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Energy research and the contributions of the social sciences: A retrospective examination



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ABSTRACT

Physical and environmental scientists and policy-makers tend to have exaggerated expectations of what social science and social scientists ask for, what they can do, what policy relevance means in both the short and the long term, and what “short” and “long” mean in social science. There is also a tendency to misapprehend the crucial distinction between ad-hoc actors in the social realm, such as policy-makers and their advisors, journalists, experienced politicians, and policy critics, and professional and disciplinary social science. The former are licensed to make quick judgments on at best imperfect evidence. The latter cannot reasonably be expected to come up with anything ‘quickly’ on a new or unfamiliar problem for lack of an experiential data base. This paper addresses the possible contribution of professional political science to debate, policy, and policy advice with regard to long-term global climate change—not so much with an eye to making recommendations as to who ought to be involved doing what as to asking how reasonable and intellectually stimulating policy-useful questions might be framed within the discipline.

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1. Introduction

This paper explores how and whether professional social science can or could be expected to contribute to a greater understanding of the dimensions and impacts of global climate change. Certainly, the range of potential contribution is large. Legal scholars can work on laws, regulations, and other forms of agreement that transcend national and regional boundaries. Economists can study the costs and impacts of presumptive changes, and/or investigate ways to provide economic incentives for efforts at preventing harm or for mitigating or otherwise coping with impacts. Students and analysts of governments and inter-governmental arrangements can extend what they know to cover expected responses of governmental agencies and bureaus, and perhaps even to suggest what they might do. Sociologists, cultural anthropologists, and political scientists familiar with human behavior and organization, on all levels (from individual to large social groups) might be engaged to work on probable responses and adaptations on levels ranging from the individual through the family, social group, polity, etc. The

list is quite long, in principle. The question, however, is not what such analysts might do, but the matching of mutual expectations.

Many people, in many fora, have tipped their hats to the potential contribution of social science in studying global climate change—usually at a level of considerable generality. An unanswered, and too often unasked question is: “contribution to what?” To their professional disciplines? To intellectual knowledge? To the polity? To the government (and if so, to which government or agency within it)? Or, perhaps, to help climatologists fight their current political battles?

The question of a social science contribution, even when not posed so tendentiously, is usually too non-specific and open-ended to elicit any reasonable answers. Moreover, it is often based on the supposition that the role of social scientists is as useful, if somewhat erratic assistants—sociological Sancho Panzas to the Don Quixotes of climatology and other physical sciences. Perhaps it would be better, instead, to treat social scientists as independent researchers in their own right, with agendas, paradigms, and goals of their own, and then to ask them what it is they do, and what it is they know they know, know they do not know, and just plain do not know, before asking them for help.

Many of us believe that professional social science does have the potential to make a major contribution to understanding of both impacts and responses. But scientists, technologists and policy-makers alike need to gain a clearer understanding of just what it

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is that social science can and cannot contribute, and what level of resources and involvement are required for that contribution to be realized. Rather than attempting to speak for other disciplines, let me restrict myself to my own – political science – to explore my analysis of three generally accepted categories or ‘approaches’ to policy-related work.

2. Epistemology and meta-theory

Because of the historical aggregation of social scientists into a small number of labeled boxes, many social science departments (and disciplines) are portmanteaus for a variety of professionals, who use a variety of tools to analyze a very broad range of questions. Most political scientists, for example, share a deep and abiding interest in the process of actual ‘politics,’ and have a great many opinions about a large number of related things. But their professional specializations may otherwise be quite diverse, and at times far removed from actual and contemporary processes [1]. For the most part, interaction with the details of immediate policy-making is the specific province of the field of “public policy,” which as often as not is treated within academic units as a quite distinct field [2]. If this seems somewhat arbitrary, it is not much different from the sometimes blurred distinction between physics and engineering in the realm where physical principles may be turned into physical products [3].

2.1. Political science is usually not policy analysis

Its strengths are a strong connection to real-world activities and the desire to insert into them advice and actions based on sound analysis and grounded in cumulative knowledge [4]. But herein lies an essential difficulty. As with the doctor or the engineer, the policy analyst cannot supply respectable professional advice unless it is grounded in other, more general disciplinary research at a more abstract and fundamental level. Moreover, the advice of the analyst is generally most effective when the recommendations are incremental, and the degree of change required least disruptive to ongoing processes [5].

There are, nevertheless, some policy areas in which professional policy analysts might be of help—for example, in seeking ways to develop more aggressive policies for increasing the efficiency of energy use [6]. There are other areas, such as gaining consumer acceptance or public confidence, for which even policy analysis is a bit too formal, and what is really sought is the advice of professional social engineers—such as advertising agencies or political campaign managers [7]. This would certainly address the ‘moderate’ agenda of minimal commitment in the face of scientific uncertainty [8]. But it will not suffice for the broader agenda underlying deeper concerns that the severity of the problems of global climate change transcend business as usual [9]. The effects will be such as to put considerable stress on present ways of living, traditional modes of policy-making, and current forms of social organization [10].

This is a daunting proposition, assuming as it does that current social and political structures cannot be taken for granted [11]. Nevertheless, it is possible that the approaches and techniques used by social and political scientists could be exploited to great advantage by those seeking to comprehend the broader and more profound social impacts of, and social responses to, extensive and potentially disruptive global climate change. In order to see how and to what extent such knowledge might be put to use, I here identify three categories of policy-related political science analysis, based on two distinct epistemological approaches to generalization.

2.2. Induction vs. deduction

The fundamental principle of policy relevance is that research should have some applicability for reducing uncertainty about the course of future events. However elegant, or perfect, the study and knowledge of the past, its applicability to policy depends upon known and validated methods for converting it into estimates of the future. The two primary modalities are well known: induction proceeds by accretion of knowledge and understanding, on the premise that from this reservoir some useful generalizations or patterns can be inferred; deduction uses past and present as a basis for building generalized behavioral rules (or even ‘models’) within which future circumstances can be inserted as parameters or variables. Both methods have their adherents, and their critics.

The continuing, historical argument about inductive vs. deductive approaches takes place at all levels—philosophical, epistemological, and practical. Yet, it is at best of marginal relevance to the present discussion (except as an organizing principle) because both the inductive and the deductive approaches share the same weakness—a dependence upon a ‘uniformitarian’ approach to social change for comprehension of any but a few of the most general principles of personal and organizational behavior [12]. In other words, the application of any formal method of inferring the future from the past involves certain assumptions of continuity, primarily with regard to the scale, scope, and temporal development of the social and physical circumstances from which the rule system is derived. In the case of global climate change, there is some uncertainty as to whether or to what extent this is true [13].

As is often the case, the two most extreme assumptions are in some ways the easiest. If the change takes a very long time (on the order of a century), and is at any point hardly noticeable, then incremental gradualism is a reasonable principle, and the usual methods and tools of policy analysis can be taken over and applied, with deduction having a slight methodological advantage. If the change is quite large, and takes place relatively quickly (less than a decade), the radical dislocation of social structures virtually ensures that historical and empirical evidence about institutional response has only a limited applicability (except in the most general sense), and one can appeal inductively to more basic psychological and behavioral approaches based on, e.g., histories of great wars, plagues, and revolutions.

However, it appears that the emerging scientific consensus is that the effects of global climate change will be moderately disruptive in general (although considerably disruptive to some), and take place over at least several decades. Thus, we fall squarely into the box where the question of how analysis might be used, for what, and under what conditions, is the most poignant [14]. Until and unless there are reasonable and believable region-wide, decade-long scenarios, we must build on only a very few historical cases. In almost all of these the source was exogenous, the results were unanticipated, and the societies involved resisted perceiving the true dimensions of what was to come [15].

2.3. Modes of analysis

The most common means of classifying policy-related work in political science range from the interpretive to the projective. The three categories as generally understood are descriptive (primarily historical and/or empirical work encompassing both past and present); predictive (what the analyst thinks might happen, perhaps with probabilities attached), and prescriptive (what the analyst thinks should happen, or actors should do) [16]. The latter, highly inductive pair are obviously based on the deductive

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