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## The Ideal of Socially Responsible Science: Reply to Dupré, Rolin, Solomon, and Giere

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*The goal of Philosophy of Science after Feminism is to provide the blueprint for a philosophy of science more socially engaged and socially responsible than the philosophy of science we have now, a philosophy of science that can help to promote a science more socially engaged and socially responsible than the science we have now. A central part of this venture is the ideal of socially responsible science, an ideal that evokes a set of interrelated concerns in the minds (and comments) of John Dupré, Kristina Rolin, Miriam Solomon, and Ron Giere. In this paper I set out to answer these concerns and make explicit exactly what is in the offing if I have succeeded.*

The main message of *Philosophy of Science after Feminism* is twofold: that philosophy of science needs to locate science within its wider societal context, ceasing to analyze science as if it existed in a social/political/economic vacuum; and correlatively, that philosophy of science needs to aim for an understanding of scientific rationality that is appropriate to that context, a scientific rationality that integrates the ethical with the epistemic. The ideal of socially responsible science that the book puts forward, in fact, maintains that sound social values as well as sound epistemic values must control every aspect of the scientific research process, from the choice of research questions to the communication and application of results. And it is this that raises troubling questions for my critics. To begin with, how, they ask, are such values to be determined? There is disagreement among scientists even regarding the status and ranking of epistemic

I would like to thank John Dupré, Kristina Rolin, Miriam Solomon, and Ron Giere for their interesting and thoughtful comments, and Kristina Rolin, in addition, for organizing the PSA 2010 symposium in which these comments were first aired. I shall start by addressing the most fundamental concerns these comments raise—a set of interrelated concerns, in fact—before turning to their more specialized questions and reservations.

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values, Rolin points out, and there continues to be ethical disagreement as well, Dupré adds, even regarding such long-debated topics as rape and domestic violence and discrimination in the workplace. What's more, Solomon adds, values, epistemic as well as social, are domain specific: what are good values in one area of science may not be good values or even relevant values in other areas. So, how is such disagreement and how is such diversity to be handled to yield a workable ideal of socially responsible science? Surely, politicians cannot be relied on to make the relevant decisions, Giere and Rolin insist, nor can the market, Rolin adds. So, how is the ideal of socially responsible science to be determined?

Now I considered questions very like these in my book. For example, at the end of chapter 4 I raised a set of questions that I then summarized in this way:

How can the . . . ideal of socially responsible science be spelled out so that it is at once 1) comprehensive enough to apply to all scientific fields and practitioners but also 2) specific enough and perspicuous enough to be capable of yielding the desired concrete results and 3) warranted enough to command the respect and adherence of scientists from different cultures, religious traditions, and economic and political systems and levels of development? Moreover, 4) what role might philosophers of science play in such a venture? (Kourany 2010, p. 106)

I then took up these questions in chapter 5. How did I do this? I recalled how philosophy of science by the middle of the twentieth century had taken on a very ambitious goal, to articulate and even improve upon what lay at the very heart of science's success, scientific rationality itself. I recalled how initially only the logical aspects of science were thought relevant to this rationality but how, by century's end, many other aspects of science, historical and social and material, were thought relevant as well. And I explained how the goal of articulating and improving upon scientific rationality was not found, even by century's end, to require involvement with the ethical aspects of science. I then contrasted this situation in philosophy of science with that of the sciences. Indeed, in the sciences—that which philosophy of science was supposed to be about—new or newly revised ethical codes were proliferating by century's end, ethical codes that illustrated the entanglements in science of the ethical and the epistemic. These ethical codes pointed to a fuller understanding of scientific rationality, but unfortunately, I argued, they have not been adequately developed. But what if they were? Clear, accessible, well-publicized ethical codes for the various sciences, adequately formulated, I explained, would be the piecemeal elaboration of the ideal of socially responsible science—

comprehensive enough, when taken together, to apply to all scientific fields but also specific enough and perspicuous enough, one at a time, to yield the desired concrete results, and authoritative enough to command the respect and adherence of scientists all over the world in each scientific specialty. So this part of my book immediately answered the domain-specificity-of-values concern of Solomon, since each scientific area would have its own code, as is the case now with the less-than-adequate ethics codes now available.

But how might such adequate ethical codes be developed? This is the question Giere and Rolin want answered, but in my book I did not offer the answers that caused them concern. That is, I resorted neither to politicians nor to the market. Instead, I suggested that the formulation of adequate ethical codes for the various sciences would be a highly interdisciplinary affair conducted by the various scientific communities. To begin with, it would be an empirical project, one that would require, for each scientific specialty (e.g., chemistry), 1) information *from within* that specialty (e.g., regarding its traditional disciplinary aims and the kinds of research considered valuable; this information would be provided by insiders); 2) information *about* that specialty (e.g., its funding arrangements and the structural conditions that allow or encourage misconduct among its members; this information would be gathered by outsiders such as sociologists); and 3) information about the interests of those *affected by* the specialty (e.g., industry, government, and the public at large; this information would be offered by a variety of observers and stakeholders such as political scientists and economists, industry representatives, ecologists, and environmental advocacy groups). But the formulation of adequate ethics codes for the various sciences would also be—would, in fact, be first and foremost—a *normative* project, that is, an ethically and epistemically normative project, one that looks deeply into the aims and attendant responsibilities scientists *ought* to set for themselves, both individually and collectively, in light of the kinds of empirical factors mentioned above. And since we philosophers of science have a deep grounding in such normative issues and a honed facility for articulating and clarifying as well as analyzing and criticizing arguments relevant to such normative issues, we would be involved in the project too.

So the way in which adequate ethics codes would be developed, the way I set out in my book, answers the concerns of Giere and Rolin: chemists, for example, would not be expected to know about the needs of society, social scientists and stakeholders would be consulted, neither politicians nor the market would be relied on, and so on. But *could* adequate ethics codes for the various sciences ever be developed in this way? That is, could many individuals pooling their information and sharing their expertise and ex-

pressing their various concerns and perspectives ever produce agreement on such codes, agreement that would be warranted enough to command the respect and adherence of scientists all over the world in each scientific specialty? This is the question Dupré wants answered, and my answer in the book takes a number of forms. The main one is that international codes of ethics for some scientific specialties already exist—for example, the “International Ethical Guidelines for Biomedical Research Involving Human Subjects” of the Council for International Organizations of Medical Sciences, the “Code of Ethics” of the International Sociological Association, and the “First Code of Ethics” of the World Archaeological Congress—and there is currently much interest in creating international codes for other scientific specialties. One reason for this interest is the international cooperation and collaboration now required for most scientific specialties. Another is the fear that research judged impermissible by one code of ethics in one country could simply be moved to another country with a more permissive code of ethics or no code at all, thereby undercutting the code of the first country and, ultimately, ethical codes in general. Still a third reason is the need for international efforts to deal with international problems in science such as fraud and other kinds of scientific misconduct and research aimed at or serving biological, chemical, or other kinds of terrorism. But there are other reasons as well for creating international codes of ethics for the various scientific specialties, reasons having to do with the pedagogical functions served by such codes, the ways they support the autonomy of science, the accountability of science, and the public’s trust in science, and so on. Do all these reasons make adequate, well-justified, well-respected international codes of ethics for the various sciences a plausible possibility?

Dupré might not be convinced.<sup>1</sup> After all, he says that there remain societies in which even widely shared values in the developed world—for example, core feminist values—are contested. And certainly this is true, and certainly scientists from such societies might hinder efforts to create international codes of ethics for the sciences that recognize such values. A more likely possibility, however, would be that scientists from such societies, scientists many of whom would have been educated in the developed world, either would have come to adopt these widely shared values of the developed world or at least would feel pressure to toe the line in order to be viewed as bona fide members of the international scientific community.

1. Of course, given his trust in the factual basis of science and given his belief in the value-ladenness of most (almost all?) scientific fact-stating languages, it is surprising that Dupré should challenge the possibility of widespread, justified agreement on values in science.

But Dupré also says that there remain people in the *developed* world—for example, people in the United States—who also fail to accept the values that would populate adequate ethics codes—for example, the values that support equal opportunities for health care for people of all economic and gender and racial/ethnic groups. And, again, this is true and, again, scientists from these societies might hinder efforts to create adequate international codes of ethics for the sciences. But there are other possibilities here too that are at least equally likely. For example, legislation might be passed in these societies to *force* scientists to accept the appropriate values. Speaking of health care in the United States, Dupré's example, this happened in 1993 when Congress passed the National Institutes of Health Revitalization Act, which mandated publicly funded biomedical research that answers to the health needs of women and minority men as well as the health needs of white men. And given the health care reform legislation passed in the United States last year—the Patient Protection and Affordable Care Act of 2010 and the Health Care and Education Reconciliation Act of 2010—legislation might now be possible that mandates publicly funded biomedical research that answers to the health needs of people of lower socioeconomic status as well as the health needs of the more affluent.<sup>2</sup> But notice that having to force scientists in this way to adopt appropriate research values can undercut the public's confidence in the integrity of science and thereby compromise the autonomy of science. Better for scientists to anticipate the values that are appropriate for research and institutionalize them in science through adequate ethics codes. Of course, none of this need be easy, only well worth the effort.

But what are these appropriate social values that scientists should anticipate, and what roles should they play? Rolin thinks they include the diverse “conceptions of the good life” that individuals should be free to embrace, and Solomon thinks they might also include such possibilities as the desire for personal reward or the goal of unified explanation. But they include none of these. Indeed, in my book I provide examples ranging from egalitarian values that inform the work of feminist scientists to environmental values that inform the work of green chemists. And I make clear at least some of the general characteristics that these values possess: they should meet the needs of society, including the justice-related needs of society; they should be the kinds of values that scientists *ought* to hold,

2. This would include, for example, all those diseases and disabilities of the poor in the United States that we usually ignore, such as the parasitic, bacterial, and congenital infections that occur predominantly in people of color living in the Mississippi Delta and elsewhere in the American South, in disadvantaged urban areas, and in the U.S.-Mexico borderlands, as well as in certain immigrant populations and disadvantaged white populations living in Appalachia (see, e.g., Hotez 2008).

the kinds of values that ought to be enforced by one or more of the various sciences' ethics codes; and they should be revisable over time as new information becomes available, new technologies become possible, and societal needs change. Nor do these social values represent, as Solomon would have it, a "takeover" of science by values, so that the ideal of socially responsible science "lets the values steer the science instead of the reverse." At least such a characterization is quite misleading. The ideal of socially responsible science, after all, calls for a science shaped by sound epistemic values as well as sound social values, and no one ever complained before about a takeover of science by sound epistemic values.

But perhaps the social values undercut the epistemic values, Rolin suggests. Well, why should they? Thus, in the research on domestic violence in the black and white communities of the United States that I take up in my book to introduce the ideal of socially responsible science, the social values that operate seem to be at least two: that women deserve to live without fear of violence from domestic partners, and that black women deserve the same opportunities as white women to live in such partnerships. These social values, I explain, motivate an empirically justified broadening of the concept of partner violence from that used in previous research, they motivate a corresponding empirically justified change in the way violence is measured, they motivate new kinds of data-gathering, and so on. But at no time do these values determine the results of the research—for example, at no time do they preclude the discovery that the stereotype about blacks is true, that is, that blacks are inherently (as part of their culture or their biology) more violent than whites (see pp. 70–74 for an extended justification of this claim). And this is in keeping with the ideal of socially responsible science and its joint emphasis on sound epistemic values as well as sound social values. True, as Rolin notes, "we can find examples of scientific research where social values override empirical evidence thereby undermining an epistemic value." But such examples will fail to satisfy the ideal of socially responsible science.

Finally, the emphasis on sound epistemic values as well as sound social values does not imply the "unity of values" doctrine that Solomon finds so worrisome—that morally good values in science go hand in hand with epistemically good values or epistemically good results, while morally bad values go hand in hand with epistemically bad values or epistemically bad results. On the contrary, the understanding that there are no such convergences is precisely the reason the ideal of socially responsible science demands *both* morally good values *and* epistemically good values. Thus, in chapter 4 of my book I take up the cases of Russian science under Lysenko and German science under the Nazis, and I explain how Lysenko's science reflected arguably good social values but bad epistemic values whereas the

Nazis' science reflected arguably good epistemic values but bad social values. More specifically, I explain how Lysenko's science with its good social values was unsuccessful because of its bad epistemic values—that is, because Lysenko relied on vague concepts, drew sweeping conclusions from small samples (sometimes single plants!), failed to use adequate controls, used peasants to carry out trials who did not always follow proper procedures, kept inaccurate records, and so on. At the same time, I explain how the Nazis' science was successful because of its good epistemic values, despite—and sometimes also because of—its bad social values (which sanctioned the absence of moral constraints on human experimentation). Both Lysenko's science and the Nazis' science failed to meet the ideal of socially responsible science but for different reasons, and certainly that ideal does not prevent us from saying, as Solomon wants to say, that Nazi science was good science—that is, epistemically good science—that was unethical. It's just that the ideal of socially responsible science demands a kind of good science that meets a higher standard than good Nazi science.

If any ideal implies the unity of values thesis that Solomon critiques, it is the empiricist ideal that Rolin prefers to the ideal of socially responsible science.<sup>3</sup> For what the empiricist ideal advocates is a close look at successful scientific practice in order to identify those of its features that contribute to and explain its success, and one of the hypotheses put forward by feminist naturalists such as Rolin is that good social values (such as feminist values) contribute to and explain scientific success (in this case, the success of feminist scientists during the last three decades), whereas bad social values (such as sexism) contribute to and explain scientific failure (such as the information gaps and inaccuracies in traditional science exposed by feminist scientists). Not surprisingly, however, given what has already been said, the evidence for this hypothesis is very mixed. To begin with, there is the negative evidence, such as the empirical success obtained with Nazi social values, showing that bad social values can also contribute to and explain scientific success. But the positive evidence also poses problems. For example, in the case of the feminist contributions to science over the last three decades, naturalists would be hard pressed to show that the progress that was made in every case was the effect of feminist values rather than other factors, a point sometimes acknowledged by feminist scientists and others who have reflected on that progress. Finally, there are the conceptual problems. For example, some feminist naturalists *define*

3. Rolin also prefers Longino's social value management ideal of science to the ideal of socially responsible science, even though Rolin grants that an acceptable ideal should be able to screen out sexist, racist, and other unacceptable values from science and that the social value management ideal of science offers no guarantee of being able to do this.



“good” social values in science as those that are epistemically fruitful, so that Nazi social values then *become* “good” social values. All this I explain in my book. True, I don’t cite all the positive cases in favor of the naturalist hypothesis that Rolin cites (some were not even published when my book went into production), but I do cite some of them as well as others she does not cite. The overall conclusion, however, remains the same.

So, what is the upshot? The goal of *Philosophy of Science after Feminism* is to provide the blueprint for a philosophy of science more socially engaged and socially responsible than the philosophy of science we have now, a philosophy of science that can help to promote a science more socially engaged and socially responsible than the science we have now. A central part of this venture is the ideal of socially responsible science, and I have tried in the foregoing to defend this ideal against the critiques of Dupré, Rolin, Solomon, and Giere. But exactly what is in the offing if I have succeeded? At least three changes.

First, new challenges for philosophers of science. These include not only analyses of the sciences’ strengths and legitimate aspirations, work needed to produce adequate scientific ethics codes, but also (and relatedly) critiques of the sciences’ present failings—their tendencies to neglect the environment, engage in and promote militarism, ignore the rights of animals, contribute to the widening gap between the rich and the poor and between the developed and the developing world, etc., etc. as well as their tendencies to maintain and even promote sexism, racism, classism, and so on. All of these new challenges presuppose the work that is traditionally expected of philosophers of science, the “coalface . . . science criticism” that Dupré talks about, but they put that work in its social/political/economic context and as a consequence place new demands on it. What should result are new kinds of criticism (such as assessments of scientific assumptions and methods using social as well as epistemic measures), new targets of criticism (such as assessments of research questions in light of the likely applications of their answers), and new critical priorities (that favor topics of current social importance, such as those relating to the environmental and health sciences, over more traditional topics, such as those relating to theoretical physics). Of course, the program of feminist science studies, both its critiques of the sciences’ sexism and its egalitarian reconstructive work in those same sciences, can serve as a model here, a kind of pilot project for socially responsible philosophy of science, one reason I entitled my book *Philosophy of Science after Feminism*.

The second change in the offing with socially responsible philosophy of science are new roles for philosophers of science—roles as public intellectuals, as policy analysts, as advisors to funding agencies, as expert witnesses in court battles or before congressional committees, and the like—

roles that the meeting of the above new challenges will make possible. These roles are long overdue. Indeed, it is downright shameful that philosophers of science, with few exceptions, have failed to do our fair share toward resolving—at least helping to clarify!—recent controversies regarding the politicization of science, the commercialization of science, global warming, human enhancement, the new emerging technologies, scientific fraud and other sorts of scientific misconduct and the structures that support them, and so on. A socially responsible philosophy of science will change all that.

Finally, the third change in the offing is new disciplinary structures for philosophy of science. Giere mentions in this connection changes in the training of philosophy of science students so they will be able to learn subjects such as ethics and social philosophy as well as the more traditional metaphysics, epistemology, and science. He mentions, as well, changes in hiring, retention, and promotion standards so that philosophy departments will be able to recognize and reward contributions to, say, biomedical policy as well as, and as much as, more traditional work in philosophy of biology. But Giere tends to treat these changes as problems to be minimized if not avoided, even though he sees value in what they promise—“more influence in more venues” for philosophers of science and “more jobs.” Of course, we can treat them, instead, as reasonable enabling conditions to a more valuable enterprise and work to bring them about. Certainly, feminists have produced disciplinary changes comparable in magnitude to those Giere mentions in all the fields of the humanities save for philosophy and in many of the sciences as well, and more interesting and more relevant disciplines have been the result. So here again feminism can serve as a model for philosophy of science, a second reason I entitled my book *Philosophy of Science after Feminism*.

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