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Review of “Science and Other Cultures: Issues in Philosophies of Science and Technology”

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Book Review

Science and Other Cultures: Issues in Philosophies of Science and Technology, Robert Figueroa and Sandra Harding, editors, 2003, 265 pp, \$27.95 (paperback), ISBN 0-41-593992-5.

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Introduction

Dialogue between feminist and mainstream philosophy of science has been limited in recent years, although feminist and mainstream traditions each have engaged in rich debates about key concepts and their efficacy. Noteworthy criticisms of concepts like objectivity, consensus, justification, and discovery can be found in the work of philosophers of science including Philip Kitcher, Helen Longino, Peter Galison, Alison Wylie, Lorraine Daston, and Sandra Harding. As a graduate student in philosophy of science who worked in both literatures, I was often left with the feeling that I had joined a broken family with two warring factions. This is apparent in the number of anthologies that have emerged on both sides in the aftermath of the “Science Wars” (Gross, Paul R., Norman Levitt, and Martin W. Lewis, eds. 1996; Koertge, Noretta, ed. 1998; Sokal, Alan and Jean Bricmont. 1998; etc.)

Depending on one’s perspective on the Science Wars, the breadth of illustrative cases and examples found in *Science and Other Cultures* can either give more ammunition for the battle, or grounding for a much needed treaty of accord. The most important feature of this book is that it does not merely claim that science is only political, and it does not merely dismiss science as a social phenomenon to be deconstructed using the standard postmodern conceptual tools. Instead, the collection illustrates ways in which postcolonial analysis and multicultural examples can enrich our understanding of “good” science and ethics. Here, the concept of “strong objectivity” from Harding’s earlier books is fleshed out through a variety of cases. The anthology is the culmination of a series of research activities funded by a National Science Foundation grant to the American Philosophical Association. The grant, under the auspices of the NSF Ethics and Values Program, sponsored fourteen summer research projects and thirty-six presentations at four regional APA meetings.

The anthology presents a range of issues and case studies reflecting the research projects and meetings. All of the readings resonate with the thesis provided by Harding on page 64:

I have been arguing that postpositivist philosophies of science, on the one hand, and multicultural and postcolonial science studies, on the other, are converging in important ways and that the former can benefit from insights about sciences in the (Northern and in the Southern hemispheres) that emerge more easily from the latter studies.

Can philosophy of science, informed by postpositivist conceptual rigor, be enriched and informed by the insights of postcolonial theory? These postcolonial insights are provided using a variety of methods, including hermeneutic dialogue between members of other cultures, and the use of exemplary situations from literature (novels and plays) that are intended to shed light on ethical and unethical behavior of science researchers.

In the Introduction, Harding and Figueroa outline central themes that organize the collection. The first section of the text is devoted to the theme “Sciences in cultures, cultures in sciences,” and provides a discussion of how sciences fit into their broader cultures, and conversely harbor cultural values and interests. The second section addresses “Classifying people: science and technology at our service,” and includes a selection of works illustrating how science has been used and misused

to provide classifications of persons that serve the interests of dominant groups while discriminating against vulnerable groups. The third and final section addresses “Technological change, tradition, and modernity,” using two articles that problematize the assumed connection between technology, modernity, and civilization. Both articles in the third section are inspired by the philosophy of Kitaro Nishida, and address the global context of modern science and the role of creativity in technology.

The opening essay, “AIDS, Crisis, and Activist Science” by Robert Hood, illustrates the cultural implications of clinical trials of AZT vaccines in protecting the fetuses of AIDS-infected pregnant women in Africa. The use of placebos in these trials is presented with detailed analysis of the ethical and cultural implications in the research. The piece is well-balanced, citing studies that criticize and defend the use of placebos in such cases. Hood advocates a special ethical standard for “crisis” science, as opposed to “normal” science research, because of the seriousness of the AIDS crisis in Africa. The essay provides perspective on the current research, as well as a beneficial counterpoint to the general philosophy of science literature. Hood’s work has pedagogical value, even for those not convinced by its post-colonial perspective. For example, students in their first philosophy of science class often have a strong reaction to the Semmelweis case discussed by Hempel (1966). Hood’s analysis of the AZT-placebo trial case provides a more recent example that brings the nature of scientific experimentation into a global context.

The second essay, “Why Standpoint Matters” by Alison Wylie, provides a clear description of the current state of standpoint theory in the feminist philosophy of science literature. On page 28, she carefully outlines two specific theses that a proper standpoint theory must avoid:

First, standpoint theory must not presuppose an *essentialist* definition of the social categories or collectivities in terms of which epistemically relevant standpoints are characterized. *Second*, it must not be aligned with a thesis of *automatic epistemic privilege*, standpoint theorists cannot claim that those who occupy particular standpoints (usually subdominant, oppressed, marginal standpoints) automatically know more, or know better, by virtue of their social, political location.

Wylie gives a concise discussion of how standpoint theory and “epistemic advantage” relate to objectivity and neutrality on pages 32-34. Standpoint theory, on this view, includes both an acknowledgement of one’s own social and historical influences, but also the “project” of developing a critical consciousness that is reflexively and politically aware of its own influences. This refined description of the theory addresses many of the criticisms raised against standpoint theory and feminist philosophy of science, including the assumption that standpoint theory is nothing more than criticism from a particular political standpoint, one that is automatically the best one (Gross, Levitt and Lewis, 1996), or nothing more than a “confused thinking” critique of the military-industrial complex (Sokal and Bricmont, 1998). Wylie uses an illustrative example from literature to show the advantages of an “insider-outsider” standpoint, the character of Blanche from Barbara Neely’s *Blanche on the Lam*. Blanche, a black domestic servant for a white family in North Carolina, gleans information about her employers and tests out hypotheses explaining behavior of other characters. The usefulness of an example like this depends on the open-mindedness of the reader: while some scientists might not appreciate the example because it comes from literature, the narrative does provide the groundwork for a fully-fleshed out update of feminist standpoint theory. Narrative and performance may be undervalued in philosophy of science, but a variety of Medical

Ethics conferences have utilized literature and performances of plays to great effect (for example, at the University of South Carolina at a conference on conference on the Humanities in Medical Education, sponsored by USC's Center for Bioethics, in the spring of 2000; and at the University of Rochester and the University of Buffalo, 2003).

The third piece, “A World of Sciences” by Sandra Harding, critiques the assumption of a “unity ideal” in science. In this piece, Harding addresses the unity thesis through its theoretical assumptions: the internalist-externalist epistemology debate; the rejection of a “logic of discovery”; the Eurocentric exceptionalist view (that only modern Western sciences are universally valid); representationism (the view that science is meant to represent the world, not interact with it); and Eurocentric triumphalism, the view that “Western sciences and their rationality exemplify the height of human achievement.” (57) Harding holds that once these problematic traces of the unity-of-science thesis are exposed, then postpositivist philosophy of science will gain a clearer understanding of sciences in both the Northern and Southern hemispheres, and will be able to benefit more directly from multicultural and post-colonial science studies. One potential problem with this essay is the number of ways in which the “unity of science” thesis can be understood: one might mean theoretical unification, unification under specific physical laws, or unification under something following a much more complex set of “rules,” like M-theory/string theory. Each of these may have distinctive and contradictory assumptions about epistemology, discovery, and interaction (let alone any presumptions about global political policies). As one might imagine, if the reader is convinced by Sokal-esque criticism of standpoint theory’s commentary on the military-industrial complex, then the discussion of the global context of science that Harding provides might also fail to convince. Even so, the questions Harding raises about the role of science in an ever-changing global economy are unavoidable for any internationalized, well-planned philosophy of science course. Because of this, the pedagogical value of *Science and Other Cultures* is beyond doubt. Students need to be aware of their global political context, and Harding’s work is richly well-informed with the most recent research in post-colonial perspectives, ethnoscience and empire studies.

The next piece, “To Walk in Balance: An Encounter between Contemporary Western Science and Conquest-era Nahua Philosophy” by James Maffie, provides a detailed analysis of the natural philosophy of the Nahuatl-speaking peoples of the High Central Plateau of Mexico. Nahua philosophy is compared to the European science of the Conquest-era. Maffie describes the epistemological and ontological orientations of the Nahua view, with special attention on the concept of “*teotl*” or spirit, which describes the sacred, self-generating and regenerating creative force or energy that exists in the universe. *Teotl* is said to transcend modernist dichotomies (god vs. non-god, personal vs. impersonal, animate vs. inanimate, alive vs. dead), but also

Teotl artistically-cum-shamanically transmutes and masks itself in a variety of ways: (1) the apparent thingness of existents, that is, the appearance of static entities such as humans, mountains, or animals. This is illusory, since one and all are merely aspects of *teotl*’s sacred motion; (2) the apparent multiplicity of existents, that is, the appearance of distinct, independently existing entities such as individual humans, plants, or mountains. This is illusory since there is only one thing: *teotl*; and (3) the apparent distinctness, independence, and irreconcilable oppositionality of order and disorder, life and death, male and female. This is illusory since one and all are complementary facets of *teotl*. As an epistemological

consequence of *teotl*'s artistic-cum-shamanic self-masking, when humans ordinarily gaze upon the world, they misperceive *teotl* as an individual human, as male, and so on. (73)

In reading this description of *teotl*, I found myself wondering if Maffie might show some connections between *teotl* and the Western concept of *nous*; a reflection on pragmatism and experiential learning; or a cross-cultural comparison between Western and Nahua views of the appearance-reality distinction. But Maffie is more interested in the differences between the cultures, and concludes with a discussion of the differences between Western and Nahua goals of scientific inquiry:

I propose we look to the ultimate values, purposes, and goals motivating these styles of inquiry – what I shall call their *epistemological axiologies*... Depending on whether one is a rationalist, scientific realist, empiricist, or pragmatist, the epistemological axiology of Western-style science defines the purpose and norms of inquiry in terms of such ultimate goals (intrinsic values) as apodictic truth; correct description, representation or explanation; empirical adequacy; or successful control, respectively... a “knowing that”, not a “knowing how”... Nahua epistemological axiology conceives the purpose and norms of inquiry in terms of the ultimate goal of human beings maintaining their balance as they walk upon the slippery surface of the earth... Nahua knowing is a “knowing how” – not a “knowing that.” (83)

This difference of epistemological axiologies is offered in support of Maffie's conclusion, that Western science and Nahua philosophy are two incommensurable epistemologies, and Nahua philosophy cannot be evaluated by scientific norms and goals without assuming that those scientific norms and goals are the correct ones. This conclusion would benefit from further discussion of what the proper evaluative apparatus for the philosophies of other cultures should be, beyond the gestures toward “knowing how” and living the right type of human life. Even so, the Nahua philosophy does provide an engaging example of how science and ethics might be brought together under a distinctively non-Western epistemological apparatus.

Another example is offered by Hugh Lacey, in “Seeds and their Sociocultural Nexus.” Lacey provides descriptions of the key entities used by transgenics programs producing genetically modified foods, and contrasts these descriptions with ones informed by the standpoint of poor people's agrarian cultures. While the technological information might be utilized with good intentions (“feeding the world”), Lacey examines how the best of intentions will not be realized without a richer understanding of the day-to-day lives that the technology will affect. The well-intentioned but foolish choices made by United States researchers and officials described in Robert P. Crease's “Fallout: Issues in the Study, Treatment, and Reparations of Exposed Marshall Islanders” are even more striking. Crease provides a detailed discussion of the history of the Marshall Islands' use in U. S. atomic bomb testing, and the following years of research with participants including Brookhaven National Laboratory and the U. S. Atomic Energy Commission. The relationship between the Marshallese and the Brookhaven researchers is characterized by mounting tension; especially as the Marshallese gain insight into their medical conditions and the possible after-effects of their radiation exposures. To illustrate the complex interconnectedness of the researchers' good intentions and moral culpability, Crease invokes the example of the doctor, Stockmann, from Ibsen's play, *Enemy of the People*:

When I've tried invoking Ibsen in talks to scientists, the audience tends to get impatient. What

could fictional situations possibly tell us about real life? But think of Ibsen's invented situation as a model that strips away grubby details to present a conflictual situation in a way to make perspicuous its essential forces. One can put questions to it and get answers. And what's clear from Ibsen's model is that this volatile situation with a scientific-technical dimension in which people have lost confidence in traditional sources of authority cannot meaningfully be treated as the product of scientific illiteracy... Nor can the situation be understood as an issue of the media or politics. The media and politicians goad, distort, and complicate, but follow other leads. Finally, the conflict cannot be treated as the product of irrationality. In the Ibsen play, it's all too rational what is happening. The community leaders, whose world is threatened by Stockmann's desire to close the baths, are being eminently practical. (119)

Ibsen and Crease report vividly the social and interpretive nature of ethics and science. In both the Marshallese case and the Stockmann situation, the lack of communication and social understanding resulted in a series of blunders that prevented serious moral analysis of the researcher's actions. In the Marshall Islands, a number of these miscommunications resulted in political decisions overriding scientific research. Crease notes that in September 1996, the Marshallese parliament passed an official resolution declaring that "diabetes and cataracts" were medical conditions resulting from the nuclear testing program. The action was defended by politicians and ex-Peace Corps workers employed by the politicians, in spite of the fact that there is no link between these medical conditions and radiation exposure. The intent of the lawmakers was to gain access to U. S. funds, but it illustrates a situation in which the authority of science is undermined in favor of political ends.

The central issue is the connection between science and its social context. Harding and Crease both address the question of whether philosophy of science is silent on issues relating to colonialism and diversity. If philosophy of science is silent on these issues, it could mean that technical information takes precedence over social realities. If this is true, then we risk giving up moral critique of science. Crease takes the argument further, noting that

If science is *not* entirely socially constructed, that's precisely what gives it a profoundly political, and politically critical, force. Science can help navigate in a world of toxins, litigation over toxins, and those who manipulate fear of toxins. It can help protect against attempts to use others, and socially vulnerable groups in particular, as means for pursuing personal utopian quests. To agree, we need not enter the hopelessly abstract debate sometimes posed in postmodernist science studies of whether all knowledge is disguised power grab, or whether all science is necessarily tied to the quest for a grand narrative, totalizing pattern, or cosmic blueprint. (122)

This perspective illustrates that *Science and Other Cultures* is not merely another example of postmodernist science to be dismissed. Perhaps the most important contribution of *Science and Other Cultures* is its unflinching look at the current academic climate surrounding cultural studies and science. The concern over science, culture, and postcolonial theory parallels recent debates on teaching post-colonial theory in area studies departments at American universities, most notably in Middle Eastern studies. In early November 2003, the United States Congress passed House Resolution 3077, giving legislators additional control over the political perspectives taught in courses at institutions receiving Title VI funding. According to the language of the bill, professors

whose ideological principles may not support U.S. practices abroad can have their appointments terminated, any part of a course's curriculum containing criticisms of U.S. foreign policy can be censored, and any course deemed entirely anti-American can be barred from ever being taught. In such an atmosphere, articles like Crease's, dissecting United States policy regarding Marshall Islanders, serve an important purpose: they open discussion about the relationship of science research to the broader military-industrial complex, and they reaffirm the importance of free speech in the academy. In Crease's humorous terms, we have to watch out for "exploding coconuts" in the Ivory Tower:

I propose a new category, which might flippantly be called these *exploding coconut genre*. More formally, it might be called the catastrophe genre, in the engineering sense of the word; what happens when a complex system grows out of synch with its environment, so that it operates for a time in a domain of instability, until an incident causes the system to break down or operate in a drastically new mode. The story of the Marshall Island exposure victims, I think, embodies another catastrophe story, one that involves a scientific dimension. The catastrophe is brought about not by the technical replacing the social – by science disabling critique and disarming social movements – but just the opposite: by ceasing to inform practical action, ceasing to provide the basis for critique of a situation. (122)

All the selections in *Science and Other Cultures* express how important it is that science must inform practical action and provide empirically proven knowledge by which a situation can be critiqued. Science should inform politics more than politics should inform science. In light of this, it seems that feminists, postcolonialists, and more mainstream postpositivist philosophers of science have at least one common goal.

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