

# A New Program for Philosophy of Science?\*

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I contend that Janet Kourany's "A Philosophy of Science for the Twenty-First Century" contains three levels of projects: (1) a naturalistic project, (2) a critical project, and (3) a political project. The naturalistic project is already well established. The critical project is less valued and less established within the profession, but seems a worthy and achievable goal. The political project, I argue, takes one outside the professional pursuit of the philosophy of science. The critical project encompasses both the evaluation of scientific research programs and of empirical conclusions. I contend that the former is widely acknowledged as legitimate while the latter is unacceptable.

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**1. Introduction.** In her "A Philosophy of Science for the Twenty-First Century," Janet Kourany proposes a program for "a *socially responsible* philosophy of science" (original emphasis). This proposal is worth considering because the philosophy of science is an evolving academic enterprise, as its history during the whole of the twentieth century clearly reveals. One mechanism for change is the exploration of explicitly formulated alternative programs.

It must initially be realized just how much Kourany packs into her notion of being "socially responsible." It explicitly includes "the appraisal of science in terms of an egalitarian ideal of human flourishing." And such appraisal applies not only to the choice of topics for research, including decisions about funding for research, but also to the *evaluation* of conclusions. Still further, Kourany wants philosophy of science to be "a socially

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engaged . . . philosophy of science.” This includes actively promoting not only a socially responsible philosophy of science, but socially responsible *science*. Philosophers of science should be engaging in criticizing current research and science policy from an egalitarian perspective, and promoting science that furthers this ideal. All this is packed into what, adopting Philip Kitcher’s (1993, 391) phrase, she sometimes calls “a truly critical philosophy of science.” Finally, Kourany claims that her new program for philosophy of science has been inspired by and even partially fulfilled by feminist scholars with whom she identifies.

**2. The Projects.** Kourany contrasts her program with “the socially *disengaged* philosophies of science” practiced by “most twentieth-century philosophers of science” who have been “. . . concerned with science . . . as a purely ‘epistemic’ enterprise” (original emphasis). Here she explicitly mentions “Anglo-American logical empiricism,” particularly as practiced in the United States after World War II. I think there are, in fact, several different projects within Kourany’s program, all framed in opposition to logical empiricism and all advocated by many feminist philosophers, though by no means exclusively by feminist philosophers.

*2.1. The Naturalistic Project.* One project can be gathered under the banner of *naturalism*. Naturalists seek to understand in broadly empirical terms the practice of science as one among many human activities. No appeal to *a priori* principles is involved. So the naturalist program is one of *understanding* rather than justification. Nevertheless, naturalists can ask why various methods used by scientists are, or are not, likely to lead to reliable judgments about aspects of the world. In answering such questions, naturalists presume the reliability of some judgments and some methods by which judgments of reliability are reached. Thus, naturalism incorporates features of pragmatism.

Naturalism is a comfortable home for feminist philosophers of science since most would argue that embodied and gendered values influence even legitimate science. Such a view is difficult to square with such programs as logical empiricism. Nor is it only gendered values that naturalists find in science. Naturalistic studies of science, especially those by historians and sociologists of science, show a pervasive influence of various sorts of values in the process by which scientists reach consensus on particular conclusions. A naturalistic philosophy of science helps us understand how this is possible. Another conclusion of naturalistic studies of science is that science is a deeply social activity. This has also been a theme of much feminist philosophy of science (Longino 1990, 2002; Nelson 1990; Solomon 2001).

The naturalist project as just characterized remains theoretical. It provides an account of science as practiced, including recognition of the role of values and social interactions in all science. But it need not include accounts of particular values or social relationships. And even where particular values and social relationships are included, they may only be described, not evaluated, at least not explicitly. Theoretical naturalists hope to convince other philosophers of science and other members of the broader science studies community of the correctness of their approach. They may also hope to provide scientists with insights into the nature of their own scientific practice. Because the naturalistic project seeks also to understand why science is successful, when it is, it implicitly provides some general standards for scientific practice. But that may be as critical as it gets.

*2.2. The Critical Project.* Kourany's program is naturalistic, but goes beyond *theoretical* naturalism as I understand it. One further project, which includes naturalism, might deserve Kourany's designation as "critical" or perhaps "reformist." Kourany's critical philosophy of science *evaluates* the sciences it studies. And this evaluation operates in at least two dimensions. First, it evaluates *what gets studied*. It should, for example, provide initiatives for "prioritizing the funding of research that promises support for egalitarian views and programs." Second, it evaluates *conclusions reached*. As she puts it, "science's set of empirically acceptable options should be narrowed to include only the ones that support (or most support) egalitarian goals." This critical project, as I understand it, remains broadly academic. The critical philosopher of science evaluates specific scientific projects and conclusions, and argues publicly for the evaluations.

*2.3. The Political Project.* Kourany suggests a third project which takes the philosopher of science outside the academy into the political realm, actively working to achieve goals suggested by the above mentioned evaluations. Politically engaged philosophers of science would pursue activities such as "the lobbying efforts of the National Breast Cancer Coalition," enlisting the support of scientists and others. The prevailing consensus in philosophy of science, however, seems to be that political activities are not part of the professional lives of philosophers of science. To put the point in cruder academic terms, the way the field is now organized, political activities are very unlikely to count toward tenure or promotion and, indeed, take time away from teaching and research, which do count. I presume Kourany intends her "socially engaged philosophy of science" to include a *politically* engaged philosophy of science. If so,

she is envisioning a professional philosophy of science so different from that currently practiced that professional criticism seems pointless. So let us back up and look more closely at her critical project.

**3. The Critical Project.** Here it is helpful to consider briefly two very recent works, one coming out of a feminist tradition and the other not. The first is Helen Longino's *The Fate of Knowledge* (2002). Here Longino argues for a view of scientific knowledge that is at once both rational and social. It is a view of science in which Kourany's critical project makes sense, but in this work Longino herself does not pursue critical projects. The second work is Philip Kitcher's *Science, Truth, and Democracy* (2001). Here Kitcher develops an ideal of "well-ordered science" which seeks "significant" truths. He argues at length that determining significance requires going beyond the immediate scientific community. So, for Kitcher, science is not autonomous. He provides idealized examples of the kind of situation in which the direction of research should be limited by broader social concerns including equity, but does not directly engage in criticism of any particular scientific projects. Both of these works, then, remain within the bounds of a theoretical naturalism, albeit one that includes the social and political context of science.

I have chosen these two works partly because both authors have, in other work, pursued genuinely critical projects in Kourany's sense. In her earlier book, *Science as Social Knowledge* (1990), Longino presents a feminist critique of explanatory models in investigations of possible hormonal bases for behavioral sex differences. This work was done in collaboration with the biologist, Ruth Doell. Likewise, in *The Lives to Come* (1996), Kitcher evaluates social implications of the human genome project, and genetics more generally, regarding, for example, social equity. Such works require much knowledge of the social and political context of the relevant science, but not beyond what a student of the philosophy of science could be expected to learn. It is currently the case, however, that such knowledge is typically far less valued by departments of philosophy than extensive knowledge of quantum theory or evolutionary biology. Yet it is not unreasonable to hope that, with considerable effort, this could be changed. So there is hope for at least some aspects of Kourany's critical project.

**4. Evaluating Science.** I would like to return once again to Kourany's critical project. This project, as noted above, has two different, though related, aspects. First is the evaluation of topics to be studied, or of research programs. After World War II, at the time of the formation of the U.S. National Science Foundation, it was widely agreed that the greatest benefits from science were to be had by letting scientists follow their own inclinations as to what should be pursued. It was called "non-directed

research,” meaning not directed by anyone or anything outside the scientific community. Simply put, scientists were to be funded to do what they wanted to do. This view still has many supporters (e.g., Weinberg 1992). Moreover, as Fuller (2000) argues, it is even supported by Kuhn’s theory of science. Yet this view of science as autonomous has been forcefully challenged since the 1960s. And it is ever more difficult to square with the more recent growth of university-industry cooperation, particularly in the biomedical sciences. So, in urging evaluation of research programs in terms of values such as equity, Kourany joins many others.

The second aspect of Kourany’s critical program, as she herself admits, is more controversial. This is her claim that scientific *theories* be evaluated in terms of their conformity to egalitarian and other moral ideals. Such theories, she says, are to be preferred over less well conforming rival theories. To forestall obvious objections, she admits that, for scientific theories, moral desirability is not an indicator of truth or of any other scientific virtue. Nevertheless, she insists, pursuit of any scientific virtue requires “a system of scientific knowledge (theories and observation statements) that fits all our observations.” At this point she invokes the Duhem/Quine thesis to claim that there is always in principle more than one such system of knowledge. It is only among these “empirically acceptable” theories that we should choose those that promise support for egalitarian goals. Thus, she claims, her critical project “does not undercut science’s ability to be a powerful ally in the fight for equality for women.”

This form of argument is familiar from the social constructivist literature, where it is often argued that the underdetermination of theory by data provides space for the social determination of theory. There are many arguments that the extent of such underdetermination is not nearly so great as Kourany assumes (see, e.g., Laudan and Leplin 1991). Prominent among these arguments is the realization that underdetermination here may mean only *logical* underdetermination, which no one denies. If one adds standard methodologies, such as statistical hypothesis testing, one of two hypotheses may be more strongly supported by the data even though logically underdetermined. And Kourany surely does not wish to dismiss standard inductive methodologies.

Even more fundamentally, as many, including feminists such as Longino (1990), have insisted, observation only becomes data for or against a theory when the two are connected by other empirical assumptions. With these assumptions in place, choice among theories may become unproblematic. It only seems that there are always still choices to be made among theories if one imagines a huge space of *logically possible* theories. But studies of real scientific practice show that mere logical possibilities count for almost nothing in empirical science. Possibilities have to be at least plausible in light of assumed background knowledge, recognizing, of

course, that any particular background assumption could itself be subject to reconsideration.

As noted earlier, historical studies have revealed many cases in which a scientific consensus on a particular hypothesis was in fact due as much to shared values as to empirical evidence. What the history of science (since the Scientific Revolution) does not reveal is many cases in which participants *explicitly* argued for a hypothesis because of its ideological desirability. And those who have, as following publication of Darwin's *Origin*, tended to be outside the scientific community. Evaluation of scientific hypotheses is *supposed* to be strongly based on empirical data, even if in practice this is not always the case. If the data fail to agree more with one hypothesis than another, one is *supposed* simply to withhold judgment, even though there is often in fact a rush to judgment that goes beyond the data. Moreover, discovery of ideological bias in the evaluation of scientific hypotheses is usually taken as a basis for criticism within the scientific community. In the end, it is the *explicit* appeal to ideology in the evaluation of hypotheses that makes this aspect of Kourany's critical project unacceptable even to sympathetic philosophers of science.

**5. Belief versus Action.** The concept of "evaluating" theories can be ambiguous. One understanding is an *epistemic* evaluation as to suitability for *belief*. But another is a *practical* evaluation as to suitability as a basis for *action*. It may be scientifically unacceptable to *believe* in the truth of a theory because it conforms to a moral ideal, but it is not unacceptable to *decide* to rely on such a theory for purposes of practical action or policy. In practical decision making it is not truth, but expected utility, that matters. So it is not irrational even to base an action on the less probable of two hypotheses provided the expected utilities of the recommended actions are sufficiently different. Thus, by distinguishing between belief and action, appraising theories by conformity to moral ideals need not be so controversial an idea after all.

But there is a danger here for Kourany. In a democratic society, those duly elected or appointed to make the relevant decisions may not share her values. So decisions may well be made in conformity to values she opposes. The continuing impasse over abortion in the United States well illustrates this potential conflict between democratic and feminist values.

**6. Conclusion.** In the end, Kourany's new program for the philosophy of science may not be as radical as she makes it sound. It would be more radical if she were to insist that the only philosophy of science worth doing is a politically engaged critical philosophy of science. But she, like Otto Neurath, makes no such claim. Still, as she says, there is much to be done. There are few examples of critical philosophy of science outside of the

feminist literature and such studies are undervalued by the professions of both philosophy of science and philosophy generally. We may nevertheless take some comfort in the fact that the existence of critical studies of science does not depend on philosophers alone. Critical work, again especially among feminists, is more common in the broader science studies community.

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