After Eurocentrism: Challenges for the Philosophy of Science

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1. Emerging Directions in Postcolonial Science Studies

Criticisms of the effects of Western sciences and their technologies on Third World societies are not new to Westerners. For decades both Third World and Western authors have analyzed and protested the frequent ill effects in the Third World of Western assumptions, concepts, paradigms and practices in health care, ecology, militarism, so-called economic "development" and its associated technology transfers.

Recently, however, two focuses of these analyses have been developed more fully. First, it is not just the purportedly separable politically engaged technologies, applications and social institutions of science which are criticized; the technical/cognitive core of Western sciences are also claimed to have distinctive and unattractive cultural and political commitments. These critics show how Western sciences are, in this sense, just one kind of culturally specific "ethnoscience" among the many that have existed. Second, many of the Third World authors envision and plan to develop fully modern sciences within the cultural legacies and progressive political tendencies of their own societies (beleagured from within and without as these tendencies frequently are). It is not that Western sciences are to be reformed for Third World uses but, instead, that other scientific traditions are to be "edited" and strengthened to make them more effective for contemporary purposes. These critics are opposed not to science, but to the world-wide dominance of only one ethnoscience, and of one that inherently legitimates—perhaps even requires—an imperialism against other scientific traditions, other cultures, other peoples and nature itself. (See Adas 1989, Goonatilake 1984, Harding 1993, Moraze 1979, Nandy 1990, Petitjean 1992, Sardar 1988, Van Sertima 1986, Weatherford 1988)

Many terms in this discussion are controversial, and among Third World thinkers as well as in the West. What should count as a science, ethnoscience, an indigenous tradition, Western, European, Eurocentric, a Third World society, progressive and regressive tendencies, etc.? Such questions deserve more attention than I can give to them here; an examination of the ways they are contested is itself illuminating.

These writings reinforce some themes in feminist analyses but in other respects take different directions. Both approaches criticize pretensions to universality and the dominating, exploitative and imperialist character and consequences of modern sciences.

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Both are concerned to create less partial and distorted histories of how modern Western science arose, and of the earlier traditions it suppressed or stole. Neither is "anti-science;" scientists are leaders in each analysis, and both seek to fashion better sciences that avoid the sins they criticize. However, the feminist ones are centered in gender analyses, and primarily in Western ones. Similarly, the postcolonial ones are centered in analyses of European expansionism, and for the most part in ones conceptualized prior to the emergence of recent Third World feminist critiques. Only a few attempts have been made to draw on the strengths of both kinds of analyses. (E.g. Haraway 1989, Shiva 1989) At this moment the two tendencies provide both powerful reinforcements and significant challenges to each other as well as to mainstream science thinking.

However, my point here is that they also provide such reinforcements and challenges to certain progressive tendencies in the very Western sciences and science studies that they criticize. In important ways these accounts are inside Western scientific and philosophic traditions as well as clearly critical of certain aspects of them. This kind of point is perhaps easier to grasp when thinking of the Western feminist critiques, but it is no less true of the postcolonial ones. By looking at Western sciences and science studies through their lenses, those of us in the West who value "our" legacies of such ideals as democracy, objectivity and rationality can learn to come closer to them through our sciences, philosophies and social studies of science.

2. Sciences in Global History

What are the major themes in these writings? First, Western histories and popular understandings of science are constructed from a Eurocentric perspective. Eurocentrism assumes that Europeans, their institutions, practices and conceptual schemes express the uncontestable heights of human development, and that Europeans and their civilization are fundamentally self-generated, owing nothing to the institutions, practices, conceptual schemes or peoples of other parts of the world. (Amin 1989) For the most part, Western accounts of science are enclosed within a history of Europe that is conceptualized only from the perspective of the lives of the dominant classes, races, and ethnicities in Europe, and thus as fundamentally autonomous from the histories of other parts of the world. While Europeans obviously traveled to other parts of the world—Asia, Africa, the Americas—it is assumed that they did not encounter any equally human but radically different peoples with their own rich histories, social institutions and scientific traditions. (Todorov 1984)

How is such a distortion of history managed? For one thing, Western science, which is simply "science" for Eurocentrists, is conceptualized as fundamentally pure ideas, not as the culturally determinate institutions and practices that historians, sociologists and anthropologists report. Moreover, the indigenes encountered are conceptualized as not capable of or as no longer producing any interesting ideas, since they are thought to be fundamentally savages, simple peoples, or members of once advanced but now backward societies (e.g., Asian cultures are often figured this way). The peoples encountered are to this day primarily perceived to be either different from Europeans and inferior to them—even pre-human—or as equally human and therefore like Europeans, but at an earlier stage of social development. In the latter's institutions, practices and tastes can be seen the infancy of European civilizations. (Todorov 1984) The primitive Other was produced along with the advanced, civilized, rational "self" of European culture; Western anthropology, philosophy and science joined hands in this project.

Do I exaggerate? After all, occasionally contributions of other cultures to the advance of modern Western sciences do appear in the margins of the standard accounts. However, in some cases these contributions are classified as part of the irrational ele-

ments of Western sciences that have fortunately been left behind; the influence of mystical and alchemical traditions on early modern European sciences are treated this way. In other cases the contribution is acknowledged, but its circumstances are reported in a way that leaves Eurocentrism intact. Islamic society is figured as merely the repository of the ancient Greek knowledge which the West then retrieved in the Renaissance. Arabic mathematics is presented as the available residue of an earlier civilization. What happened to the scientific traditions of that civilization? Why was it Europeans alone who could make use of that available residue? The answers are supposed to be irrelevant to understanding the causes of the advance of Western sciences. In many cases, European appropriations of the accomplishments of other scientific traditions are not acknowledged at all, and the histories of those traditions, their rise and the reasons for their decline is largely invisible in the West. This is the fate of the advanced sciences of the high cultures of Asia, as well as of the less developed but nevertheless significant scientific traditions of Africa and the Americas. (Needham 1954ff, 1969, Rodney 1982, Van Sertima 1986, Weatherford 1988.)

In contrast, the anti-Eurocentric history explains Western sciences as, first, fully constituted by the rest of Western history. Second, Western sciences developed through encounters with the histories and scientific traditions of other peoples which have had and still have their own trajectories, weakened though these often are today as a result of their past and ongoing destruction by Western practices and by local processes in which the West has played little part. European history is understood as one thread in global history, and as "European" only in far more limited and often different respects than the standard accounts report. For example, it is "European" over a far shorter period than Westerners generally assume. The ancient Greek culture to which the origin of modern European culture, its philosophy and its scientific spirit are conventionally traced was Mediterranean, not European; Europe did not come into existence until Charlemagne created it many centuries later as a quite different geographical, political and cultural configuration. The revisionist "Aryan interpretation" of European history has obscured the ways in which classical Greek civilization was infused with Semitic and African elements (Bernal 1987), and subsequently was not only preserved but also developed for modern Europe in Islamic cultures. This legacy is as rightfully claimed by other cultures as it is by any European ones.

In these new accounts, it was not because European science was inherently better in some absolute sense that it flourished and the others failed to continue developing; rather, it developed because it travelled with and benefitted from European expansionism. In some respects it is inferior to other scientific traditions in its ability to explain the regularities of nature—human health and ecology are two cases that have already been widely discussed in the West. European science advanced in the early modern period because it focused on describing and explaining those aspects of nature's regularities that permitted certain classes of Europeans to multiply and thrive, especially through the prospering of their expansionist projects. Modern sciences were constituted through these projects. Intervening in nature is not a matter of the "uses and abuses" of inherently non-interventionist sciences; experimental method is distinctive for the way it requires intervention in what it observes. Our sciences' technologies and applications are more strongly guided by the science itself than is the case for sciences constituted by less interventionist methods. (Rose and Rose 1979) Of course Western sciences can also claim contributions to improving the quality of life for peoples in diverse parts of the world. As Western authors have pointed out, many achievements claimed for Western sciences, however, are better attributed to other factors. For example, improvements in public health practices and nutrition—neither owing much to Western sciences—appear to have been much more important in increasing the longevity of Europeans and improving the quality

of their lives than any contributions of medicine, biology or other sciences. (Cf. e.g., McKeown 1979)

In the U.S., the heavy direction of scientific research by industry, the military, and an imperialistic and socially uncaring state is not a recent aberation but, instead, simply a continuation of well-established patterns. Western science was imposed as an alien presence in Third World societies in the past through overt conquest. Today it is the World Bank and International Monetary Fund (often with the complicity of the tiny wealthy and middle-class elites in these countries that are positioned to benefit from their alliances with the West) that insure the still alien presence there of Western "scientific" agriculture, ecology, medicine, pharmacology, energy production, economic organization and militaries. Western sciences and technologies are deeply implicated in increasing the gap between the haves and have nots in the Third World and the world economy, in appropriating non-renewable Third World resources for the benefit primarily of already economically advantaged Westerners, in turning productive local ecologies that were capable of supporting their indigenous populations into wastelands capable of supporting no life at all. As Vandana Shiva puts the point, Western scientific development is maldevelopment that makes it difficult for indigenous peoples, their long established social rights, and the ecology on which their lives depend to "stay alive." (Shiva 1989)

There are other important themes in these writings. Most surprising, perhaps, are accounts of the distinctively Christian, bourgeois and national elements of the metaphysics and epistemology of Western sciences. More familiar are descriptions of the history and uses of scientific racism, the maintenance of "metropolitan" control of "periphery" science projects, the greater objectivity and effectiveness of many aspects of Third World scientific traditions, and Western sciences' implication in militarism against Third World societies, for example, in the cases of Hiroshima, Viet Nam, Central America and the Gulf.

None of these authors believes for one moment that the claims for a purported separation between pure science and the technologies and applications of science have any grounding in reality now or in the past. Of course many scientists, like the rest of us, have been unable to foresee the consequences others planned or subsequently came up with for their work. Many have intended only to follow their curiosity wherever it might take them, believing that the production of information is inherently good. Most, like the rest of us, have been unable to detect the distinctive cultural fingerprints on their projects and accounts of nature. However, these undeniable facts do not support the claim that Western sciences are value-free or that they make universally valid claims. The issue in these writings is not so much the bad intentions of individuals (though that is sometimes the issue) but, instead, a far more difficult problem: the institutional aspects of the constitution of Western sciences through Eurocentric and imperialist projects.

3. Issues for the Philosophy of Science

The Western philosophies of science have been responses primarily to different problems than those to which the new postcolonial studies are a response. A crucial such difference is that the conventional philosophies assume that the main threat to the cognitive and social progressiveness of science is the intrusion of political and social values by individual "cranks" or special interest groups into scientific endeavors that are otherwise pure and socially neutral. But in these postcolonial accounts, the threatened intrusion of values comes not from outside Western science but through it, its inherent interests, practices, and distinctive European culture. Because of its distinctive enculturation with Western meanings, values and goals, and its historic and

continuing symbiotic relation to Western expansionism, Western science internally generates irrationality, ethnocentric "subjectivity" and special interests that have been intruded into other cultures. The belief that disinterestedness, value-freedom and social neutrality are ideal for knowledge-seeking is one of the distinctive modern Western values that has generated and consistently supported the flourishing of culturally special interests and irrationality. In these accounts, sciences are fully permeated by their cultures since they are constituted and continuously reconstituted by them. In this sense, cultures are not "outside" their sciences since no human endeavor or its outcomes is outside its culture. Of course similar accounts of sciences' necessary permeation by "society" is already familiar in the work of leading Western philosophies and social studies of science. (Cf. Pickering 1992)

How should/could Western philosophers of science respond to the postcolonial challenges? For one thing, we should locate the histories and sociologies of science that we must assume in order to construct our philosophies of science within more realistic (and less Eurocentric) global accounts. For another, we need philosophies of necessarily constitutively socially engaged sciences rather than of ones conceptualized as ideally socially detached, disinterested and unengaged in the economies, politics and cultures that in fact do and must constitute them. In the third place, we should develop standards and procedures for maximizing "strong objectivity" rather than only the "weak objectivity" that commitment to the neutrality ideal insures (Harding 1992a). This is just one example, fourth, of a way to reoccupy our own Western, indigenous scientific and philosophic traditions so as to produce philosophies of science that are better equipped for a postcolonial world that their authors may not have chosen but in which they they must make their way. Finally, this line of analysis emphasizes how the postcolonial accounts importantly are inside Western sciences and their associated philosophies and social studies of science; to present the interactions of this recent postcolonial literature with more conventional Western accounts as one of "them vs. us," as it is easy to do (and my opening narrative may have suggested), distorts the situation of Western philosophies of science at this moment in global history.

With respect to the first point, our histories, sociologies, ethnographies, and philosophies of science must be rewritten so that they are located in this postcolonial terrain instead of in Eurocentric ones. Science policy must be redesigned to enable Westerners to take our place as members of just one set of cultures among the many that have existed in the past, exist now, and will in the future, and in a way that recognizes that Westerners have serious responsibilities to help rectify the political, economic and ecological wrongs that Eurocentric Western sciences have played a central role in perpetrating. Of course no peoples can "escape" their history, but this postcolonial literature helps Westerners to figure out that there are better and worse ways for us to come to terms with ours. To the extent that we fail in this project, our accounts and actions perpetrate and disseminate Eurocentrism and imperialism, and this will be true whether or not we so intend. Neither sciences nor science studies are constituted by the intentions of their "authors"; instead, their very nature and structure are constructed and reconstructed again and again by their meanings and effects. Just as the literary critics write about the "death of the author" (or, at least, of what turns out to be that distinctive kind of bourgeois, Western, androcentric author), so too, those of us in the sciences and science studies should get firmly in mind the recent "death of the Scientist" and of the writer of philosophies and other science studies that is so clearly revealed not only in the postcolonial and feminist accounts, but also in the last two decades of mainstream social studies of science.

In the small space remaining at my disposal, I can only start a discussion of the last four of these proposed Western responses. What would it mean to develop neces-

sarily constitutively socially engaged sciences, ones that have systematic processes for maximizing strong objectivity, and that conceptualize the "postcolonial exchange" as one internal to the flourishing of Western sciences and their philosophies? To begin with the problematized neutrality ideal, the postcolonial critics make clear that the problem is not that the neutrality ideal has not been realized and, thus, that the conventional philosophies are unrelated to how science does, in historical fact, work. Nor is the problem that the ideal could not in principle be achieved, since many unachievable ideals nevertheless serve valuable functions. Moreover, the problem is not that the neutrality ideal is a historically specific one, peculiar to the modern West, rather than the universally desirable valid one Westerners imagine it to be. I take all of these claims to be true. However, the problem with the neutrality ideal is a different one: it is a wrong ideal. Of course this neutrality ideal has always rested uneasily with a conflicting one holding that scientific knowledge should be useful and not merely decorative, that a major point of gaining knowledge should be to increase human welfare. Specifying an interventionist experimental method as what is responsible for Western science's success already betrays the neutrality ideal.

The problem with linking objectivity to the neutrality ideal is that it permits no procedures for identifying those social values and interests that belong to the entire scientific community (or virtually all of it). Scientific method is supposed to maximize objectivity by eliminating social values and interests from the results of research. However, conventionally understood "method" begins only with a research design—that is, after the "context of discovery" where scientific problems are identified and conceptualized. While the emphasis on peer review of the design, the observations, the sorting of evidence and the results of research tends to identify and eliminate from the results those social values and interests shared by less than the entire peer group, there is nothing in this process that even permits, let alone pursues, systematic identification of assumptions and interests shared by that entire group. Social restrictions on who gets to count as in the peer group exacerbate this problem.

Yet Eurocentric beliefs are precisely culture-wide ones. Must each culture be doomed only to thrash around within its historically relative set of local biases? Obviously not, since we can now talk within the dominant cultures about precisely the formerly culture-wide beliefs mentioned above. But the lack of a systematic procedure for identifying such beliefs makes the choices appear to be only a no longer reasonable absolutism, an unattractive relativism, or ineffective moral gestures in the direction of a critical stance toward distorting values.

Standards for "strong objectivity" delink important elements of the notion of objectivity from the neutrality ideal. Historian Thomas L. Haskell identifies central features ofwhat is valuable in the older ideal:

> The very possibility of historical scholarship as an enterprise distinct from propaganda requires of its practitioners that vital minimum of ascetic self-discipline that enables a person to do such things as abandon wishful thinking, assimilate bad news, discard pleasing interpretations that cannot pass elementary tests of evidence and logic, and, most important of all, suspend or bracket one's own perceptions long enough to enter sympathetically into the alien and possibly repugnant perspective of rival thinkers. (Haskell 1990, 132)

This detachment is not the same as neutrality; in some respects it is clearly opposed to it since neutrality is often taken to preclude sympathetically entering into alien and possibly repugnant perspectives.

Standpoint epistemology has provided one effective alternative to the field of otherwise only absolutist and relativist "methods" and epistemologies when it directs researchers to start off their thought—their initial specification of what is the problem—from marginal rather than dominant lives. From a theoretical perspective this makes sense since marginalized lives are the furthest ones from those of the dominant culture. Thinking about the history, present practices, and philosophies of Western sciences from the perspecltive of those lives that have the least "say" in designing these sciences offers the possibility of identifying those social values and interests that are invisible to the designers of Western sciences. Moreover, there is good historical support for this "method" since many of the important advances in the history of Western sciences can be reconstructed precisely in terms of the way thinking about a phenomenon from the perspective of marginal lives enabled the identification of distorting local assumptions that were invisible to the locals. For example, some of the rational reconstructions of the invention of experimental method itself in the early modern period in Europe provide this kind of account of the importance of thinking about nature's regularities and their underlying causal tendencies from the perspective of the needs of the emerging class of artisans and the landholding and merchant groups they served rather than from the lives of the nobility, monks and humanist intellectuals who were the guardians of the social order. (Van den Daele 1977) Thinking critically from the perspective of the lives of the nineteenth century European laboring classes about the conceptions of human and non-human nature that flowed from the bourgeois classes' activities enabled the generation of new social sciences and, eventually, biology. And we could continue through various episodes of the detection of racist and sexist assumptions to provide similar evidence for standpoint epistemology's usefulness in rationally reconstructing important advances in the history of the sciences. Such standpoint accounts have been difficult for readers to distinguish from a kind of "experiential foundationalism," from advocacy of relativism, and from other alternatives to conventional foundationalism. But they offer a third option to the conventionally imagined absolutism vs. relativism bifurcation of possible epistemologies. (Harding 1991, 1992a, 1992b.)

Many other concepts and assumptions central to Western sciences and philosophies of science are suitable for such a recuperation; indeed, the redeployment of these important "Western" concepts and problematics has already begun in the writings reviewed here as well as in feminist critiques. A thoughtful appreciation of these postcolonial analyses could focus, for example, on ways in which the advance of science and of social justice are positively and negatively linked; characteristics of the rationality of individual belief sorters and of a particular scientific enterprise as a whole; mechanisms through which sciences also generate systematic forms of ignorance; the negative role that ideals of universality and truth play in the advance of empirical knowledge, and possible residual positive roles for them; a desirable relationship between the natural and social sciences, or the decline of the importance of the distinction; the "strong reflexivity" and "strong method" that must be the correlates of "strong objectivity"; a "Europology" of the natural and social sciences that identifies and traces the history of the Westernness of Western sciences, their concepts and assumptions. (The phrase is Goonatilake's; see his essay in Sardar 1988.) No doubt this list can be extended.

If the notion of objectivity that is so central to Western culture can be transformed in the ways indicated, so too can other elements of our "indigenous Western" tradition. Moreover, in recuperating and transforming important parts of our cultural inheritance, Westerners engage in the same kind of science project that the postcolonial critics recommend for their societies. The West has always done so, since Western societies—like all others—have been dynamic and in constant encounter and ex-

change with other societies throughout their history. We can choose to see this moment as just one more in this history, where yet again we can borrow something from other societies and transform it to what we conceptualize as progressive Western ends. (Others will tell us just how progressive these ends are, and the sooner the better.) My argument has been that one thing we should "borrow" is a more powerful and critical perception of Western sciences—their origins, conceptual schemes, meanings, and possible futures—than are easily generated within the norms of Western sciences and science studies, including our dominant philosophies of science.

Such tendencies in Western philosophies of science will direct the development among scientists and observers of science of crucial interpretive and critical thinking skills presently devalued in those circles but which are necessary to enable Westerners to distance our projects from Eurocentric ones. They will enhance our ability to stop sacrificing our critical intelligence and the empirical and theoretical adequacy of our accounts to our prejudices. Developing these analyses within the philosophy of science will have important consequences elsewhere: for philosophy more generally, since many of the notions requiring recuperation figure in other philosophic discourses; for the sciences themselves, since scientists, too, need systematic ways to distance their projects from Eurocentric ones; for science education, since every citizen needs a less partial and distorted account of the strengths and weaknesses the natural sciences exhibit in their histories. And such work will have consequences for public policy, since there is little in current international relations—from the Gulf War to the Rio global ecology conference—that suggests a happy future for Eurocentric legacies in the sciences or the philosophy and social studies of science. Of course the philosophy of science alone cannot bring about such an ambitious program. My argument is only that it has an important role to play in it.

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