

Science and the Common Good: Thoughts on Philip Kitcher's *Science, Truth, and Democracy**

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In *Science, Truth, and Democracy*, Philip Kitcher develops the notion of well-ordered science: scientific inquiry whose research agenda and applications (but not methods) are subject to public control guided by democratic deliberation. Kitcher's primary departure from his earlier views involves rejecting the idea that there is any single standard of scientific significance. The context-dependence of scientific significance opens up many normative issues to philosophical investigation and to resolution through democratic processes. Although some readers will feel Kitcher has not moved far enough from earlier epistemological positions, the book does represent an important addition to literature on science, society, and values.

Philip Kitcher's *Science, Truth, and Democracy* marks an important turn for philosophy of science. By opening a way for even epistemologically conservative thinkers to understand science and scientific knowledge as public goods, the book establishes philosophical space for deliberation about value and political theory in relation to science as legitimate, even necessary subject matter. The book is briskly paced and bristles with useful distinctions and clearly stated arguments.

Kitcher begins by contrasting two extreme images distilled from recent debates about the sciences and their place in culture. The "scientific faithful" hold the sciences to be the height of human achievement and the basis for improvement of human life while the "debunkers" see the sciences as merely serving the interests of the powerful under cover of myths about

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truth and objectivity. While I think it would misrepresent the state of play to take these two distillations as adequately capturing the full range of contemporary discussion, I wholeheartedly endorse Kitcher's observation that for the most part this discussion has focused too much on the claim that the sciences yield truth and not enough on questions about value.¹

Kitcher identifies three such issues that should be addressed: the possibility of attributing a single aim to science, the possibility of a "morally significant" distinction between science and technology, and the basis for assigning scientific knowledge overriding value. The carefully articulated negative assessments of each of these will themselves provoke lively discussion. For Kitcher, they clear the way for meaningful argument about what goods scientific inquiry should promote. How we get to this point and what follows from it constitute the arc of the book's argument. After the introductory chapter, four brief chapters are devoted to sifting through the arguments of science's debunkers and defenders. The sixth chapter, on scientific significance, is pivotal, marking the place where values can enter, and the remaining eight, all but two quite short, develop the consequences.

Even though Kitcher urges us to focus on the questions about value, he takes pains to clarify his views about the relation of scientific inquiry and truth. Readers of his (1993) will find many of the arguments familiar, but as he tells us in the very first sentence of the book, *Science, Truth and Democracy* represents a rethinking of that earlier book in light of his "studies of the uses of scientific findings in social contexts" (vii). What is different? And what remains the same? Kitcher still defends a "modest" realism and a thesis about the objectivity of scientific reasoning against the debunkers. But he now withdraws his support from a central idea of the earlier text, that there is a single good towards which the sciences aim, and thus, by implication, from the arguments in which this idea figured.

Readers who were, like me, unpersuaded by the earlier arguments for realism and rationality are not likely to have their minds changed. But that's not really the point of restating them here. They are better viewed as providing boundaries to the scope of the political for whose admittance he argues. What is left of the debunkers' claims is only that decisions about what research to pursue always involve value judgments. While this may seem obvious enough, there are certainly some members of Kitcher's "scientific faithful" who would reject even this limited scope for values. Kitcher thus devotes Chapters 4, 5, and 6 to discussions of scientific classification, theories, and significance, discussions which rebut the more extreme of the defenders' claims.

All three discussions embrace a form of pluralism that admits a role for (non-epistemic) values in scientific decision making. Regarding clas-

1. Two important exceptions are Tiles and Oberdiek (1999) and Lacey (1999).

sification, Kitcher agrees with recent skeptical writers on natural kinds that there are multiple languages, multiple equally correct ways of representing the world. Classificatory concepts and systems are dependent on the interests of those who use them. This pluralism regarding classification is used to give an account of construction acceptable to realists of the modest variety. It may or may not satisfy constructivists, but surely Kitcher is correct to point out that the world that we inhabit is a result of past human alterations carried out under the aegis of classificatory schemes responsive to the interests of those who used them. We all do live in worlds constructed by the expressions of varied past human interests, but their constructedness in that sense detracts not a whit from their reality. As have other philosophers recently², Kitcher develops an analogy between scientific theories and maps. Once one has abandoned the idea that there is a singularly correct way to parse the objects of the natural world, one must abandon the idea that there is a singularly correct theory, or set of theories, as well. The sciences seek not merely truths, but significant truths, and theories, like maps, must provide not only true or accurate representations of their respective domains, but significant ones that answer to our needs in using them.

It is here that we encounter the pivotal departure from *The Advancement of Science*. Whereas in that text significance was calibrated in relation to a single aim of science, to wit, uncovering the structure of nature, here the idea that there could be such a single overarching aim is disavowed. Its disavowal has deprived the current treatment of underdetermination (in Chapter 3) of the bite it had in *Advancement*, but in *Science, Truth, and Democracy* the context-dependence of significance provides the philosophical underpinnings for the main theses of the book. It is uncontroversial that practical significance is context-dependent, but epistemic significance might well be thought otherwise. The aim of uncovering *the* structure of nature cannot be the determinant of scientific significance, given the context-dependence of classification systems. Kitcher frames his discussion of alternate candidates around ways of understanding the aim of inquiry as the provision of objective understanding of phenomena through explanation. In order to suppose that this aim yields unique judgments of epistemic significance, it must also be supposed that the truths about nature from which explanations can be drawn are systematically organized. One proposal for such organization was the old Unity of Science conception, which represented the sciences as hierarchically organized such that each science was reducible to the science at the next level, until the lowest and most basic level was reached. Kitcher employs earlier arguments regarding the relations between classical genetics and molecular biology to discredit this notion.

2. Notably Giere (1999).

Other philosophers of biology have extensively discussed these issues, and I will not tarry over them.

Kitcher also considers a proposal to the effect that objective understanding would be achieved by discovery of the natural laws that govern phenomena. But the idea that this goal might provide a unique criterion of significance collides with the pluralism regarding classificatory systems. At best, Kitcher tells us, a complete system of laws will consist of "a patchwork of locally unified pieces, sciences with their own schemes of classification, their own favored causal processes, and their own systematic ways of treating a cluster of phenomena." (72) It is hard to know how to interpret this passage. Is the patchwork a set of mutually consistent systems, each correctly accounting for its proper cluster of phenomena? Or is the patchwork messier, as a more radical pluralist would hold, with overlapping systems, each meeting its own or a common standard of adequacy, but giving accounts of common clusters that are not consistent with each other? In the earlier chapter on classification, Kitcher stipulates that the multiple languages and classificatory schemes, each correct relative to some set of interests, were nevertheless all consistent with each other. This will strike the radical pluralist as simply a declaration of faith. If the patchwork is instead messy, with overlapping, non-consistent systems, then the interest-ladenness of classification and of theories will be more far-reaching than Kitcher seems willing to allow. The subsequent discussion, which lays to rest the idea that there could be any special relevance relation that provides a way of dividing true statements into those that are epistemically significant and those that are not, does not, to my mind, resolve the puzzle concerning how far Kitcher's pluralism really goes. It does serve to introduce Kitcher's alternative strategy for addressing significance.

Relevance relations which would establish the explanatory pertinence of particular truths are given by the kinds of questions we can expect scientific inquiry to address and these are quite heterogeneous. We may be interested in triggering events, in the standing conditions that facilitate certain causal processes, in the material constitution of the participants in a causal interaction, in the conditions of equilibria, etc. "Given a topic that is of interest and a relevance relation, the objective explanation is whatever complex of truths stands in the appropriate relation to the topic." (75) We are not left without any systematic ways of talking about significance, however. Significance graphs (which resemble path analysis graphs) can map the complex relationships between questions and topics, the complex network of questions constituting a field of inquiry. A graph can be field-centered or item-centered, can change as old questions give way to new ones, can contain both practical and epistemic relations. And the epistemic relations it contains may "bear traces of yesterday's practical significance." Science advances by the changing expression of both our

natural curiosity and our practical needs and there is “no ideal atlas or compendium of laws” toward which it aims.

What are the implications of this new view of significance? Kitcher first uses it to dispose of several familiar shibboleths. The notion of pure science, i.e., research that is socially neutral, directed only at uncovering the truths about nature, is shown to have extremely limited application. There is no way of shielding epistemic from practical significance that would enable us to distinguish basic from applied research, science from technology. The ascription can attach only to individual researchers and that a given inquiry Q has only epistemic significance for researcher Jones must be ascertained by examining the place of Q as pursued by Jones in significance graphs, taking into account not only Jones’ intentions, but the feasibility of ignoring connections of Q to practical concerns. It won’t do to claim ignorance if those connections are obvious to others. Even if Q turns out to be pure for Jones, one must take into account the effect of Jones’s choice on research not pursued. If foreseeable social benefit is forgone, Q turns out not to be socially neutral. The myth of purity is not just the supposition of a clear division between pure and applied science, but the supposition that absence of practical intention on the part of individual researchers is sufficient to allay moral, social, or political critique. The point here is not that the sciences must always pursue socially useful research, but that a common strategy for deflecting social criticism of science is without merit.

The self-evident value of free inquiry also falls to Kitcher’s skepticism. He organizes this discussion around John Stuart Mill’s defense of freedom of expression as it rests on the value of individuals’ abilities to define and choose their own life projects. This defense, Kitcher notes, is not an argument for unlimited freedom of inquiry, because the very pursuit of some inquiries may well interfere with the freedom of others to exercise their abilities to define and choose their own projects and aspirations. Some projects in human sociobiology and human behavior genetics, for example regarding the cognitive abilities of members of social subgroups, could interfere in this way. Kitcher carefully articulates a series of conditions having to do with such things as the quality of possible evidence and the distribution of burden of proof created by social prejudice under which “free inquiry would unfairly increase the burden on those already disadvantaged.” When these conditions are met there can be no right to free inquiry. Because a formal ban on such research is likely to backfire, however, it is no more possible to develop an argument banning it, than to develop an argument permitting it unreservedly.

Having briskly and effectively disposed of these myths, Kitcher has maneuvered his reader into a position in which the question of what kind of good or benefit science is has some meaning. If truth does not trump other values, if the value of free inquiry is not unconstrained, to what, if any, evaluative norms can or must science be subject? Or as Kitcher puts

it, can "collective research be organized in a way to promote our collective values in the most encompassing sense?" (111) Such a question presumes we know what those values are. Unfortunately, an objectivism about values, which would support a straightforward account, is not tenable. Kitcher thus proposes to answer the question, what collective good or benefit inquiry should promote by starting from a subjectivist view of individual value. According to this view, personal preferences are the basis for an account of personal welfare. Individual good, thus identified, will be related to collective good within a democratic framework. The question also presumes we know who the "we" are whose good is in question. While Kitcher's democratic framework is supposed to be responsive to this issue, I'm not sure it fully succeeds.

Chapter Ten, "Well-Ordered Science," outlines Kitcher's vision for the governance of science. It is an account of the deliberation that, in his view, would ideally determine choice of research projects to be pursued in a society. As long as the outcomes of actual decision procedures were the same as the outcomes of ideal deliberation, science would be well-ordered. Ideal deliberation addresses, in successive stages, research agendas, their feasibility and cost, their practical applications, the relevant moral constraints, etc. Kitcher's account draws on and integrates features of the work of John Rawls, Robert Dahl, and Amy Gutmann, among others. The key to ideal deliberation about research in a democratic society is the "tutoring" of preferences both by information from relevant experts and by (transformative) exchange of initial preferences among good faith deliberators among whom all the relatively widespread interest blocs of the society are proportionately represented and who are committed to taking into account the interests of future generations and of presently less advantaged societies. The collective good is whatever is identified as such through this ideal democratic deliberation.

Articulation of the ideal enables Kitcher to identify at least four defects in contemporary selection and development of research agendas. When "the research agenda . . . systematically neglects the interests of the members of [a] group in favor of other members of society" we have "the problem of Inadequate Representation" (129). When "epistemically significant questions are systematically undervalued because the majority of members of society have no appreciation of the factors that make these questions significant," research suffers from "the Tyranny of the Ignorant" (130). When a research agenda conforms to what would be the tutored preferences of the majority "not because the public reasons are those that would figure in an ideal deliberation but because [they] . . . cater to the actual untutored preferences of the majority, we have "the problem of False Consciousness" (131). And when a general principle or value that would support different programs of action affecting larger numbers of people is extended only to a subgroup to legitimate a more narrowly con-

ceived avenue of research we have “the problem of Parochial Application” (132). Examples of each are provided. Only someone ignorant of the last twenty years of science could fail to recognize these problems, so well-ordered science has some force as an ideal.

The process of ideal deliberation is essentially a form of enlightened democracy. The chapter closes by considering and rejecting a variety of arguments in favor of forms of elitism. Each is incapable of rectifying one or more of the four identified problems, while enlightened democracy, if realizable, offers the only chance of rectifying them all. This latter result should not surprise, since the four problems are each departures from one or more of the conditions constituting the ideal deliberation of enlightened democracy. What is significant is that elitism can do no better and is in some cases likely to do worse.

Kitcher’s account of well-ordered science and of the good or benefit science may be said to advance is put to work in three areas of discussion: science policy, the relation between truth and social progress, and the relation between science and social well-being. He diagnoses the failure of successive writers on science policy to provide meaningful avenues for public input as due to the lack of a concept of well-ordered science. Without such a notion proposals for democratic governance of science are hard put to differentiate themselves from “vulgar [or non-deliberative] democracy.” Against the ideas that science is an unqualified good or that knowledge, however painful or deflating, is always beneficial, Kitcher argues that there is no way of organizing values that shows that knowledge is always instrumental to value. A society can both value knowledge and ignore the results of or refuse to pursue a line of inquiry if there is reason to think such inquiry would undermine a way of life important to it. Practically speaking, however, once such a question is even mooted, preserving a way of life by such rejection becomes less likely to succeed, but the practical difficulties do not affect the point. And finally, Kitcher argues, those, such as the Critical Theorists of the Frankfurt School, who have rejected modern science as a tool of domination should find satisfaction in the democratic inclusiveness of well-ordered science. Science, he concludes, is neither an unqualified good nor an unmitigated evil. Rather, research agendas must be evaluated on a case by case basis through processes that will produce outcomes that coincide with those that would be produced by ideal (enlightened) democratic deliberation.³

3. This strikes me as an odd formulation. In its emphasis on outcome rather on process, it leans more towards “government for the people” than towards “government by the people,” seeming to leave an opening for the elitism Kitcher otherwise dismisses. It is meant, however, to allow that the decision-makers be located in agencies like the National Science Foundation, rather than in a representative legislature, while still requiring that such entities design structures (such as public oversight committees) that will mimic on a small scale ideal deliberation by the entire society.

The chapters that start with that on "Scientific Significance" and that constitute more than two-thirds of the book, open up a whole series of issues about the values of science and offer a systematic and compelling treatment of them. I am nevertheless left somewhat uncomfortable even as I admire the call for effectively democratic agenda setting for science. This is a call to treat scientific knowledge as a common holding like social security, national highways, or the military. My disquiet stems in part from wondering on what basis science should be so considered. When research was primarily funded by taxpayers, from the 1950s to the 1990s, it was much more clearly a public undertaking and as such subject to the kinds of arguments Kitcher develops. Now that more and more research, even in universities, is funded by the private sector, it is not clear we have a collective research effort that can be evaluated by reference to well-ordered science, or on what grounds privatized research could be brought under the umbrella of well-orderedness. Like many private enterprises, private science is parasitic on public institutions and undertakings, and in the case of science, on its public counterpart, but developing this argument might challenge the epistemological boundaries Kitcher reaffirms earlier in the book.

This disquiet is not allayed by the sensitive discussion in the book's final chapter of the socially responsible scientist involved in research with problematic social applications. The final recommendation is that she should consider how the projects in which she is involved conform to or depart from the ideal of well-ordered science. If the work is sufficiently problematic, she should publicly switch her efforts to projects more closely approximating the well-ordered ideal. Now, this is not trivial. Kitcher's discussion concerns only the individual scientist, but if generalized in the case on which Kitcher grounds his discussion, it implies that all socially conscious researchers in human genome research should switch to other projects until the social problems are solved. But this recommendation presumes an availability of resources and a commitment to intellectual diversity possible under some systems of public funding, but diminished, if not eliminated, when the balance tips to private sponsorship. At the very least we would want a discussion of the conditions under which the strictures of well-ordered science could reasonably apply. I recognize that this point can be met by a *tu quoque*, but that does not rebut the question. And how does the scientist come to recognize the departure from well-ordered science in the first place? Those suspicious of science, the Critical Theorists of the previous chapter, will not be happy to leave these determinations to the common sense of a well-meaning individual.

Kitcher stresses that goods like love or friendship can occupy a higher place than truth in a defensible scheme of values. Extending this pluralism to democratically chosen collective goods raises a further puzzle concern-

ing the reach of well-ordered science. Modern science is not only privately sponsored, but it has gone global. How can individual societies or communities maintain the control envisaged? And what happens when different equally advantaged or even differently advantaged societies embrace values and agendas that will conflict when put into action? However attractive the vision of well-ordered science to those of us already democratically inclined, I think more work needs to be done to secure its applicability in the current and foreseeable scheme of things.

In spite of these reservations, I believe that *Science, Truth, and Democracy* constitutes a major achievement. While some thinkers about the sciences might take issue with the epistemological positions to which Kitcher commits himself, might see a role for values in choices other than those regarding research agendas, and might also want more far-reaching social and political critique of the sciences and their institutions, one of the great merits of this book is that it shows how much scope for social and political considerations can be established on the basis of relatively canonical epistemological stances. It's not necessary to be a skeptic about truth to mount a significant challenge to scientific autonomy. Kitcher has thus significantly expanded an important arena for philosophers of science, an arena in which clear thinking grows daily more necessary.

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