basis did they reject those options in favor of a policy that serves their own self-interests? The Hubble panel's report was not partisan in the conventional sense, but it was clearly political in the sense that the decision appears to be a function of the panelists' parochial interests.

A similar situation occurred in the Food and Drug Administration scientific advisory panel that voted last year on whether or not to keep the pain relievers Celebrex, Bextra, and Vioxx on the market after concerns were raised about possible side effects. The panel voted to recommend keeping the drugs on the market, but as the *New York Times* reported

> Ten of the 32 government drug advisers who last week endorsed continued marketing of the huge-selling pain pills Celebrex, Bextra and Vioxx have consulted in recent years for the drugs' makers, according to disclosures in medical journals and other public records. If the 10 advisers had not cast their votes, the committee would have voted 12 to 8 that Bextra should be withdrawn and 14 to 8 that Vioxx should not return to the market. The 10 advisers with company ties voted 9 to 1 to keep Bextra on the market and 9 to 1 for Vioxx's return.

This seems to be pretty clear evidence that a relationship with the drug companies affected how the experts voted on this issue. Again, this is not partisan in a conventional sense, but the decision seems to have been clearly influenced by panelists' parochial interests.

Thomas Mills suggests that the waging of political battles through science should be viewed in the same way that we view other types of conflict of interests:

> An attempt by the scientist to simultaneously be a science information provider and a position advocate is an inherent conflict of interest. The development of objective science information on the one hand and the value balancing of all considerations in a final decision on the other hand are two different roles that cannot be credibly played by one person. The risk to the credibility of the science component of the decision process is too great. At best, it will further confuse already contentious and complex public debates. At worst, it is an unethical misrepresentation of personal values as if they were science information.

The scientific community has gone to great lengths to acknowledge the potential for financial conflicts of interests through greater transparency and disclosure of relevant financial relationships. However, scientists have yet to engage the issue of political perspectives—whether they are left/right, special interest–focused, or whatever—in the practice of connecting science with the needs of decision-makers. The typical reaction is to pretend that science can be treated separately from politics—a utopian ideal impossible to achieve in practice.

## SEPARATING SCIENCE AND POLITICS?

The typical received wisdom on scientists in policy and politics is to put into place mechanisms that somehow ensure the purity of science, so that scientists might deliberate unaffected by external values, pursuing only the truth. Such a quaint, utopian view of science in decision-making has been thoroughly rejected by scholars who study science in politics. For example, Harvard's Sheila Jasanoff writes, "Although pleas for maintaining a strict separation between science and politics continue to run like a leitmotif through the policy literature, the artificiality of this position can no longer be doubted. Studies of scientific advising leave in tatters the notion that it is possible, in practice, to restrict the advisory practice to technical issues or that the subjective values of scientists are irrelevant to decision making." But in spite of such findings, a 2004 National Research Council report on empanelling science advisory committees invoked the utopian vision of cleanly separating science and politics when it recommend, "It is inappropriate to ask [prospective panelists] to provide nonrelevant information, such as voting record, political-party affiliation, or position on particular policies." One might be excused for wondering, then, how it is that the panel that made this recommendation came to be comprised of a perfect partisan balance with equal numbers of panelists who had served under Republican administrations and Democratic administrations.

Of course, we value science and other types of expertise in decision-making because of the tremendous value they can contribute to the process of identifying and deciding on a particular course of action. This is simply because, as Harold Lasswell and Abraham Kaplan argued more than 50 years ago, "decision making is forward looking, formulating alternative courses of action extending into the future, and selecting among alternatives by expectations about how things will turn out." One of the important roles of science in policymaking is to inform expectations about "how things will turn out." Yet, as Arizona State University's Dan Sarewitz argues, science is rarely a sufficient basis for selecting among alternative courses of action because desired outcomes invariably involve differing conceptions of the sort of world we want in the future. Whether or not avoiding some degree of climate change is desirable, or whether or not the risks of nuclear power or genetically modified organisms exceed their benefits are not issues that can be resolved by science alone.

That science alone cannot resolve political debates seems well-appreciated by many scholars, particularly those who study science and society. Yet, the linear perspective that seeks to isolate science from the rest of society continues to manifest itself in attempts to compel political consensus through science. Daniel Kemmis noted this apparent paradox and its effects in the context of natural resource decision-making:

> So why would anyone continue to speak and act as if good science by itself could get to the bottom of these bottomless phe-

nomena and in the process give us "the answer" to difficult natural resource issues? In large part this is simply a holdover of an anachronistic view of how the world works and of what science can tell us about that world. In this sense, the repeated invocation of good science as the key to resolving complex ecosystem problems has itself become bad science. What is infinitely worse is that this bad science is all too readily made the servant of bad government.

Political decisions involving different interest groups are inherently difficult to resolve because any adopted action is bound to infringe upon someone's (overt or vested) interests—hence the need for decision processes for resolving various claims of constituents. The process of achieving a legitimate outcome involves bargaining, negotiation, and compromise—the essence of "politics." Politics unfettered by science can be messy enough—consider the abortion issue in the United States. But when politics is played out through science with the acquiescence and even facilitation of scientists, the results can serve to foster political gridlock to the detriment of science and policy alike because science alone is incapable of forcing a political consensus.

So are things hopeless? Not at all. One way to depoliticize science may be to ask scientists to participate in the process of connecting science with policy alternatives—to explicitly consider what alternatives are or are not consistent with scientific understandings in relation to different valued outcomes. By working to clarify or expand the scope of choice available to decision-makers, scientists can depoliticize their science and offer the potential for the introduction of options previously unseen or outside existing political debates. Such an approach would also more clearly distinguish the role of expert as adviser and policymaker as the one responsible for making final decisions.

## THE HONEST BROKER OF POLICY OPTIONS

In thinking about how things might be different, it is absolutely critical to differentiate scientific results from their policy significance. To illustrate the distinction, consider the central conclusion of the Intergovernmental Panel on Climate Change that global average temperature in 2100 will increase anywhere from 1.4° to 5.8° C. This is a scientific result and communication of what it means (i.e., the origins of the estimates, how "global average" is defined, the confidence level of the projection, etc.) to the non-expert may take some effort. But communication of what this result means is not the same as assessment of what it signifies for alternative courses of action. The latter is the essence of policy advice. The IPCC presents statements of trend, condition, and projection. Assessment of significance for action depends upon how trends, conditions, and projections are related to policy alternatives and their implications for valued outcomes such as human health and environmental sustainability as well as economic prosperity, etc.

The current state of the scientific enterprise is such that most scientists, even those asked to inform policymaking, typically eschew explicit discussion of the significance of science for policy. The IPCC, for example, seeks to be "policy relevant, but policy neutral." In practice, this means that the IPCC does not consider policy alternatives and instead has institutionalized the linear model. A great irony of the IPCC process is that its institutional organization, selection of participants, and even scientific foci necessarily reflect a non-neutral policy orientation, and hence it is in fact very political and advocacy oriented. If decision-makers wish to know what some piece of science means for action, they almost always turn to political advocates for answers, in effect creating a world where almost all science is filtered through existing special interests.

A better alternative is for the scientific community to take some responsibility to address the policy significance of scientific results. This would mean not simply seeking to better "communicate" the results of science to the policymaker, but developing the capability to place science into policy context, i.e., to address the question of what policy alternatives are consistent with and inconsistent with scientific results. If the scientific community wishes to claim independence from partisan politics, then with this comes an obligation to provide independent guidance on the significance of science for a wide scope of policy alternatives.

Instead of the futile effort to keep science and politics separate, it may make more sense to ask scientists to engage more substantively in policy debate, not by taking sides but instead by serving as "honest brokers of policy options." Such honest brokers might distinguish themselves from policy advocates (who work to reduce available options) by furnishing policymakers with a broad set of policy alternatives and their relative pluses and minuses. The policymakers would then decide what course of action to take. For instance, a panel on the Hubble Space Telescope (or the IPCC or Bioethics Council) might provide a range of decision options to policymakers and maybe even help to create new options, rather than advocate one particular option over all others. This would have the effect of depoliticizing science in policy deliberations without having to achieve the utopian ideal of separating science from politics.

We are all familiar with honest brokers of policy options. Anyone who has used Expedia, Orbitz, or Travelocity to book travel knows that those Web sites are fundamentally different than individual hotel or airline sites that also provide travel information. Honest brokers of policy options can help to distinguish responsibility for the provision of information from the act of deciding on a particular course of action. To facilitate the de-politicization of science among scientists, it is important that some scientists, and some scientific organizations, serve as honest brokers of policy alternatives. Arguably, today there are exceedingly few in the expert community.

While there are undoubtedly many lessons to be learned from the debate over *The Skeptical Environmentalist*, one that stands out is that arguing politics through science can be detrimental to policy and science alike. Because scientific results always have some degree of uncertainty and a range of means is typically available to achieve particular objectives, the task of political advocacy necessarily involves considerations that go well beyond science. Science never compels just one political outcome. The world is not that simple. R