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Scientific Research and Policy Analysis

Difficult and controversial policy decisions often need a factual base that can only be provided by careful scientific investigation. Examples abound: the detection of underground nuclear explosions, the setting of standards for air and water quality control, the development of alternative energy sources, the control of nutritional health hazards. Without extensive research, embodied in numerous individual studies, such policy decisions would be blind. However, the results of scientific research do not enter the decision-making process in an automatic fashion, nor should they be allowed to be used in a haphazard way. To be used responsibly, scientific data must first be summarized, evaluated, and interpreted. What does the evidence add up to? How solid is it? Are the results tentative or final? Is there consensus or disagreement among the experts about the significance and meaning of the data? What is suggested by contradictory evidence? What is needed to fill gaps in available knowledge? Synthesis, evaluation, and interpretation of scientific data represent a significant part of policy analysis—the systematic search for public policy alternatives.

Policy analysis establishes an important link between the worlds of science and public policy. Obviously, it has other important components, having to do with consideration of social, economic, and political factors. However, the treatment of scientific evidence is of critical importance for the quality of the total analytical effort. Policy analysis belongs to the realm of science to the extent that it makes use of the analytical tools of various scientific disciplines. But, given its location and function in the policy process, the standards and methods of other scientific activities do not necessarily apply to it.

Policy analysis is in heavy demand in government. Much of the work is conducted in specialized units in government agencies, or by staff members of legislative committees. Independent research organizations, universities, and professional associations participate in the production of policy studies. While the level of activity is increasing, little is known about the quality and impact of its results. Most of the work is not subjected to the traditional quality control system of the scientific disciplines. Publications often take the form of memoranda and reports. Funding is mostly outside the peer review system. To urge that review and funding mechanisms be formalized would be counterproductive, since much of the work must be completed under deadlines and in proximity to the needs of decision-makers. It would also be difficult to find competent judges. However, quality standards acknowledging the special functions of policy analysis need to be developed.

For one, scientific evidence must be summarized in an objective, comprehensive, and verifiable manner. Contradictory evidence must be included. Preliminary, incomplete, or inconclusive evidence must be qualified as such. If information is missing, the fact must be stated. A clear distinction needs to be drawn between the scientific evidence itself and its interpretation for possible action. Analysis should be designed to precede action or evaluate previous decisions. It should be inadmissible to contract for policy studies to provide justification for decisions already made. Mission-oriented agencies, which are major consumers of policy analysis, need to avoid overspecification of what they expect contractors to find. There is a growing tendency to let contracts for policy studies with such narrowly defined terms of reference that the quality of the product is bound to suffer. The advantage of involving outside researchers is lost under such conditions.

It is time for the government jointly with the members and associations of the scientific community, to examine the role of policy analysis and appropriate arrangements for its organization, funding, and quality control. An important part of this task is of direct interest to the readers of *Science* and the membership of the AAAS: the responsible "translation" of scientific results for the purpose of reaching informed and workable public policy decisions.—JURGEN SCHMANDT, *Lyndon B. Johnson School of Public Affairs, University of Texas, Austin 78712*