Making Policy Research Relevant to Policy

Albert H. Teich
Center for International Science & Technology Policy
George Washington University
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A CAUTIONARY NOTE

On July 16, 2012, a commentary by Kimberly Clausing, an economics professor at Reed College, appeared in *Tax Notes*, a journal published by an organization described as "the country's foremost provider of unbiased tax information . . . regarded by tax professionals as 'the epitome of hard-nosed impartiality.'" (Glain, 2003) In it, Professor Clausing criticized a proposal to exempt U.S. corporations from taxes on their foreign income, noting that, based on research she had done, it would end up creating 800,000 jobs *outside* of the United States and costing the nation billions in tax revenue. Almost instantly, her analysis was cited by President Obama, who used it to criticize Mitt Romney's jobs plan. And, just as quickly, a Romney spokesperson responded, implying that Clausing was hardly an unbiased observer, since she was a donor to the Obama campaign. (Clausing, 2012)

In an interview in *The Chronicle of Higher Education* later that week, Clausing was asked whether her scholarly conclusions were influenced by her political views. She defended her research, saying that she is "motivated to pursue intellectually honest answers in every case," and that her work is "as careful and honest" as she can make it. Although the public story seems to end there, for a few days at least, Professor Clausing found herself, in the words of *The Chronicle*, "in the political cross hairs." (Bartlett, 2012)

Although her study, arriving as it did during a Presidential campaign, was undoubtedly more topical and relevant to immediate and controversial policy issues than most academic

social science research, Kimberly Clausing's experience points up two faces of policy-relevance: If a piece of social science research is relevant to an important issue, it will be noticed by policymakers and can have impact. But, if it is important enough, the issue is likely to be controversial. And if the issue is controversial, research that relates to it will be seen and used differently by opposing sides in the controversy. Relevance to important problems is an essential element of policy research; it can also be hazardous to your reputation.

SciSIP: MAKING POLICY RESEARCH MORE RELEVANT

The National Science Foundation's SciSIP (Science of Science and Innovation Policy) program was designed to produce and provide policy-relevant research to science and innovation policymakers – "theoretically grounded and empirically tested evidence to federal and state government policymakers relating to questions about the size of public sector investments in science and technology, the distribution of these investments among fields of science and technology, the means by which science and technology contribute to the attainment of societal objectives, and the means by which the efficiency and effectiveness of these investments are to be determined." (Teich and Feller, 2009, p. 4)

Much has been written on the use and misuse of scientific evidence in policymaking. The differing perspectives on and interpretations of data on global climate change are the most obvious and visible examples, but one could easily cite other cases, including nuclear energy, food safety, tobacco use, and evolution – just to name a few. These issues all involve evidence from physical and life sciences research, however. Interestingly, despite the widely recognized importance of science and innovation to the economy and to the achievement of a wide range of national and international

goals, relatively little has been written on the ways in which *policy research* relating to science and innovation is (or is not) used in policymaking.

That changed in 2005, when President George W. Bush's science adviser, John H. Marburger III, gave the keynote speech to the Forum on Science and Technology Policy of the American Association for the Advancement of Science (AAAS), the nation's largest annual gathering of science policy wonks. Marburger decided to call attention to what he saw as the disconnect between the research in which science and technology policy researchers are engaged and the actual practice of policy in this area. Marburger's speech, which he followed up in short order with an editorial in *Science*, led to considerable soul-searching among scholars of science and technology policy. The academic field of science policy has grown substantially in the past several decades. Many of the people trained in this field work in the federal government or in organizations, such as think tanks and consulting firms, that are associated with government. Most are in mid-level positions, such as policy analyst. But, as Marburger pointed out, the research produced by the science and technology policy scholars in academia does not seem to have made many inroads into the questions to which policymakers most want answers. So policymakers looking for help with the difficult issues of science and innovation policy lack data or models on which to base their choices. He called for "econometric models that encompass enough variables in a sufficient number of countries to produce reasonable simulations of the effect of specific policy choices." "This need" he pointed out "won't be satisfied by a few grants or workshops, but demands the attention of a specialist scholarly community. As more economists and social scientists turn to these issues, the effectiveness of science policy will grow, and of science advocacy too." "The question is not whether R&D investments are important," wrote Marburger, "but what investment strategies are most effective in the rapidly changing global environment for science." (Marburger, 2005)

Marburger's comments led, over a period of months, to the establishment of the SciSIP program in the National Science Foundation and to the formation of an Interagency Working Group on the Science of Science Policy under the auspices of the National Science and Technology Council. Although Marburger, a policymaker (i.e., a user of policy research), provided the original impetus for the program, the programmatic response to his call, SciSIP, developed as a supply-driven rather than a demand (i.e., user) driven effort. In other words, the program is designed to support academic (and non-academic) research that will produce the kind of data for which Marburger presumably was calling, but leaves to the researchers or intermediary actors the job of bringing that data – i.e., the results of the research – to policymakers. It is, as students of technology transfer might say, a "technology-push" rather than a "demand-pull" program. The success of this ambitious program, therefore, will depend on the ability of STI researchers to understand the needs of policymakers, engage their interest and attention, conduct research that responds to or anticipates those needs, and communicate the results of that research to policymakers in ways they can understand and use.

These are hardly trivial tasks. STI researchers, primarily social scientists, are accustomed to writing for their peers—colleagues who share their vocabulary, their basic assumptions, their methodologies, and their approach to problems. They are motivated by the desire to gain the recognition and esteem of those peers. And their rewards derive in large measure from the recognition and esteem that they achieve. These factors tend to drive their research in directions that makes it less accessible to non-specialists, including policymakers. In addition, STI researchers, like most social scientists (in fact, most scientists and scholars in all fields) tend to choose research problems in terms of their interest and importance to their disciplines. Policymakers, on the other hand, don't generally care about disciplines. They face problems and need solutions.

The designers of the SciSIP program are, of course, well aware of all this. As noted in a report on a 2010 SciSIP workshop organized by AAAS (discussed below), one of the program's goals is to build a "community of experts across academic institutions and disciplines focused on SciSIP" – the "specialist scholarly community" for which Marburger called. (Teich and Feller, 2009, p. 8) Specifically, the objective of SciSIP "has been to create an intellectually cohesive and sustainable community in which the participating members are familiar with and benefit from the work of others who are addressing identical or closely related questions." Looking at the list of researchers funded by the program and the diversity of their disciplines and institutions, and observing the interactions among SciSIP researchers at the workshops and in other settings, one might credit the program with at least a modest degree of success in this objective. But this is only half or less of the battle. The other, more difficult, part is for the members of that community to engage with policymakers. Before engaging with them, however, researchers need to ask who *are* the policymakers and how does one get their attention and interest.

LESSONS FROM THE AAAS SciSIP WORKSHOPS

To assist the SciSIP program in its mission, Professor Irwin Feller, senior visiting scientist at AAAS, and I organized and ran two workshops for SciSIP grantees. The first, *Toward a Community of Practice*, (cited above) was held in Washington, DC, in March 2009. It was intended to give SciSIP researchers an opportunity to become acquainted with one another in order to build a community of practice. The second workshop, held in October 2010, was aimed at strengthening that community and providing an opportunity for researchers and policymakers to meet each other and explore common interests. (Teich and Feller, 2011)

In seeking to build a community of practice among STI researchers, the SciSIP program is distinguishing itself among the relatively short list of programs that fund academic research in this area. As Feller and I noted in the report on the first workshop, before SciSIP arrived on the scene, "[l]ittle support was available for activities that would connect researchers across program research areas; even less support was available for building a continuing set of interactions and relationships among researchers." The workshop sessions "provided an opportunity for participants to learn about each other's work and to gain an appreciation of the overall scope of the SciSIP research portfolio in their area of interest." The workshop report describes the barriers to building a community of practice: most notably, the discipline-based structure of most universities and the fragmentation of the SciSIP field (if indeed it can be considered a field) into clusters which, while trans-disciplinary, are largely independent of one another.

Although the amount that can be accomplished in a one-day workshop is clearly limited, the report on the first workshop suggested some success in community-building where participants and the results they reported converged in several categories: workforce issues, the innovation ecosystem, outcome measures for policy initiatives, and data infrastructure. The report also highlighted a number of research issues that appeared across the range of projects: the need for a common language in which terms mean the same thing to SciSIP researchers in different disciplines; the need to provide SciSIP researchers with a better understanding of the overall policy context for their studies and where their work fits into it; and the need to provide intellectual space for and encouragement to SciSIP researchers to question the conventional wisdom – "what everybody knows" – including such basic ideas as "increased expenditure on science, technology, and innovation will increase social welfare," or "all innovation is good."

The second AAAS SciSIP workshop, *Building a Community of Practice II*, held a year and a half after the first one, in October 2010, drew upon the findings of the first and focused on "build[ing] bridges between researchers and science and innovation policy makers in the Executive and Legislative branches of the federal government who are the intended users and beneficiaries of the research." (p.1) In this workshop, the researchers were invited to submit abstracts in advance to be judged competitively. Those selected were given the opportunity to present their research and had their travel and expenses paid by the organizers. The invited policymakers included policy-level staff from all of the major federal agencies engaged in scientific research and technological innovation—e.g., NSF, NIH, OSTP, NASA, DOE, EPA, USDA, etc.—as well as congressional staff members, and a few individuals from scientific and higher education associations, the National Academies, and other relevant organizations. The response was gratifying—some 23 policymakers attended, more than a third of total attendees, a significant indication of interest, in view of the time pressures on policymakers and their general disinclination to attend what they perceive as academic meetings.

The workshop presentations were grouped under the topics identified in the National Science and Technology Council's 2008 report: *The Science of Science Policy: A Federal Research Roadmap:*

- New Tools and Methods of Data Collection and Analysis
- How Competitive is the U.S. Scientific Workforce?
- Understanding Science and Innovation
- What is the Value of the Nation's Public Investment in Science?

In the introduction to the report on this workshop, Feller and I described an "analytic bridge" between the first and second workshops based on a key finding of the literature on how research-based knowledge makes its way into policymaking. We noted that:

> . . . the effects of research-based new knowledge upon decision making may take two forms: instrumental and enlightenment. "Instrumental" impacts occur when one or more research studies provide salient, specific answers to specific, current policy questions. The "enlightenment" effect takes the form of the contribution of research to shaping the terms within which science policy issues are framed, forging agreement about empirical variables—the characteristics and magnitude of a policy problem, the impacts of past initiatives, and the like. (Teich and Feller, 2011, p.2)

The discussions at the workshop fell naturally under a number of themes while ranging over both of these forms. In a finding that was undoubtedly gratifying to the SciSIP researchers, one major theme that came out of remarks from the federal participants was that the research presented at the workshop offered "considerable potential for informing policymaking." The policymakers, however, qualified this sentiment by pointing out the need for "translation" –that is, converting the products of the research supported by SciSIP into accessible and convenient forms. In addition, they expressed a need for synthesis (aggregation and distillation of findings from a number of research studies into common themes that permit readily accessible identification of both core, agreed-upon findings and the range and nature of differences among them.) For their part, researchers at the workshop expressed a strong interest in addressing the science and innovation policy needs of the federal participants. However, as they did in the first workshop, many of the researchers felt they needed clarification on who the policymakers are, and what their respective roles and needs were. The federal participants were no more a

monolithic group than were the researchers, and each seemed to need guidance in navigating the world of the other.

WHAT MAKES RESEARCH "POLICY RELEVANT"?

Looking at the presentations from both workshops in retrospect, there were examples of both types of research mentioned above. Examples of research projects that might have *instrumental* impacts are (1) a study that looked at the impacts of the federal stimulus program on hiring and staffing at colleges and universities; (2) another that examined how federal funding policies affected human embryonic stem cell research; and (3) one examining the influence of U.S. visa policies for international students in science and engineering on the productivity of research in academic institutions. These are studies that could have immediate, direct application to policy needs.

Some of the projects that are contributing more generally to the formation of knowledge in the SciSIP field and the ability of the field to address policy issues (i.e., studies whose impacts might classified as "*enlightenment*") are those aimed at developing new metrics and new visualization techniques for assembling and analyzing large data sets. Such projects are, for example, looking at how the social dynamics of various regions affects regional innovation as measured by the number of S&T start-ups, and developing data visualization techniques to understand and present the structure and dynamics of an area of science. These studies and others like them are helping to build a methodological base for future contributions to the solution of SciSIP problems. Rather than finding immediate application, the impacts of research in this category tend to seep into the policy world as the research becomes more widely understood and used – i.e., part of the broad base of knowledge and methods underpinning the field.

What this suggests is that SciSIP researchers conducting studies with instrumental impacts are the ones who should be thinking most actively about communicating with policymakers. This is the type of research that most interests policymakers and that they can potentially use. It is research whose results may be incorporated, sometimes directly, into proposed legislation, administrative procedures, or regulations. But how do researchers and policymakers bridge the gaps between them, and how can such research actually reach the policymakers?

WHO ARE THE SCIENCE AND INNOVATION POLICYMAKERS?

It is easy to speak loosely about "communicating with policymakers." But it is not so easy to determine who the policymakers are and how they are involved in the policy process. Limiting the field to those involved in SciSIP, and further limiting it to the "policy for science" side of the "science for policy/policy for science" dichotomy, makes the task somewhat easier, though still not entirely straightforward. If one imagines an oversimplified model of policy as a pyramid, with the key issues and decision-makers at the top, then in the U.S. federal government, that top is of course occupied by Congress and the White House.

There are committees in both House and Senate with "science" in their names. They have broad oversight responsibilities for the research enterprise and are the bodies that scientists most often turn to when seeking sympathetic ears on Capitol Hill. But they are authorizing committees and lack the power to appropriate funds. Also, neither the House Committee on Science, Space, and Technology nor the Senate Committee on Commerce, Science, and Transportation holds sway over two federal agencies that fund over three-fourths of the federal government's R&D: the Department of Defense and the National Institutes of Health. In addition, there are separate committees for energy, agriculture, and other parts of the government

that use and fund science. In all of these committees, as well as in the relevant appropriations subcommittees, there are certain Members who have the strongest interest in science, are the most knowledgeable about it, and are most engaged in science policymaking.

Researchers seeking to connect their work to current policy concerns often start by identifying and focusing on these individuals and, more importantly, on their key staff members. Essentially, this is the core group of STI policymakers on Capitol Hill. While few of the Members have any formal training in science, many, especially some of the more senior ones, do have considerable *political* experience dealing with the issues confronting the U.S. science establishment—experience that may well be more useful in the science policy world than technical knowledge. A significant number of staff members have Ph.D.'s in science or engineering and some also have substantial political experience. Many came to the Hill as Policy Fellows through programs sponsored by AAAS or one of the major disciplinary scientific or engineering societies. The staff members of committees with major roles in science policy are usually the most accessible points of contact for SciSIP researchers, but the researchers would be remiss in devoting their attention just to them. Although it may be more difficult to get their attention, the Members and staffs of many other committees whose jurisdictions involve science in some way (and there are many) often play vital roles in policymaking for science and technology. (White and Carney, 2011)

Congress, of course, only represents one component of the federal policymaking picture for science and innovation. The executive branch, from the President and the Executive Office (EOP) down through the federal agencies is where policies at the ground level are made as well as implemented. In contrast to Congress, the offices concerned with science and innovation policy throughout the Executive Branch are heavily staffed with people who have technical

training, and in some cases, degrees in science and technology policy. Researchers often look to the White House Office of Science and Technology Policy (OSTP) as their entry point for executive branch policymaking. And although OSTP lacks direct budgetary authority over the federal agencies, its access to the President and his close advisers (which varies from one administration to another) and its frequent collaborations with the Office of Management and Budget (OMB—which has authority over the budget) make it uniquely influential in S&T policy. OSTP has played a major role in the SciSIP program. Through the National Science and Technology Council, a body that coordinates science and technology policy across the federal government, it has led SoSP (Science of Science Policy), a web-based community that complements SciSIP on the practitioners' side.

OSTP, however, is a relatively small organization and its staff members are extremely busy. Staff members in federal agencies engaged in science and technology—and more than 20 agencies have significant R&D and/or regulatory roles associated with science—are often easier to reach and are more directly involved in SciSIP issues.

DIFFERING PERSPECTIVES OF RESEARCHERS AND POLICYMAKERS

Assuming a researcher is able to identify relevant policymakers, there's still the matter of communicating with them. A substantial literature exists on communication between researchers, policymakers, and practitioners. For purposes of this discussion, policymakers and practitioners are considered together, although there are some obvious differences in their roles.

Stephen Nelson of AAAS gives a thoughtful presentation on "The Contrasting Cultures of Science and Policy-Making and Implications for Communication Between Them" at the annual orientation program for AAAS S&T Policy Fellows and at the AAAS Leadership

Seminar on S&T Policy, a short course offered yearly to the broader community that covers much of the same ground in an abbreviated form. (Nelson, 2011)

Nelson highlights – and to some extent caricatures – the contrasts between scientists and policymakers in five categories, briefly:

(1) **ends and means** – e.g., scientists seek to understand and explain phenomena, policymakers make decisions and act;

(2) **time perspective and attention span** – long for scientists, short for policymakers, due to the requirement for action;

(3) **accountability and rewards** – "real world accountability" is low for scientists in most cases[*], high for policymakers who (mostly) must live with the consequences of their actions;

(4) **communicating and interacting** – interpersonal skills are generally of low relevance to work quality among scientists, but the *heart* of one's work and effectiveness in the political world;

(5) **how they see each other's enterprise** – dimly at best. Each has relatively little understanding of the other's world, seeing it mostly as a black box. In addition, scientists most often look at policy in terms of how it affects science (e.g., budgetarily), while policymakers look at science in terms of its ability to contribute to their (and national) goals.

[*] But not in all cases. Consider, for example the Italian earthquake experts convicted of manslaughter for giving the public what the court considered false reassurances about the possibility of a major earthquake (Cartlidge, 2012).

Nelson counsels scientists who want to be effective in the policymaking environment to build "ongoing, positive relationships" with policymakers and to try and understand the overall policy issues, not just the technical aspects.

Others come at the matter from different angles, but see many of the same cultural contrasts. Among these writers is the late distinguished scholar of organization development, Donald Schoen. Schoen's work is discussed at length in an article by Paul E. Lingenfelter, president of the State Higher Education Executive Officers Association, entitled "Evidence and Impact: How Scholarship Can Improve Policy and Practice." (2011) Schoen (writes Lingenfelter) describes three reasons why practitioners have difficulty using the results of "normal social science."

- "First, *knowledge is represented differently* for the scientist and the practitioner." The scientist seeks principles that apply across a range of situations. The practitioner looks for knowledge that he or she can apply to a specific problem in a specific situation. Results that may be statistically significant in a scientific sense may not be all that useful in dealing with a real-world problem.
- "Second, practitioners also face a *gap in the valid application* of social science." How certain can a practitioner be that causal relationships established in the context of research will work in a given situation? One cannot control extraneous factors in a real-world situation to the same extent as in a research setting. Usually there are time constraints, pressures from individuals or groups with a stake in the outcome, and other factors that are beyond the practitioner's control.
- "Third, Schoen argues that a *gap between discovery and production* thwarts the efforts of practitioners to implement strategies of action." He suggests that a person may

> inadvertently subvert his or her own intentions and that this tendency is seldom taken into account by researchers.

The often politicized field of educational policy also provides lessons for SciSIP researchers. In his book, *Spin Cycle: How Research is Used in Policy Debates*, (2008) and his article, "Politicization of Evidence: Lessons for an Informed Democracy," (2009) political scientist Jeffrey Henig examines how research results can serve more as political weapons than as "part of a collaborative effort to genuinely inform democratic decision making." Henig draws on the report on charter schools released by the American Federation of Teachers (AFT) on how the performance of charter schools became the object of an intense debate between supporters and opponents of this approach to the reform of elementary and secondary education. He abstracts from that debate five dimensions of what he calls "research think versus political think." In a manner similar to Nelson, he writes of the "distinct cultural milieus" of politicians and researchers."

> The culture of the researcher tends to add complexities and resist final closure. The culture of the political actor tends to demand straightforward and easily communicated lessons that will lead to some kind of action. (2009, p. 144)

Henig admits that these are "propensities" and do not exist in pure form, but indicates that they are the result of the different roles that scientists and politicians play and the incentives that motivate them. The five dimensions of which he writes are:

(1) **Time**: Researchers need to work carefully and slowly, and not jump to conclusions. Politicians often must act with whatever information they have available at the time.

(2) **Accumulation of evidence:** Researchers see the production of knowledge as a gradual, cumulative process. Politicians want a single definitive "killer" study to settle an issue. Period.

(3) **Causality**: Researchers are generally reluctant to ascribe outcomes to specific causes, doing so only when they are persuaded they have the evidence to support their case. Politicians tend to look for causality where a finding supports a position in which they have a stake.

(4) **Abstraction**: Researchers look for ways in which specific findings and cases support broader ideas, seeking steps that lead to more general findings with broader implications. Politicians seek specificity; they find anecdotes describing individual cases more compelling than statistics.

(5) Simplification: Researchers and politicians have different ways of dealing with complexity. Politicians try to keep their messages simple, boiling them down to a few bullet points. When researchers need to simplify, they do so through abstraction, even though this may make decision making more difficult in many circumstances.

LESSONS

At the risk of belaboring the obvious, the success of the SciSIP program will depend on the ability of STI policy researchers to understand, anticipate, or respond to the needs of policymakers; engage their interest and attention; and communicate the results of their research in a manner that policymakers can understand and use. The above discussion suggests several points that might help SciSIP researchers achieve this end and that the researchers should bear in mind as they develop and conduct their research efforts:

Choosing and framing one's subject carefully: This is good advice for any type of research, but it's especially important for social scientists seeking policy relevance. Getting input from potential users can be helpful, but it is important to recognize that policymakers are not always aware of what may be useful to them. An interesting research result might point to a policy initiative that was not previously available and therefore had gone unrecognized.

Understanding the policy context of the problem or issue to be studied: Policy issues do not exist in a vacuum. They are connected to other policy issues and to a social, organizational, and economic context. The better one understands this context, the greater are the prospects of coming up with relevant findings. What are the cost considerations? Who are the relevant actors? How do they see the subject today? How might the issue evolve in the time it takes to conduct the research and what might that mean for the research design?

Understanding how policymakers use research: In the words of one wag, "Policymakers tend to use research like a drunk uses a lamppost – for support, not illumination." Like many quips, this has a kernel of truth in it. Although it may not always be the case, policymakers, like most human beings, tend to be more receptive to information that supports their preconceptions and point of view. Many researchers are aware of this and may find it hard to resist the tendency to tailor their presentation, if not their results, to suit the client's (i.e., the policymaker's) preferences. While this may not be a major issue for SciSIP at this point, it is worth keeping in mind as the field develops and more studies that bear on the impact of current policies are conducted.

Becoming acquainted with and known to the policymakers in one's area of interest and the environment in which they operate: Knowing who's who, what roles the various actors play and where they stand in the policy arena in which a researcher is operating is a key to

being influential in that arena. This means not just walking in at the end of a project and presenting the results to potential users. Rather, getting to know the users is a process that a policy researcher should initiate at a relatively early stage in his or her project. The researcher, should know the potential users and—at least as importantly—they should know the researcher. Understanding the policymakers' environment and having an ongoing relationship will increase the prospects of one's research getting some attention.

Drawing on the experience of researchers in other policy areas: Academic researchers in many fields—for example, public health, education, and economics—face the need to be relevant to policy, just as do SciSIP researchers. Jeffrey Henig's study of the politicization of research on charter schools (Henig 2008, 2009) is a good example. It does not appear that there is much cross-fertilization among researchers in these areas, yet there are certainly ways in which the experience of researchers in these other fields can inform the SciSIP community. It is worth exploring possible mechanisms that would facilitate communication between SciSIP researchers and policy researchers in other areas.

Watching one's language: It may seem obvious, but it bears repeating nonetheless, that communicating with policymakers means adapting one's language and style to a different audience, one that is sophisticated but not versed in or receptive to an academic style or technical jargon. As a popular bumper sticker says, "Eschew obfuscation!"

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