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BOOK REVIEW

Philip Kitcher, *Science in a Democratic Society*

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Philip Kitcher is a leading figure in the philosophy of science, and he is part of a growing community of scholars who have turned their attention from the field's long-time focus on questions of logic and epistemology to the relation between science and society. Kitcher's book *Science, Truth, and Democracy* (2001) charted a course between relativism and realism, arguing that the aims of science emerge from not only scientific curiosity but also practical and public concerns. The book also drew on John Rawls's *A Theory of Justice* (1999) to develop an ideal of "well-ordered science," and then applied the ideal to various aspects of the scientific research agenda. Ten years later, complex public issues like climate change have grown more urgent, and with many people questioning mainstream science on climate change, evolutionary biology, vaccines, stem cell research, and other topics, the tensions between science and democracy seem more pronounced than ever. Kitcher's *Science in a Democratic Society* takes up a wider range of science policy questions but retains the Rawlsian approach of the earlier work, along with its attendant promise and pitfalls. Understandably frustrated with widespread "denial" of mainstream science, Kitcher throws out the popular-democratic baby with the denialist bath water.

Chapter 1 considers various possible causes of public skepticism toward science and potential responses. Most citizens don't worry much about "Science" in general, but they are often concerned about how particular sciences may impact their lives. Kitcher suggests that the "science wars" of the 1990s were a distraction, and it makes little sense to blame constructivist science studies for declining trust in experts. "Skepticism about scientific authority has not grown because postmodernism has been injected into the drinking water" (16). Rather, Kitcher argues, public skepticism toward science is best understood as a reaction against scientism. Scientism appears in exaggerated claims about the social benefits of science,

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coupled with the notion that science should be entirely disinterested and value-free. Indeed, Kitcher writes, "The deepest source of the current erosion of scientific authority consists in insisting on the value-freedom of Genuine Science, while attributing value-judgments to the scientists whose conclusions you want to deny" (40, see also 163–64, 244). When people see that science does not deliver everything its champions have promised, and when people discover that science is inevitably shaped by values, they react with hyper-skepticism. They come to assume that everyone is "entitled to their own opinions across the board," a view Kitcher calls "epistemic equality" (20).

Kitcher develops an alternative that, first, articulates a coherent role for values in science, and second, rejects epistemic equality in favor of a liberal-democratic division of labor between laypeople and experts. In contrast to the long tradition of restricting values to the "context of discovery" and insisting that the "context of justification" remain value-free, Kitcher argues that "value-judgments are deeply embedded in the practice of science" (34). He then outlines three kinds of value judgments that may shape scientific practice: *broad values* related to individual and social goals such as freedom, justice, and democracy; *cognitive values* that express a commitment to acquiring certain kinds of knowledge; and *probative values* that specify the specific problems and lines of inquiry worth pursuing (37–38). Whereas some consider such value judgments mere expressions of preference or interest, Kitcher argues that value judgments in science are usually "eminently reasonable" (36).

Chapter 2 supports the notion that scientists make reasonable value judgments by locating such judgments in the broadest possible historical context: the entire moral history of humanity, or what Kitcher calls "the ethical project" (see also Kitcher 2011). Kitcher draws on anthropological studies of primitive societies, but he notes that he offers only a possible history of ethical practice (44). He tells a story of gradual ethical progress, shaped by the emergence of a division of labor, encounters with outsiders, hierarchical property relations, the establishment of legal codes, and so on. Significantly, Kitcher argues for a conception of ethical development as *progress away from* violent conflict and other "altruism failures," rather than *progress toward* ethical truth. He doesn't reject truth in ethics. "Truth does not, however, come first, discovered by those who make ethical progress. Rather, truth is constituted in terms of the tools that solve our problems" (48; see also Kitcher 2011: chap. 6). Kitcher cites William James on this point, but the pragmatism of this passage is difficult to find in the rest of the book. And when it comes to contemporary politics, Kitcher adopts a different view of progress, arguing that it depends on articulating an ideal theory toward which practices should aim.

More specifically, Kitcher argues that we should develop judgments about values through a discussion that (1) "takes the body of discussants to be the members of our species," including future generations, (2) involves "mutual engagement" of all participants, and (3) strives toward real equal opportunities for living a worthwhile life (50). Of course, an actual discussion including the entire human species is practically impossible, so as in *Science, Truth, and Democracy*, Kitcher echoes Rawls and shifts from actual to hypothetical deliberation. He asserts that "the ethical conclusions to be endorsed are those that would emerge from an ideal

conversation, one satisfying conditions of *mutual engagement*" (51). Kitcher hopes that his account of such an ideal conversation can be "useful in indicating *directions* in which *actual* conversations about values might proceed" (54).

But rather than merely indicating "directions" for actual conversations, Kitcher employs his ideal to recommend specific substantive positions on the social organization of science. Kitcher notes, for example, that "broad" values should play a role in science only if they are "sustainable in an ideal conversation" (60). Who decides whether the broad values of creationists meet that standard? Kitcher doesn't hesitate to offer his opinion: "The anti-Darwinians fail," because they "violate the cognitive conditions on mutual engagement" (60). Regardless of whether Kitcher is right on this point, such claims seem to contradict Kitcher's repeated assertion that there are "no ethical experts, only the authority of the conversation. Philosophy's role is simply one of making proposals that might facilitate the conversation" (57, see also 49). To "facilitate the conversation," for Kitcher, apparently means to articulate policy proposals and an ideal that justifies them, combined with an invitation to respond with proposals of one's own. It does not mean to articulate and clarify the particular values and perspectives that arise in actual conversations or the institutional conditions that might make such conversations more productive. I discuss this issue more fully in a moment.

Chapter 3 presents Kitcher's conception of democracy, which emphasizes the role of public knowledge for coping with the "unidentifiable oppression" that arises in complex societies, when people's lives are affected by obscure forces and they don't even perceive the limits on their freedom (78–79). Such oppression can be remedied, Kitcher argues, by improving defects in public knowledge (83). Kitcher contrasts his emphasis on public knowledge with the typical liberal-democratic emphasis on elections and interest-group competition. He rightly notes that citizens usually have little control over the political agenda, and electoral politics is often dominated by small groups with intense interests (76). Voting and elections are "plainly not sufficient" for a complete account of democracy (75). But Kitcher doesn't say whether elections are necessary, and if so, why. He is so focused on the shortcomings of electoral democracy that he doesn't bother to defend it. Nor does he discuss political parties, interest groups, popular protests, civil disobedience, and other non-deliberative forms of public engagement that have been central to the history and theory of democracy.

Having identified popular elections and other manifestations of public ignorance as the Achilles's heel of democracy, Chapter 4 presents a conjectural history of public knowledge, similar to Kitcher's conjectural history of ethics. By "public knowledge" Kitcher means a society's "body of shared information," including the social and natural sciences, art, literature, music, and so on (85). Whether tracking prey or gathering food, early bands of humans developed "norms of sincerity and competence" and "habits of careful inquiry" (87). But once a division of labor emerged, not everyone was deemed a knower on all topics. The advent of writing established a public depository of knowledge, which created four issues that we still face today: investigation (what gets studied and how), submission (who participates on what topics), certification, and transmission (91). Whereas Paleolithic, ancient Greek, and early Christian systems of public knowledge had clear structures

and rationales for coping with such issues, "the elements of our own system, with institutionalized Science as a prominent part of it, have emerged contingently and haphazardly. Not much time, if any, has been devoted to wondering how public knowledge might be shaped so as to be good for democracy" (100).

Chapter 5 applies the ideal of well-ordered science to the science research agenda. Building on *Science, Truth, and Democracy,* Kitcher considers and rejects conceptions that restrict the aims of science to simply understanding nature or solving practical problems. He criticizes "efforts at uncovering an 'objective', 'neutral' agenda for Science" (111). We cannot make detailed predictions about outcomes, but that doesn't prevent societal direction of basic research goals. Funding research on gene transcription, for example, is not likely to help address global warming (120).

Chapter 6 goes beyond the research agenda and extends the ideal of well-ordered science to include the certification of scientific claims and their inclusion within public knowledge. Kitcher considers two basic reasons why scientists sometimes accept false claims: first, deliberate fraud, which he argues can usually be prevented by the self-regulation of scientific communities (146–47); and second, racism, sexism, and other social prejudices that sometimes shape scientific concepts and practices, and which may be exposed through "wider discussion" that includes the people being studied (150). Such discussion is part of what Kitcher calls "ideal transparency," which requires that, when the need arises, both scientists and outsiders "can recognize the methods, procedures and judgments used in certification" and can accept them (151). Acceptance should be neither sought nor expected, however, from "Deniers" who adopt "chimeric epistemologies" and reject both science and common sense whenever they conflict with revealed religion (155–63).

Chapter 7 extends the ideal of well-ordered science to the social application and public distribution of scientific knowledge. Kitcher develops a taxonomy of scenarios in which various contingencies prevent available knowledge from being effectively applied to public problems. Then he considers how such scenarios might be addressed through improved public access to and understanding of scientific knowledge.

Chapter 8 discusses diversity and dissent among scientists. Much of the chapter consists of a rather technical discussion of epistemic diversity within different scientific fields. Kitcher persuasively argues that social diversity among scientists is valuable when it bears on scientific judgments. Although in principle anyone could represent the needs of anyone else, in practice members of particular social groups do so more reliably (199–200).

Throughout these chapters, Kitcher repeatedly invokes the ideal of well-ordered science, which creates a number of ambiguities. On the one hand, Kitcher seems to defend an ideal of deliberative democracy. He writes, "The trouble with putting judgments of significance to majority vote is not the *democracy* but the *vulgarity* of the view of democracy it embodies" (113). "If voting ever occurs, it is a matter of last resort, when we reluctantly agree that consensus is impossible" (114). When considering restrictions on research involving animal and human subjects, Kitcher argues that "decisions should not be made by wielding abstract principles . . . but through deep immersion in the case from a variety of human perspectives" (134).

When discussing the certification of scientific claims, he argues that involving non-scientists can help identify hidden biases, and he calls such involvement "an *epistemic* argument for democratization" (150). He concludes the book by saying the ideal of well-ordered science and his various other proposals "offer only a blueprint for a conversation" (248). Kitcher thus sometimes appears to endorse actual public deliberation that strives for consensus but may conclude by taking a vote.

On the other hand, Kitcher repeatedly emphasizes hypothetical deliberation, and he often seems to dismiss actual deliberation. As indicated previously, he explains that "science is well-ordered when its specifications of the problems to be pursued would be endorsed by an ideal conversation embodying all human points of view, under conditions of mutual engagement" (106). These "human points of view" include future generations, others who cannot speak for themselves, and spokespersons for nonhuman animals (116, 132). As in *Science, Truth, and Democracy,* Kitcher here offers a substantive standard for science policy, which in itself does not require democratic procedures (Brown 2004: 82–83). Moreover, when discussing the ideal conversation of well-ordered science, Kitcher explicitly states that "any *actual* conversation of this type is impossible" (115). Here Kitcher could just be making the obvious point that actual conversations cannot physically include everyone on the planet. But in another context he says that "any attempt to orchestrate even a sample of voices representative of the diverse perspectives of living people would produce a vast cacophony" (51). This suggests that Kitcher does not think actual conversations among ordinary citizens should attempt, however imperfectly, to emulate his ideal. It is thus puzzling when Kitcher says that "nobody can predict how the ideal conversation would come to conclusion" (124, see also 248). Presumably, an ideal conversation is not a real-world event involving different people with conflicting values and interests, but an imaginative process within the mind of one or more individuals. Maybe the conversation in Kitcher's mind was not predicable when he started writing the book, but he seems to have reached some very specific conclusions.

Similarly, although Kitcher repeatedly states that ideal deliberation requires "representation" (79–81, 116, 132, 150), it seems clear that he does not mean political representation by elected or appointed representatives who are accountable to their constituents. Rather, Kitcher adopts Rawls's Kantian notion of a "device of representation" or thought experiment in which we represent others imaginatively in our own minds (Rawls 2001: 17). Kitcher thus writes that he is articulating an ideal, not "identifying procedures for attaining or approximating the ideal." And he makes the surprising statement that identifying such procedures requires "information no one yet has" (125, see also 223). Kitcher was already mistaken when he made the same claim in *Science, Truth, and Democracy* (2001: 135). After ten years and the production of an enormous literature on citizen engagement in sociotechnical controversies, he is even more mistaken now.

Moreover, Kitcher often expresses deep skepticism about actual deliberation. His discussion of shortcomings in the public's understanding of science, for example, includes a critique of the "shibboleth of free discussion." Free discussion depends on background conditions of "evidential harmony" (180), which contemporary

societies no longer enjoy. Kitcher concludes: "*As things stand, 'free and open public discussion', far from being the expression of democratic values is actually subversive, for it tends to undermine a previously well-functioning division of epistemic labor"* (185). Here Kitcher conveys a questionable nostalgia for past deference to experts, which conflicts with his challenge to such deference elsewhere in the book. To be sure, Kitcher rightly argues that increased access to scientific knowledge could improve people's capacity to pursue their own interests and develop realistic expectations about the social outcomes of science (174–75). But excluding those who reject mainstream science from public deliberation is counter-productive. Empirical research has repeatedly shown that people most effectively acquire scientific knowledge when actively engaged in sociotechnical controversies (Bucchi 2009). Indeed, elsewhere Kitcher rightly argues that science education efforts should target citizen-consumers of science in practical contexts (190).

In a similar vein, Kitcher's two proposals for mediating between scientists and the lay public—celebrity science popularizers and deliberative citizen panels (128–29)—while admirable in many ways, both easily slip into a "deficit-model" that emphasizes top-down science communication efforts by elites (Bucchi 2009). Kitcher devotes special attention to citizen panels, which engage either a statistically representative sample (deliberative polls) or a societal cross-section (citizen juries) of lay citizens in scientifically informed and carefully managed deliberation. Kitcher argues that citizen panels could include "some of those who are most alienated from current institutions of public knowledge." They will be "brought to understand the consensus achieved by experts," and then somehow restore trust in experts among the general public (185).

Alarmingly, Kitcher also proposes that citizen panels could evaluate the statements of dissenters from the scientific consensus on topics like climate change or evolution, and if the dissenters' claims had been repeatedly refuted by mainstream science, "any publication" of their views would be accompanied by warning labels like on cigarette packs. "The analogy is appropriate, for, if free debate promotes intellectual health, it does so only when the public arena is not abused. Part of the task of regulating that arena consists in *issuing licenses* to those who are serious and thus distinguishing them from frivolous intruders who substitute dogma for discussion" (222, italics added, see also 230). Kitcher's proposal goes far beyond existing "fact-check" organizations, and he does not explain how such a licensing body could establish public credibility and legitimacy. Moreover, the notion that speakers should be "licensed" sounds like prior restraint of political speech, which would probably violate constitutional protections in the United States and other liberal democracies.

The intense skepticism toward broad citizen engagement evident in Kitcher's discussion of public deliberation reappears in his comments on science advice. Despite his persuasive critique of scientism, when discussing expertise Kitcher endorses a technocratic model that effectively grants decision making power to experts. With regard to climate change, for example, Kitcher rejects the notion that scientists should restrict themselves to outlining possible scenarios and specifying their respective probabilities, so that lay citizens and public officials can make the final call about what to do. The assignment of probabilities, Kitcher rightly argues, requires value judgments (33). But he concludes that, because experts cannot avoid

value judgments anyway, they might as well make specific policy recommendations—"we should act now"—which policymakers should then implement. "Do we really think *our* judgment—or that of anyone else—would be as good as that of a scientist whose lengthy immersion in these issues leads to the admittedly imprecise assessment offered?" (34). In a democracy, some might respond, we require not only good judgments but judgments by public officials who are publicly authorized and accountable, and who have the task of balancing the competing values and interests of their constituents.

Kitcher later imagines a scenario in which an atmospheric scientist makes a discovery that seems to challenge a particular model of sea level increase due to global warming. She expects her discovery will be refined through further research, and that, in the end, it will not refute the mainstream view. In the meantime, she wants to avoid giving ammunition to climate skeptics, so she postpones publication. But an ambitious postdoc surreptitiously informs the media about the discovery. The media accuse the scientist of a cover-up and report that key evidence for anthropogenic climate change has been refuted. Kitcher concludes, "The atmospheric scientist was not wrong to withhold the information from the public; she wisely foresaw the danger that it would be deployed in misleading ways and attempted to do her bit for the promotion of public freedom" (184). Here Kitcher seems to contradict his discussion of "ideal transparency," mentioned previously. Kitcher's scenario resembles the "climategate" email scandal, and his analysis echoes the efforts of many scientists and environmentalists to argue that the episode was a skeptic-driven media sideshow that had no lessons for the politics of climate change (244). Although climategate certainly did not refute the basic conclusions of mainstream climate science, it did reveal a need for greater public transparency and accountability in scientific research and advice (Jasanoff 2010; Sarewitz 2010).

The book's final chapter takes up four specific policy issues—creationism, reproductive technology, genetically modified food, and climate change—and considers what Kitcher's "ideal deliberators" would say about them. Kitcher notes that "the conclusions drawn here can only figure as preliminary proposals—the ultimate authority resides in *ideal deliberations*, and those might diverge from the lines of thought I offer" (227, italics added, see also 248). It's obvious that actual deliberations might produce recommendations different than Kitcher's, but what does it mean to say that ideal deliberation might also depart from Kitcher's views? Isn't Kitcher the ventriloquist for these ideal deliberators? If all he means is that other scholars with other ideals might come up with other policy recommendations, then why doesn't Kitcher just make a straightforward argument for his views?

Indeed, the notion of "ideal deliberators" often seems like little more than a philosophical delivery van for Kitcher's policy proposals. When discussing human cloning, for example, Kitcher hypothesizes not only that the ideal deliberators would be scientifically competent, but that they would be committed to the same conception of the good that he recommended earlier in the book (233). Consequently, the ideal deliberators would likely "view human cloning as a bizarrely complex way of achieving goals of relatively minor significance in comparison with the urgent health needs of the world's poor" (234). Kitcher also says that his ideal deliberators would reject the notion that the tiny clusters of human cells used in stem cell research have

immortal souls, and hence, they will "tear down the barriers that currently block valuable investigations" (235).

There's nothing wrong, of course, with Kitcher offering substantive arguments on science policy, and I agree with many of his positions. But Kitcher's reliance on the fiction of ideal deliberators produces a strangely disembodied, subjunctive mode of argument. Kitcher writes, "Well-ordered biomedical practice *would*, I suggest, retain an emphasis on 'basic research', but it *would* differ from the status quo in at least three ways" (236, italics added). "An ideal deliberation *would* view the elaboration of Science to improve crops and crop yields as an important direction for research" (239, italics added). With regard to climate change, well-ordered science "*would* insist on transparency . . . *would* replace our imperfect channels of transmitting scientific information . . . *would* provide a more accurate picture of the internal workings of the sciences"—and as a result, the debate over the basic facts of anthropogenic climate change "*would* be over" (245, italics added). Kitcher seems to think that the great question of our times is not *What should we do?* but rather *What would we do?*

In these passages, Kitcher's approach amounts to applied moral philosophy, which Rawls (2001: 14, 182) explicitly distinguishes from political philosophy. Indeed, Rawls makes clear that his notion of a well-ordered society applies only to the "basic structure" of liberal-democratic society, including constitutionally established institutions, citizen rights and liberties, economic structures, familial arrangements, and the like. Rawls's theory of justice applies to "constitutional essentials" and questions of "domestic justice," not the questions of "local justice" relevant to particular associations, practices, and policies (Rawls 1999: 6-7; 2001: 11–12, 27–28). Kitcher, in contrast, attempts to apply a Rawlsian notion of ideal deliberation directly to specific policy questions.

Nonetheless, Kitcher echoes much of Rawls's view of the relation between philosophy and politics (Brown 2004: 88–93). Political philosophers often frame this issue in terms of a contrast between "ideal theory" and "non-ideal theory." The former assumes "strict compliance" with principles of justice, whereas the latter assumes more realistic conditions of "partial compliance." Non-ideal theories emphasize three questions often neglected by ideal theories (Valentini 2012): what should we do when not everyone else will do what's right? (partial compliance); to what extent should a political ideal be practically realizable? (feasibility constraints); and what practical steps will take us toward a long-term ideal? (transitional theory). Rawls's theory of justice is an ideal theory that assumes strict compliance, but he calls it "realistically utopian," because it "probes the limits of the realistically practicable" (Rawls 2001: 13). For Rawls, ideal theory does not provide specific recommendations for action, but it can guide thinking about non-ideal theory. Ideal theory should "help to clarify the goal of reform and to identify which wrongs are more grievous and hence more urgent to correct" (2001: 13; 1999: 8).

Echoing Rawls, Kitcher writes, "Understanding an *ideal* . . . can sometimes help us to improve our practice" (115–16; see also 125). Kitcher's humble formulation raises many questions that he does not address. When do ideal theories actually help improve practice, and when don't they? Under what conditions can ideal theories tell us not only what is wrong with current practices, but also what to do about

them? Are ideal theories actually necessary for reducing injustice? Or, as Amartya Sen (2009) argues, does making the world more just require only that we identify injustices and figure out how to respond?

In many respects, it seems that ideal theory is more useful as a yardstick for assessing current practices than as a resource for improving them (Valentini 2012: 660). Not all readers will be persuaded by either Kitcher's policy proposals or his method of developing them. But by arguing that science should be "well-ordered"—not only with regard to research topics but also in contexts of knowledge certification, application, and public access—Kitcher highlights many shortcomings in the current role of the sciences in democratic societies.

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