

What Roles Can Scientists Play in Public Discourse?

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What is a useful and proper role for scientists in the public arena? How can we best discriminate where the boundary lies between expert knowledge and values or political opinion, and how can we properly honor that line? What can we expect in the way of reception for our interventions, and how can we increase their efficacy?

Involvement in public policy debates is a common and accepted role for scientists in many disciplines. In the sciences related to public health, it is taken for granted that experts will talk about the implications of their research for public policy, whether in regard to smoking, diet, or disease spread. There is also a remarkable track record of geoscientists taking a lead role in the public arena and actually affecting public policy—F. Sherwood Rowland and Mario Molina collaborated on ozone depletion research at the Department of Chemistry at University of California, Irvine and then went on to make outstanding public contributions, as have James Hansen (at NASA's Goddard Institute for Space Studies); Robert Watson (first at NASA, then at the University of East Anglia); and, of course, the late Stephen Schneider (first at the U.S. National Center for Atmospheric Research, then Stanford) on climate. Some “public” geoscientists have restricted their activities to interpreting science for the wider public, while others have endorsed specific policy initiatives (see Figure 1). I firmly believe that the quality of public discourse and the information reaching policy makers were better for their interventions.

There are several options for pursuing such involvement, although each comes with risks and benefits. These options can be matched to the diversity of communications skills, personal inclinations, and time pressures that characterize members of our community. But

scientists ought to carefully consider whether engaging with the public is worth the effort before actually doing so. Accordingly, I begin with a few questions that a scientist skeptical of such involvement might raise, using these to show that a public role is both efficacious and to some degree inevitable.

How Much of My Time Do I Owe Policy Makers and the Public?

Isolating oneself from the fray is problematic for several reasons. First, science is not wholly owned by governments, but it does draw a large fraction of its support from governments. This financial support means that science as an enterprise, if not individual scientists, owes something in return, such as interpretations of research findings and, if possible, explanations of their implications for society.

But there is also a pragmatic reason to get involved: Failure to do so leaves governments with no choice but to seek explanations from others, who may not be as informed. Alternatively, scientists can be proactive and define the meaning and significance of their own work. Such involvement does mean lost research time because, ultimately, individual scientists, not professional societies, bear the burden. Nonetheless, recent efforts by AGU, the American Association for the Advancement of Science (AAAS), and other such groups to improve their capacities to facilitate engagement by individual scientists are assets to the scientific community.

But there are two things the societies, universities, and research institutions ought to do that they are not currently doing very well, if at all: preparing young scientists and graduate students for the rough-and-tumble to which they will be exposed if they work in areas germane to policy, and protecting our community and its members from frivolous, personal, and occasionally highly threatening attacks for merely doing their jobs.

Can't We Make Clean Statements in Lay Terms and Leave It at That?

Interaction with the public is a dialogue, not a monologue. Even the “cleanest” statements demand elaboration once the inevitable follow-up questions begin to roll in. For example, consider this widely cited statement highlighted in the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report: “Warming of the climate system is unequivocal.”

What precisely about climate warming did IPCC view as unequivocal: that it has been occurring, that it is anthropogenic, or that the entire problem we call “global warming” is unequivocal in all aspects?

The correct answer is that it has been occurring. But this is a question that might be raised by a person who has not absorbed all the minutiae of explanations and modifications that accompanied the statement in the report. In fact, a major client of IPCC, the United Nations climate negotiators, recently tripped on this very issue when they wrongly asserted that the warmer Earth and the attribution of this warming to human activity were both unequivocal.

We cannot simply drop our pearls of wisdom and expect others to deconstruct them. When we emphasize or deemphasize a point, assign likelihood to an outcome or refrain from doing so, we are exercising expert judgment about what is important and what is not. We should be prepared to explain and justify these judgments.

I'm Not So Good at Communication. Why Can't Others Take This On?

Unfortunately, such a segmented world is not ours. Ask some of our colleagues who never tried to be public figures or never said anything even mildly controversial but who nevertheless became collateral damage in so-called “Climategate,” the episode involving e-mails stolen from the University of East Anglia's Climate Research Unit. These scientists were put under scrutiny simply because they were recipients of mostly anodyne e-mails sent by others.

Science and scientists are now part of an unavoidable and contentious public discussion. Climate and related issues are characterized by very high socioeconomic stakes and accordingly generate much public controversy. Thus, if we do not frame the scientific aspects of that discussion, we run the

risk of letting others less interested in scientific truths set the terms of public debate.

Options for Involvement

In these contexts, participation in the public arena is not only highly desirable—it may also be unavoidable. If so, what are your options for involvement?

Option 1: You can participate in partisan activity based specifically on what you see as policy implications of your research

Some have argued that visible participation by scientists in the political process dilutes the credibility and independence of science. Yet scientists and other experts have long taken partisan positions as individuals, some running for public office, others vehemently supporting or volunteering for a particular party. Damage to the credibility of the community by an individual scientist's actions comes only if he or she misuses and abuses science to support specific political aims. In short, if you are going to justify partisan positions based on scientific arguments, make sure you aren't simply using your science as a cover for what are really political, not scientific, judgments.

Option 2: You can take a position on or actively lobby for particular policy proposals

Scientists regularly take sides by visiting representatives in Washington, D. C.; writing letters to the editor; posting on blogs; etc.; or just answering questions from the media. The least controversial examples occur when scientists testify on Capitol Hill in favor of additional research funding, a political act based on scientific and other motivations. More controversial interventions (but ones also with a long pedigree) occur when scientists back particular initiatives related to their scientific findings, such as cap and trade, carbon tax, or fuel economy standards.

However, the farther you wander from your expertise in making judgments about policy, the shakier the ground will be on which you stand. It is one thing to argue that within scientific uncertainty, warming of a given amount would cause a particular level of damage. But it's a value judgment, not a scientific one, to argue that emissions reductions that could help us to avoid the damage are necessary. And it is far outside the expertise of most geoscientists to assert that one or another type of policy initiative is appropriate for attaining such a goal. Furthermore, we are not entitled to make value judgments or political or policy judgments, especially in areas where few of us are experts, like politics or economics, and try to pass them off as following automatically from our scientific expertise.

In deciding how to respond to issues like climate change, which sprawl across disciplines, there is one measure of expertise that, though conservative, is a good guideline to

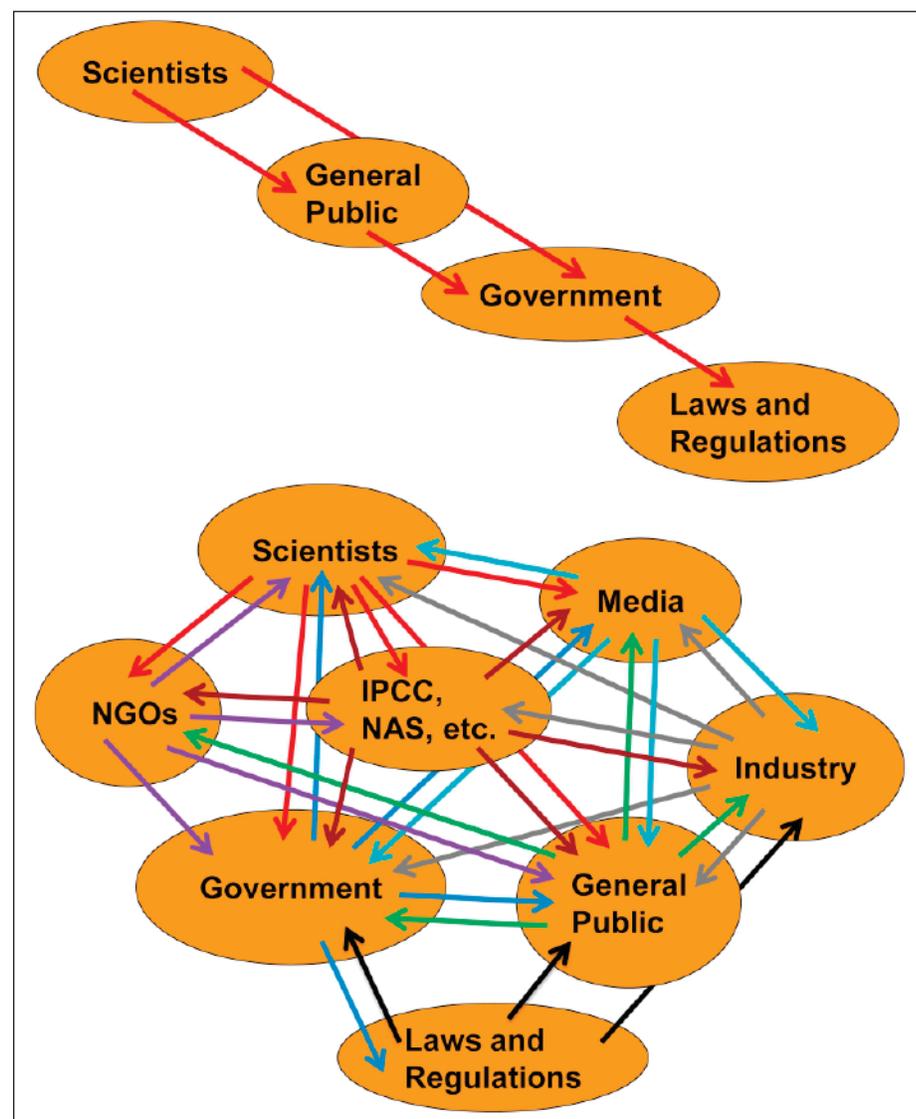


Fig. 1. Science in the public arena. Rather than being in (top) a linear model, where scientists hand information to the public and government and then step back from the policy process, science and scientists are often entangled in (bottom) a complex web of interactions involving many feedbacks. A key question is how individual scientists can optimize their involvement in this web. NGOs are nongovernmental organizations, IPCC is the Intergovernmental Panel on Climate Change, and NAS is the National Academy of Sciences.

use: Have you published in the field? Consider it this way: If you are a heart specialist and someone asks your view on his kidney problem, should you answer the question or tell him to consult a kidney specialist? The media can be lazy about doing due diligence in selecting whom to ask, but we should not be lazy in deciding whether to answer.

If you are asked questions that stretch your expertise but nevertheless want to venture an opinion, perhaps to paint a complete picture, then rely on what IPCC or a U.S. National Research Council panel has said in addressing the issue. These assessments have a logic and a pedigree behind them; our individual comments are not always as well informed.

Option 3: Talk to reporters and provide background information

This involves, for instance, offering insights into what the state of the science is

and what its implications are. But as more of us speak in public, there will be more public disagreements on some issues. Divergent views will be aired more and more, and we need to get used to that; it usually reflects honest disagreement in the face of uncertainty. What is problematic, however, is a scientist refusing to accept evidence-based arguments, the dishonest search for a back door when the front is blocked by overwhelming proof.

Once you decide you are willing to speak with the media and your name appears in public, you will be called on more and more. At some point, everyone needs to draw some boundaries to get their day job done. But the media are fickle, and there will be times when you have something pertinent to say and no one will ask you. You need to be psychologically ready for that, too.

And if you are called out of the blue by the media, think things through before you

answer. There is no reason to believe that your first thought is your best thought. The smartest answer I ever gave a reporter was, "I'll call you back."

Option 4: You can participate in outreach and public policy committees of AGU, AAAS, or other professional organizations

Such group efforts provide the opportunity to step back and facilitate direct interventions by others. This is a critical task for the community as a whole, and for those who feel more comfortable participating in this way, such societies are providing several expanding avenues through which to be involved indirectly in public discourse.

Specific Suggestions for Moving Forward

On the basis of these general points, here are some specific suggestions for using your time efficiently and effectively while keeping your expectations aligned with potential outcomes:

1. Think about your audience in advance and be ready for people not to listen to or not to hear your message

Different audiences are receptive to different aspects of what you want to say, so always know your objective and to whom you are speaking. In particular, scientific arguments won't always work; receptiveness to expertise is selective, preconditioned by the listener's views on a constellation of subjects.

It is not surprising that research in social psychology, political science, and public opinion [Lupia and McCubbins, 1998; Oppenheimer and Todorov, 2006] indicates that the average citizen has limited interest in or time for delving into technical subjects, whether health care reform, nuclear arms control agreements, or global warming. Rather, they often look to the views of surrogate experts or opinion leaders, who presumably have enough resources to evaluate relevant information, assess the situation, and make an informed judgment. But for an issue like climate change, there are several potential surrogates, and people will often pick the one who aligns generally with their worldview. Al Gore provides a noteworthy example. He did his homework and he had access to a big megaphone, so many peoples' views on global warming were influenced by his, particularly those on the "progressive" side of the political center. But for many on the political right, he may have reinforced pre-existing skepticism, because they were attuned to other surrogates. Various biases of this sort operate from both ends of the

spectrum and shape the uptake of technical information.

In other words, people absorb science as part of a worldview woven of many components. Discordant threads are not easily accommodated; often they are simply removed. Sometimes, explaining the science without simultaneously serving up your personal worldview will be an effective approach.

2. Maintain perspective

Participation in public discourse is not always rewarding—often it does not produce a tangible outcome. All that scientists acting as scientists can expect is to set the stage for others to deal (or not deal) with a problem. Other expertise, value judgments, and political views do and should dominate the rest of policy evaluation.

Furthermore, even while sticking to your expertise, expect to be challenged—and why not? Put yourself in the place of the average citizen: Amid the welter of concern about a bad economy, unemployment, college tuition, illness, divorce, and who knows what else, along comes an "expert" telling you, "I have a magic black box, and out pops the answer, and it says 'if you don't do X, Y, or Z, the world is headed down the drain.'" The automatic reaction is to disbelieve and rankle at such "command authority." When a car mechanic or widget maker or doctor offers us a judgment, we demand explanations; why should scientists expect special immunity for their expertise?

3. No matter how nonpartisan and "scientific" your intervention is, expect to be vilified

Among the other risks you will encounter for "going public" is that you will be accused of misconduct and may even be subject to legal inquiry. But what I alluded to before, keeping your head low, is no longer a guarantee of safety. There is no use in being intimidated and hiding rather than speaking your expert mind if you really want to do so. Ultimately, so-called "good behavior" may reduce your exposure but won't completely remove your vulnerability to the hazard.

4. Don't hide your biases; instead, think them over in advance and lay them out

Years ago, I asked a colleague why he thought climate sensitivity (the equilibrium response of global mean temperature to a doubling of carbon dioxide levels) was almost certainly closer to 1.5°C than to anywhere else in the range up to 4.5°C, as the U.S. National Academy of Sciences then saw it. Rather than give me

physical evidence, he said he just didn't believe that humans could affect the climate that strongly. Such an opinion is fine, but it is an extrascientific belief that should be stated at the outset, not hidden in the weeds.

5. Keep it civil—don't let differences ruin collegiality

I once got into a figurative food fight on television with a colleague; we attacked each other rather than each other's scientific assertions. You could hear remote controls all over TV land clicking as viewers moved to other channels, and an educational opportunity was lost.

Over the next several years each of us as individuals may need the collective "we" as a community more than ever. There may be more attacks; there may be more mistakes. But the worst outcome would be if we let these divide us as individuals and, at the same time, separate us from the very special norms and values that we as scientists all share.

The Road Ahead

Science as a profession has maintained a high level of respect among the general public. To continue that status in a world that demands ever more transparency, we should be accessible while recognizing that we are fallible and that our word isn't definitive. We are only one contributor, albeit an important one, to a larger public discussion.

The worst outcome of our involvement in the public arena would be to temper or shape our judgments in response to pressure, not just from our enemies to keep quiet but also from those of our friends who are eager to solve the climate problem. The best outcome would be to use our involvement to show how relevant the scientific method remains to thinking through complex problems and to society's developing effective solutions for these problems.

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Author Information

Michael Oppenheimer, Department of Geosciences and Woodrow Wilson School of Public and International Affairs, Princeton University, Princeton, N. J.