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

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ABSTRACT

This article reports on changes in climate science, social science, public administration, and policymaking over the past twenty-five years. It responds to Gene I. Rochlin's "retrospective examination" of energy research and the social sciences. In 2014, we find that social scientists are still disadvantaged by policymaker biases and inaccessible deliberative systems, but also better poised to conduct original humanistic energy research and produce targeted social change interventions. We review promising social scientific advancements, particularly in the realm of citizen action research. We conclude with the case study of evidence-based practice, a model from the health field that illustrates how climate change and energy research, practice, and policymaking could benefit from the inclusion of social science perspectives and methods.

Today, can social science "contribute to a greater understanding of the dimensions and impacts of global climate change?" [1] Can social scientists calibrate scientific recommendations to complex social realities? Can they gird policymaking with social scientific theory, empirical observations, and experimental results? Can they broker bonds among scientists, policymakers, and the public? What, exactly, is possible in 2014?

In engaging Gene I. Rochlin's "a retrospective examination," we are called to deliberate the essay both as it stood in 1989 and in light of a quarter-century's unfolding. In doing so, we are struck by how little and how much seems to have changed. Climatological models are more complex than ever, and yet their predictive power is difficult to channel into concrete policies and government regulations [2,3]. Academic fields interact with even greater ease than in 1989—a time of great cross-specialty conversation—and yet disciplines such as economics still dominate social scientific energy policy [2], and interdisciplinary environmental problem-solving centers are rare [2,4]. Public administration schools in the U.S. are a model of interdisciplinary education [5–8]. Graduates of these programs are increasingly adept at economic risk analysis, program evaluation, and human resource management. And yet, few traverse the practitioner-academic gulf to publish in their field's journals [5,6], including energy regulators. Having weathered decades of criticism and mandatory reforms, most public administrators are reluctant to embark on radical new projects [9]. Further, as the Montreal Protocol negotiations illustrated, they are often sidelined in the policymaking discussions that determine the scope of their work; social scientific debate is limited in these forums too [10].

In 2014, we have greater social scientific knowledge, tools, and capacities than we did in 1989, and yet we are stymied by many of the same obstacles detailed in "a retrospective examination." Given a quarter-century of advances in the sciences, social sciences, and our public sectors, it is possible that we might harness the resources of our present age to better respond to international climate change (politics). Akin to our companion essay, this "contemporary examination" is animated by the belief that the social sciences can meaningfully contribute to energy research now, and throughout the next twenty-five years. Our "contemporary examination" is organized around six questions:

1. What does the reader need to know to fully appreciate "a retrospective examination?"
2. Did "a retrospective examination" sufficiently defend the utility of the social sciences?

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3. Has climate change science advanced since 1989?
4. What has social science contributed to public administration and policymaking since 1989?
5. What has social science taught us about climate change and citizenship?
6. Today, what role can social scientists play in solving looming energy and climate calamities?

1. What does the reader need to know to fully appreciate "a retrospective examination?"

To properly understand "a retrospective examination," one must consider the remarkable advancements that preceded and comingled with the original essay. Behaviorism had permeated the policy sciences via Herbert Simon's theories of "bounded rationality" [11,12], Charles Lindblom's evolving insights into incremental public management [13,14], and a host of complementary works [15]. Simon's scholarship suggested that rational choice making preceded not from a reduction of all available alternatives to a few promising options [11] and [15], but from the constrained deliberations of "choosing organism[s] of limited knowledge and ability" [16]. Lindblom's research explored the interactions among policymaking and public management, and illustrated the tendencies of a broad range of public decision makers to conflate means and ends, systematically simplify the range of potential alternatives, skew toward the status quo, and view interpersonal agreement as a signal of successful decision making [13,14]. An economist by training, Lindblom posited that social scientists could assist public administrators and policymakers in designing just and effective institutions [17,18]. His essays in public management coincided with the professionalization of a number of social scientific and professional fields, including Public Administration, and a move toward interdisciplinary social science.

In the United States and elsewhere, the twentieth century witnessed the formalization of fields of practice and disciplines such as Anthropology [19], Economics [20,21], Engineering [22,23], Finance [24], and Sociology [25,26]. Prompted by new discoveries in mathematics, improvements in communication and transportation infrastructure, cosmopolitan competition, and professional lucubration, most scientific and social scientific fields metamorphosed from vocational collectives to abstracted intellectual communities [20,27,28], including Public Administration. Following the industrialization and urbanization of the late 19th century, diverse social movements catalyzed widespread municipal government reforms [29]. From these reforms, a class of professional public managers emerged [29]. In the 1920s and 30s, the first American public administration graduate program was launched [30]; the first issue of Public Administration Review (PAR) appeared in 1940. Shortly after PAR's debut and for decades, leading scholars debated whether the field should or could develop into a formal profession and/or discipline [30]. Among the varied arguments against professionalization, one is concordant with concern over climate change mismanagement: that professions and disciplines are insular and privilege self-preservation over service to the polity and posterity [30–32]. Though these concerns have been realized across the disciplines, the professionalization of fields such as Public Administration has also improved the quality of empirical research and public service delivery, as we describe in following sections of this article. These fields benefited from another mid-century trend: interdisciplinary research.

The work of Herbert Simon, Charles Lindblom, and others mustered broad appeal amidst a diuturnal trend toward cross-disciplinary research. In the 1950s, Simon's *Models of man* [12] arrived on the shelves with Quincy Wright's now-classic text on international relations [33], also cited in "a retrospective examination." *The study of international relations* described retreating disciplinary divisions among the human sciences:

> There has... been a tendency to distinguish the *social sciences* (sociology, economics, political science) from the *behavioral sciences* (...cultural anthropology), the *policy sciences* (politics, administration, communication...), and the *demographic sciences*..., but most of the social disciplines actually utilize more than one of these points of view. [34]

A few years later, Lindblom's seminal essay on "muddling through" public management connected Communications, Economics, Operations, Policy, and Public Administration studies [13]. Perhaps the best evidence of the growing regard for interdisciplinary research was when Simon, a political scientist, won the Nobel Prize in Economic Sciences in 1978. The feat was not repeated until 2002, when psychologist Daniel Kahneman captured the prize.

Simon's Nobel Prize win underscores a key point of this introductory section: the decades leading up to "a retrospective examination" were marked by great change and cross-disciplinary fertilization. But the distance between Simon and Kahneman's Nobel prizes hints that the advancements informing "a retrospective examination" were not uniformly developed in the intervening decades. Further, disciplines such as Anthropology and Communication Studies were often relegated to the sidelines, particularly in energy and climate research [2]. We observe a similar bias in our companion essay.

2. Did "a retrospective examination" sufficiently defend the utility of the social sciences?

A litany of disciplines pepper the text of "a retrospective examination"—Cultural Anthropology, History, Psychology, Sociology—but the essay focuses on Political Science, and to a lesser extent, Public Administration. The author acknowledges the limits of this epistemic vantage. Still, his essay reflects a dominant perspective within social scientific writing on energy [2]. The Political Science focus fails to push the bounds of the proposition that the social sciences *generally* might be useful to policymakers, public administrators, or natural scientists. Contemporary Anthropology, arguably the broadest of the academic disciplines, serves as a superior heuristic of the utility of the social sciences—and humanities—in energy policymaking.

In the decades after World War II, anthropologists began to realize how profoundly their discipline had been involved in colonialism, subjugation, and war [19]. This realization led to a period of reflection about how anthropological knowledge is made, represented, and used. Today, anthropologists resist answering "only limited questions, formulated by other people with other interests, largely having to do with how to manipulate beliefs and behavior" [35]. Anthropologists conceive of themselves as actors, *internal* to the problem under investigation, rather than as external critics. Such a perspective encourages them to "not only define problems from the perspective of their own discipline, but also to look at who else is defining problems, and from what other perspectives" [35]. The discipline strives to be: (a) integrative, drawing on multiple subfields as well as historical, ethnographic, and critical methods; (b) holistic, examining problems from multiple perspectives; and (c) inclusive, providing a broader framework for addressing public issues.

Anthropology, among the most generalist *and* specialist of the academic disciplines, is composed of four fields, which are meant to be combined. The origin of this composition of American