distinctions between incentives (*Triebfedern*), desires (*Begierde*), inclinations (*Neigungen*), feelings (*Gefühle*), affects (*Affekte*), and passions (*Leidenschaften*). Showing how her interpretation fits and makes sense of these and like issues in Kant scholarship would support and deepen Deligiorgi's interpretation.

Deligiorgi might reply that her main argument in favour of her interpretation is its defensibility: on her interpretation, Kant's ethics resists standard criticisms and does well when compared with contemporary alternatives. However, while interpretive charity may dictate that we choose the more defensible of two interpretations that are equally supported by the texts, it cannot, I think, replace or outweigh textual support.

So, while I applaud the aim and ambition of *The Scope of Autonomy* and found a lot to admire in it, I do not think that Deligiorgi succeeds in her interpretive project. This conclusion matters, insofar as *The Scope of Autonomy* is supposed to offer an interpretation and defence of Kant's ethics. Of course, if Deligiorgi's aim was merely to articulate and defend a Kantian ethic rather than to interpret and defend Kant's ethics, then this conclusion would not be terribly troublesome. I have not tried to assess whether Deligiorgi succeeds in showing that her ethics of autonomy is superior to the alternatives, so that possibility remains open.

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Science, Policy, and the Value-Free Ideal, by Heather E. Douglas. Pittsburgh, PA: University of Pittsburgh Press, 2009. Pp. xii + 210. P/b $27.95.

Douglas argues that in a democratic society, while science should strive to be authoritative, it should *not* be autonomous. Rather, scientists' value judgements should be informed by ethical and social values in coordination with public policy makers.

The book begins with a history of the role of official scientific advisors in the US, beginning in the late nineteenth century. Agencies such as the Geological Survey, the National Bureau of Standards, and the Department of Agriculture all sponsored scientific research relevant to their policy decisions. The National Academy of Science, created during the Civil War, by contrast, was a free-standing honor society, which could be called upon, but was not an ongoing advisor to the government. This independence was supposed to make its advice more credible. After World War II the number of scientific advisory

boards mushroomed. As the policy issues became more controversial and more complex, there were often adversarial debates between scientific experts. As an example, Douglas mentions the lack of consensus concerning the health risk of saccharin. The hope that science could provide a univocal basis for policy questions waned.

Douglas then provides a brief history of what American philosophers of science were (and were not!) saying about the role of values in science, starting in the Cold War period. Given the increasing importance of science advisors in government she finds it surprising and regrettable that they paid little attention to the complex interaction between facts and values in public policy. Most of the debates that did occur struck me as reminiscent of the old discussions about Weber's ideal of *wertfreie Wissenschaft*. Despite the term *value-free*, all parties agree that science is valuable and that what makes science valuable is its respect for unbiased evidence. All parties also agree that scientists have to make judgements about which instruments are reliable or what confidence levels to choose when doing statistical analyses. So exactly where do the disagreements lie?

Douglas uses the writings of philosophers who invoked decision theory as the basis for a strong version of the value-free ideal. Scientists should produce the probabilities and people applying scientific results should insert their utilities (values). She quotes Ernan McMullin: 'Such utilities are irrelevant to theoretical science proper and the scientist is not called upon to make value-judgements in their regard *as part of his scientific work*' (p. 63; my italics). I have italicized the last phrase because I doubt that McMullin, a Catholic priest, believed that being a scientist absolved him or her of the moral responsibilities of a citizen. In fact, anyone with special knowledge of or influence on a problem situation may well have an increased moral responsibility. But McMullin was also a Galileo scholar and knew all too well how the imposition of value judgements could impede scientific progress.

Yet I agree with Douglas that in retrospect it is surprising that philosophers of science did not explore the duel roles of scientist-citizens as well as science advisors. Certainly scientists themselves were energized over issues such as the dangers from nuclear weapons. Some may remember the 'Doomsday Clock' on the cover of the *Bulletin of the Atomic Scientists* (1947, Vol. 3, No. 6). Tom Lehrer's sarcastic lyrics, '"Once the rockets are up, who cares where they come down? That's not my department", says Wernher von Braun', reflected the sentiments of many Americans who wanted scientists to speak out instead of simply shrugging and saying, 'That's not my department'. And scientists have indeed spoken out for decades on environmental issues. But it was only with the rise of social constructionism and feminist commentaries on science that the philosophical debate about the value-free ideal moved forward in the US. (In Germany the Frankfurt School was important.)

So what should replace the value-free ideal? Douglas's alternative is very nuanced and difficult to summarize. She emphasizes that objectivity remains

essential to good science, while pointing out that philosophers have characterized many different markers of objectivity (she discusses seven), ranging from a concordance of results from different experimental approaches (what Whewell meant by 'consilience of inductions') to Longino's requirement of 'transformative criticism', which occurs when diverse perspectives are taken seriously. She endorses Lloyd's warning that scientists should not become so personally attached to a single point of view that it impedes the acquisition of a correct representation of reality. She also accepts the idea that scientists should be 'value-neutral' in cases where a wide spectrum of values is in play.

There is a similar mapping of what Douglas calls a *topology* of values in science, ranging from epistemic and cognitive to ethical and social. She emphasizes that an awareness of how particular research is likely to be applied should inform scientists' decisions at various stages of inquiry, including the choice of problem, the scope of hypotheses to be pursued, the design of statistical tests, and the communication of results. However, not all values should carry equal weight when it comes to acting on scientific findings. Ethical values can shift the burden of proof if there are egregious consequences of error. And although cognitive values, such as simplicity and scope, are proper considerations in 'pure science', they should not count in cases where there are clear ethical or social implications.

The end of the book returns to the role of science advisors, including an interesting discussion of a 1996 National Research Council report on policy making called *Understanding Risk*. Douglas points out that earlier NRC documents had drawn a sharp distinction between *risk-assessment* (the purview of scientists) and *risk-management* (the job of regulators), thus mirroring the division of labor recommended by the value-free ideal. In their more recent bulletin, by contrast, the NRC describes coping with risk as an integrated *analytic-deliberative* process. Analyses rest on established protocols of an expert community, while deliberations involve more informal collaborative communications involving diverse perspectives. Douglas emphasizes that these are not independent activities, quoting the report: 'deliberation frames analysis, and analysis informs deliberation' (p. 160). She notes that this sort of labor-intensive, back-and-forth collaboration works best with localized problem situations with a limited number of stake-holders, such as the regulation of tug boats in the Prince William Sound following the Exxon Valdez oil spill. Once again there is a call for philosophers of science to get involved.

I welcome her attempt to broaden the philosophical agenda. It would be interesting to study how regulatory decisions are made in other countries. In the European Union there are often stricter rules, for example, on the extent to which drug companies must share the results of clinical trials or the use of genetically modified grains. What role did scientists play in these decisions?

It would also be helpful to have philosophers of science comment on the way science itself is increasingly regulated by policy makers. Although institutionalized review boards (IRBs) are an important mechanism for insuring that

experimental subjects are treated in an ethical manner, in some cases they inhibit legitimate scientific research, especially in the social sciences. For example, students can be prevented from doing pilot studies in their dormitory of mundane linguistic behaviour, such as numbers of interruptions or incomplete sentences, unless they first submit their plan to an IRB and get informed consent from their dorm mates. By that time the semester will be over! More serious and worthy of careful reconsideration are the complex ethical issues that arise when studying so-called vulnerable populations, such as children, prisoners, the terminally ill, people that are illiterate or indigent, and members of other cultures. Again, looking at ethical codes in other countries would be instructive.

I am less convinced that trying to introduce an explicit emphasis on social values is a productive approach. Every profession has a hierarchy of norms that serve both to give their practioners credibility and to protect them from impulses that would weaken the profession in the long run. Defence lawyers, for example, have the duty to make the strongest case possible for the accused, no matter how horrible the crime and even when they are personally totally convinced of the defendant's guilt. And scientists have the duty to report in accurate detail their best understanding of how the world works without regard for the wishes of government regulators or considerations of political correctness. It is very tempting to say that scientists should incorporate progressive social values into their scientific research at every step of the way, from choice of problem to the communication of results. But it is not up to scientists to determine which social values are progressive. History shows how quickly these can shift, and not always in a positive direction. Just as good scientists subject reviewed views in science to stringent test, so should they maintain an open mind about current social values and, where appropriate, even challenge them through probing studies.

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When Is True Belief Knowledge? by Richard Foley. Princeton and Oxford: Princeton University Press, 2012. Pp. viii + 153. H/b £24.95.

In this provocative book, Richard Foley defends a simple and novel account of knowledge: knowledge is true belief plus adequate information. What needs to be added to true belief to get knowledge is not something distinct from but related to true belief, such as justification, reliability, or truth-tracking in close counterfactual situations; instead, knowledge of P requires

