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Whose Science? Whose Knowledge?

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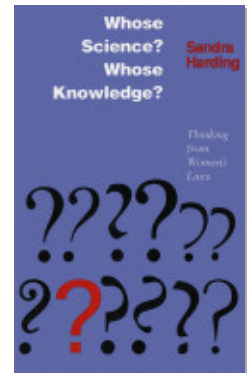
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I

Introduction

After the Science Question in Feminism

The feminist discussions of science, technology, and theories of knowledge occur at a moment of rising skepticism about the benefits that the sciences and their technologies can bring to society. Calls for reforms and transformations have arisen from many different groups. However, these discussions also occur when intellectuals in the fields of science and technology are gaining more and more power in higher education and in government.

Feminists themselves are of at least three minds about the sciences. They (we) criticize not only “bad science” but also the problematics, agendas, ethics, consequences, and status of what has come to be called “science-as-usual.” The criticisms of science-as-usual are made in the context of a call for better science: important tendencies within feminism propose to provide empirically more adequate and theoretically less partial and distorted descriptions and explanations of women, men, gender relations, and the rest of the social and natural worlds, including how the sciences did, do, and could function. From theorists who draw on European philosophy, however, comes criticism of the very idea of trying to reconstruct science, whether or not in feminist ways. These feminists appear to be arguing that there is no baby to be found in the bath water we would throw out. Additionally, analyses flow from not just one but many feminisms, each increasingly well developed in both theoretical and historical terms. Consequently, feminist analysts of science, technology, and epistemology disagree with one another over many important aspects of these issues.

Feminism and Science: A Confusing Moment

Skepticism about the Sciences

Modern Western sciences and their technologies have always been regarded with both enthusiasm and dread. On the one hand, we tend to attribute to them at least some responsibility for the high standards of living that many in the West enjoy—especially if we are white and middle or upper class. It is unimaginable to us that we could want to give up the food and clothing, medical treatment, cars and airplanes, computers, television sets, and telephones that have become available through scientific and technological development. On the other hand, just who or what is responsible for atomic bombs, Agent Orange, industrial exploitation, polluted air and vast oil spills, dangerous contraceptives such as Dalkon shields, inappropriate uses of Valium, health profiteering, high infant mortality in the United States, famine in Ethiopia, and the development of a black underclass in the United States? Conventionalists insist that science get full credit for the good aspects of the “Western way of life” but that such “misuses and abuses” are entirely the fault either of politicians or of the industries that apply supposedly pure information in socially irresponsible ways.

The insistence on this separation between the work of pure scientific inquiry and the work of technology and applied science has long been recognized as one important strategy in the attempt of Western elites to avoid taking responsibility for the origins and consequences of the sciences and their technologies or for the interests, desires, and values they promote. From a sociological perspective, it is virtually irresistible to regard contemporary science as fundamentally a social problem. Sal Restivo has argued that it should be conceptualized as no different in this respect from alcoholism, crime, excessive drug use, and poverty.¹ The name “Frankenstein,” which Mary Shelley gave to the scientist in her dystopian novel, has in popular thought migrated to the monster he inadvertently created. How the monster actually got created—and gets nourished and reproduced day after day—retreats into the shadows, as if there are no persons or institutional practices that we can

1. Sal Restivo, “Modern Science as a Social Problem,” *Social Problems* 35:3 (1988).

hold responsible for the shape of the sciences and the kind of social order with which they have been in partnership.

These kinds of issues have been raised by feminists (see Chapter 2), but they are certainly not what is unique about feminist analyses. In one form or another, such concerns are voiced by the ecology and environmental movement, the peace movement, the animals rights movement, leftist and worker movements, and antiracist and antiimperialist movements in both the West and the Third World. Even “postmodernist” criticisms of the philosophical foundations of Western rationality should be regarded as part of the counterculture of science. What is at issue for all these critics, including feminists, is not only the easily identifiable theories, methods, institutions, and technological consequences of the sciences but also something harder to describe: the Western scientific world view or mind-set. The “indigenous peoples” of the modern West—those most at home in Western societies—have culturally distinctive belief patterns in which scientific rationality plays a central role. These “natives,” like all others, have trouble even recognizing that they exhibit culturally distinctive patterns of belief; it is like discovering that one speaks a distinctive genre—prose. From an anthropological perspective, faith in scientific rationality is at least partly responsible for many of the Western beliefs and behaviors that appear most irrational to people whose life patterns and projects do not so easily fit with those of the modern West. From the perspective of women’s lives, scientific rationality frequently appears irrational.

Still, scientific rationality certainly is not as monolithic or determinist as many think or as the description above suggests. Nor is it all “bad.” It has been versatile and flexible enough throughout its history to permit constant reinterpretation of what should count as legitimate objects and processes of scientific research; it is itself shaped by cultural transformations and must struggle within them; and it is inherently no better or worse than other widespread social assumptions that have appealed to groups with different and sometimes conflicting agendas. Perhaps even liberalism and feminism would provide examples, since both have at times been associated with racist and bourgeois projects, even though at other times they have advanced struggles against racism and class exploitation. It is one theme of this book that modern Western science contains both progressive and regressive tendencies, and

that our task must be to advance the former and block the latter. Indeed, scientific rationality can make possible the transformation of its own agendas; critics from feminist and other scientific counter-cultures certainly intend to use it for this purpose.

The Rising Status of the Intellectuals in Science and Technology

Increased participation in the countercultures of the sciences occurs just when the prestige of the intellectuals in science and technology is rising in higher education and the government. Scientists have been held in high regard since Sputnik, of course—indeed, even since Newton²—but the flood of industrial and federal funds that pours into scientific and technological projects in universities these days is truly astounding. It is a long time since scientific research could be regarded as significantly isolated in real life from the goals of the state and industry—if it ever could. Scientific research is an important part of the economic base of modern Western societies.

No doubt envy plays a certain role in the criticism of science. Scholars from the humanities and social sciences perceive themselves increasingly working in offices cramped into university attics and basements as new science and engineering buildings open; they lose what they think are too many of the best graduate students to the sciences and engineering as they lose support for graduate programs. More and more they find themselves reporting to deans, provosts, presidents, chancellors, and trustees whose backgrounds are in science and engineering and who intend to take universities where the money is flowing. How could they justify not doing so, these administrators ask.

Intellectuals in science and technology do not see their situation as rosy. One can hardly open a science journal or even an airline magazine without finding hand-wringing projections of a shortage of scientists and engineers. It has gotten so bad, they say, that in order to “keep America strong” they are even willing to develop special programs to recruit women and minorities to science, mathematics, and engineering departments. This institutional setting needs to be kept in mind when one thinks about the “postmodernist” criticisms of the philo-

2. See, e.g., Wolfgang Van den Daele, “The Social Construction of Science,” in *The Social Production of Scientific Knowledge*, ed. Everett Mendelsohn, Peter Weingart, and Richard Whitley (Dordrecht: Reidel, 1977).

sophical foundations of modern science. The attractions of the postmodernist critique are many,³ but among them are surely its perceived usefulness as a means to restore status to the humanities, status that has stolen away to science and technology without public discussion of the benefits and losses of such a move.⁴ The intellectual fundamentalism of Allan Bloom and the “back to the classics” movement in the United States is another critical response to the rise in status of science and technology. The countercultures of science have at least the beginnings of a realistic assessment of possible futures for the West, an assessment that is lacking in intellectual fundamentalism.

The Need for New Sciences

It is at this moment that feminism and other liberatory social movements appear on the scene with agendas that include generating new sciences. Women need sciences and technologies that are *for* women and that are for women in *every class, race, and culture*. Feminists (male and female) want to close the gender gap in scientific and technological literacy, to invent modes of thought and learn the existing techniques and skills that will enable women to get more control over the conditions of their lives. Such sciences can and must benefit men, too—especially those marginalized by racism, imperialism, and class exploitation; the new sciences are not to be *only* for women. But it is time to ask what sciences would look like that were *for* “female men,” all of them, and not primarily for the white, Western, and economically advantaged “male men” toward whom benefit from the sciences has disproportionately tended to flow. Moreover, it is time to examine critically the conflicting interests in science that women in opposing classes and races may well have; women’s interests are not homogeneous. Feminism insists that questions be asked of nature, of social relations, and of the sciences different from those that “prefeminists” have asked, whether conventional or countercultural. How can women manage their lives in the context of sciences and technologies designed and directed by powerful institutions that appear to have few interests

3. And so are the problems with it, many will say. Postmodernism is discussed in later chapters.

4. Philosopher Cornel West made this point in the plenary session “What Is Cultural Studies?” at the conference sponsored by the Committee for Cultural Studies, City University of New York, May 11, 1989.

in creating social relations beneficial to anyone but those in the dominant groups?

Thus, though it would be foolish to deny that science is a major social problem, we can ask who benefits from regarding it as *nothing but* a social problem. Possible scientific beliefs and practices are not limited to those that have already existed, let alone to that subset that has existed in the modern West. It is complicitous with the dominant ideology to assert that everything deserving the name of science has been done in the modern West. Nevertheless, we must contend realistically with what the West has done with its sciences. It is important for the countercultures to struggle with science and technology on the existing social terrains while they also try to envision and plan different social environments for science in the future.

The Diversity of Feminist Analyses

Feminist analyses of science, technology, and knowledge are not monolithic. There is no single set of claims beyond a few generalities that could be called "feminism" without controversy among feminists. (The same could be said about sexism or androcentrism or non-feminism, which can also claim diverse historical frameworks and projects: Aristotle is not Freud.) The feminist science discussions are both enriched and constrained by the different political, practical, and conceptual perspectives that they bring to bear on science, its beliefs, practices, and institutions.

This is a good place to note that the term "feminism" is itself a contested zone not only within feminism but also between feminism and its critics. It is widely used as a critical epithet in the Second and Third Worlds and in some Western subcultures, by women as well as by men, to prevent women from organizing across class, race, and national borders and even just to "keep women in their place."⁵ It is also important to note that widespread tendency in the West, at least, for women and men to insist that they are absolutely not feminists but then to advance the very same intellectual and political programs that are promoted by others under the label of feminism. These non-feminists too are for ending violence against women, the sexual exploi-

5. The designations First, Second, and Third Worlds have been constructed by the West. They distort global politics in many ways, all to the benefit of the West, but I use them for lack of better terms.

tation of women, women's poverty, job discrimination against women, the exclusion of women from public office, unequal educational opportunities, sexist biological and sociological and historical claims, and so on. For these people, "feminism" appears a handy label for those elements in feminism from which they wish to distance themselves—and it is the Eurocentric, racist, bourgeois, and heterosexist elements in feminism, as well as the vigorous opposition to them, from which different groups wish to distance themselves.

I think it is important to try to distinguish regressive from progressive tendencies in peoples' actions and beliefs and to support the progressive tendencies, whether or not others think about them in just the way I do. What appears to be radical and progressive from the perspective of some women's lives may be too conservative, too dangerous, or just irrelevant from the perspective of other women's lives. If feminism is a term people find appropriate to their attempts to improve women's conditions, they will use it. It would be regressive and ethnocentric for me to decide for them that they should adopt a term I find useful in my world. Nevertheless, I do use the word throughout this book, since I can assume that the majority of readers will find it appropriate here.

Several distinctive traditions of thought within which feminists have analyzed human nature, the fundamental causes of women's inferior conditions, and what should be done to change those conditions generate different issues about science, technology, and epistemology. Most important are the "grand theory" traditions that borrow from Western political theory: liberal feminism and traditional Marxist feminism. We should also include in this group the African American feminism that has strong roots, we are now learning, in the nineteenth-century struggles of African American women.⁶ Then there are the now well-developed feminisms that emerged in the politics of the 1960s: radical feminism, socialist feminism, and the feminisms of racially marginalized women both in the West and in the Third World, some associated with national liberation struggles.⁷ Other feminist political orientations and traditions can be located within and along-

6. See, e.g., Hazel Carby, *Reconstructing Womanhood* (New York: Oxford University Press, 1987); Angela Davis, *Women, Race, and Class* (New York: Random House, 1981); Paula Giddings, *When and Where I Enter: The Impact of Black Women on Race and Sex in America* (New York: Bantam Books, 1985).

7. See Alison Jaggar, *Feminist Politics and Human Nature* (Totowa, N.J.: Rowman & Allenheld, 1983).

side these: anarchist feminism, Jewish feminism, lesbian and gay feminisms, antimilitarist feminism, ecology-focused feminism, and others. Most of these feminists also work in other intellectual and political movements, as their compound identities indicate. Each of these “movement” orientations brings unique concerns and approaches to discussions of gender, science, and knowledge.

Moreover, feminists work in diverse social settings. In the United States we work in battered women’s shelters and rape crisis centers, in agencies for international development and mainstream political organizations, in law and medicine, in child-care and organizational management, in factories and secretarial pools, in computer programming and therapy—not to mention in laboratories and women’s studies programs. And we experience the consequences of developments in science and technology not only at work but also as pregnant women and mothers, as sick or old, as pedestrians or drivers, and every time we eat or even breathe. We experience science and technology in our everyday lives, in the struggles for dignity and survival that women engage in daily on behalf of their kin and community as well as themselves.⁸ In Western Europe and the Second and Third Worlds, there are other culturally specific daily activities of women that produce distinctive experiences of Western science and technology. It is in different and conflicting ways that women experience modern science and technology in each of these locations. Analyses from these different social perspectives have contributed insights—sometimes contradictory ones—to our understanding of the sciences and their technologies.

Additionally, the conceptual frameworks and current agendas of our disciplines and the various approaches within them have provided important resources for feminist science discussions. Feminist analyses have drawn from the history of science, focused on intellectual or social history, formal and informal institutions, economic history, or the history of individuals; from the sociology of science, focused on the structure of occupations, the workings of institutions, the legitimation of erroneous belief, the class structure of science, the sociology of knowledge, or the microstructure of laboratory life; from the philosophy of science, informed by traditional rationalist and empiricist agendas, Marxist epistemology, critical theory, the postmodernism of Jean-

8. See Bettina Aptheker, *Tapestries of Life: Women’s Work, Women’s Consciousness, and the Meaning of Daily Life* (Amherst: University of Massachusetts Press, 1989).

François Lyotard, Michel Foucault, Richard Rorty. All these theoretical and disciplinary frameworks—and others, such as literary criticism, psychoanalysis, and even art history—have provided rich resources for the study of gender and science.⁹ At the same time, the “prefeminist” schemes have limited or obscured important ways in which the relations between women, gender, and science could and should be analyzed.

A Complex and Changing Environment for Discussion

The joint action of these various competing and interacting forces in the terrain in which feminism also operates—indeed, feminism is also part of all of these other tendencies—will have consequences different from those one might imagine from the perspective of the feminist critiques alone. It is as if we were at the point at which bands of men and women leave the familiar streets of their different neighborhoods to join an ongoing march down a boulevard. We watch each band struggle to maintain its identity and carry its banners forward as it is jostled by boisterous groups with similar intent. As the crowd surges forward, some people leave their group to join others; some groups merge, and others disappear. The words of anthems change, and the inadvertent harmonies and disharmonies created when one hears two bands playing at once suggest previously unimaginable musical possibilities—not all of them desirable. The necessity to struggle to advance their goals in the environment of everyone else’s equally determined efforts creates configurations different from those of individual groups marching alone. Similarly, feminist tendencies must struggle against, with, and within these other streams of contemporary intellectual, political, and social life. The consequences of these interactions cannot but be surprising to everyone.

Challenges

Five issues that are at present emerging in one form or another from recent analyses of science, technology, epistemology, and feminism shape my concerns in the chapters that follow. The challenge in each

9. One good place for newcomers to start in this literature is the collection of essays in Sandra Harding and Jean O’Barr, eds., *Sex and Scientific Inquiry* (Chicago: University of Chicago Press, 1987). See also the sources cited in Chapter 2.

case is to develop conceptual frameworks that are theoretically rich enough and empirically adequate to enable us to think what appear at first to be contradictory thoughts.

(1) Science is politics by other means, and it also generates reliable information about the empirical world. Science is more than politics, of course, but it is that. It is a contested terrain and has been so from its origins. Groups with conflicting social agendas have struggled to gain control of the social resources that the sciences—their “information,” their technologies, and their prestige—can provide. For those who have suffered from what seem to be the consequences of the sciences, their technologies, and their forms of rationality, it appears absurd to regard science as the value-free, disinterested, impartial, Archimedean *arbiter* of conflicting agendas, as conventional mythology holds.

And yet sciences created through political struggles, which are the only ones we have ever had, usually do produce reliable information about nature and social relations—reliable, that is, for some group or another’s purposes. They are no less sciences for being driven by particular historical and political projects.

There are few resources in the conventional philosophy of science, epistemology, or sociology of science, however, which permit the articulation and exploration of these seemingly contradictory understandings. It is a challenge for feminism and other countercultures of science to develop conceptual frameworks that encourage widespread discussion of this apparently contradictory character of science.

(2) Science contains both progressive and regressive tendencies. So does feminism. To say this about science is to oppose the view that “science is inherently good, although it is sometimes applied in regressive ways.” And it is to oppose the view that “science is inherently value-neutral, although it can be used in progressive or regressive ways.” It is to oppose both views because they refuse to recognize that the social origins of science and the values it carries suffuse scientific projects. A critical examination of these origins and values can be carried out as part of the project of science, however. The very scientific rationality that has been the object of criticism from so many quarters contains the resources for its own transformation. Thus, what science becomes in any historical era depends upon what we make of it.

The same can be said of feminism. It too contains both progressive and regressive tendencies. It is not usefully conceptualized without qualification as inherently good—and of course no one characterizes it

as value-neutral—because its origins and the values it carries clearly shape its projects. Those of its tendencies that focus on male supremacy and gender relations without giving equal weight to other important aspects of social relations can provide resources for Eurocentrism, racism, imperialism, compulsory heterosexism, and class exploitative beliefs and practices—whether or not such a result is overtly or consciously intended. But it also contains tendencies that can contribute sturdy resources to the elimination of these forms of oppression, exploitation, and domination.

It is a challenge for feminism and other contemporary countercultures of science to figure out just which are the regressive and which the progressive tendencies brought into play in any particular scientific or feminist project, and how to advance the progressive and inhibit the regressive ones. The countercultures of science must elicit and address these contradictory elements in the sciences and scientific consciousness (and feminists must continue to do so with their various feminisms). The alternative is that regressive forces in the larger society manipulate these contradictory features and mobilize the progressive tendencies for their own ends. For example, international financiers appeal to belief in scientific and technological progress to gain support for technology transfers to the Third World which deteriorate the power of people there to control their lives. In the West it appears that there must be something wrong with “those people” if they cannot progress even when “gifted” with the supposed fruits of First World science and technology. Industries appeal to feminist themes about the importance of new health standards for women in order to produce profit from the sales of sporting goods, cosmetics, and so-called “health food.”

(3) The observer and the observed are in the same causal scientific plane. An outpouring of recent studies in every area of the social studies of the sciences forces the recognition that all scientific knowledge is always, in every respect, socially situated.¹⁰ Neither knowers nor the knowledge they produce are or could be impartial, disinterested, value-neutral, Archimedean. The challenge is to articulate how it is that knowledge has a socially situated character denied to it by the conventional view, and to work through the transformations

10. Donna Haraway focuses on the importance of his insight and supplies the useful term: “Situated Knowledges: *The Science Question in Feminism and the Privilege of Partial Perspective*,” *Feminist Studies* 14:3 (1988).

that this conception of knowledge requires of conventional notions such as objectivity, relativism, rationality, and reflexivity.

Another way to put the issue is to note that if science is created only within political struggles, as mentioned above, then our “best beliefs,” not just the least defensible ones, have social causes.¹¹ This means that observers and their subject matters are in the same social, political, economic, and psychological scientific planes. If, as the social sciences hold, class and race and gender relations must be called on to explain observable patterns in the social beliefs and behaviors of other people—of health profiteers, or the Ku Klux Klan, or rapists—then other aspects of those very kinds of relations have probably shaped the “empirically supported,” “confirmed by evidence,” and therefore less false results of our own fine research projects as well. We should think of the social location of our own research—the place in race, gender, and class relations from which it originates and from which it receives its empirical support—as part of the implicit or explicit evidence for our best claims as well as our worst ones.

One consequence of this claim is that we can understand how inanimate nature *simulates* encultured humans in that it always comes to us culturally preconstructed as a possible object of knowledge, just as do humans. Humans construct themselves as possible objects of knowledge and have also constructed inanimate nature as a possible object of knowledge. We cannot “strip nature bare” to “reveal her secrets,” as conventional views have held, for no matter how long the striptease continues or how rigorous its choreography, we will always find under each “veil” only nature-as-conceptualized-within-cultural projects; we will always (but not only) find more veils. Moreover, the very attempt to strip nature bare weaves more veils, it turns out. Nature-as-an-object-of-knowledge simulates culture, and science is part of the cultural activity that continually produces nature-as-an-object-of-knowledge in culturally specific forms.

Neither the conventional nor the countercultural science discussions have developed conceptually rich enough or empirically adequate frameworks to enable critical thought about the fact or consequences of recognizing that observers and observed are in the same scientific

11. The last part of this claim is the contention of the “strong programme” in the sociology of knowledge (to be discussed later in this book), with which I agree in this respect, though not in others. See, e.g., David Bloor, *Knowledge and Social Imagery* (London: Routledge & Kegan Paul, 1977).

field. This understanding brings into sight a new kind of agent of both knowledge and history.

(4) It is necessary to decenter white, middle-class, heterosexual, Western women in Western feminist thought and yet still generate feminist analyses from the perspective of women's lives. Feminists have argued for the decentering of masculinity in society's thoughts and practices: no longer should manliness (however that is culturally defined) be the standard for the so-called human; no longer should masculinity and its widespread expressions across the canvas of cultural life be the preoccupation of everyone's anxious attention. The centering of men's needs, interests, desires, visions ensures only partial and distorted understandings and social practices. (And it *must* be possible for women to criticize this institutionalization of masculinity without being thought to "hate men.")

But then it is also necessary to decenter the preoccupations of white, economically advantaged, heterosexual, and Western feminists in the thinking and politics of feminists with these characteristics. No longer should their needs, interests, desires, and visions be permitted to set the standard for feminist visions of the human or to enjoy so much attention in feminist writings. How can this decentering be enacted in the discussions and practices of feminist science and technology? What will be feminist about them if they are not grounded in the presumed common lives of women?

One way to approach this issue is to keep in mind the argument of Jane Flax and others that gender is fundamentally a relation, not a thing.¹² That is, masculine and feminine are always defined "against each other," though the "content" of womanliness and manliness can vary immensely. Furthermore, as Judith Butler argues, gender is not an "interior state" but a performance that each of us acts and reenacts daily.¹³ Moreover, we can see that the relationship picked out by "woman" or "man" is always a historically situated one. It is not constructed by relations between men and women in general, for there are no such persons and therefore no such relations. Nor are the gender relations between men and women in any particular group shaped only by the men and women in that group, for those relations too are

12. See Jane Flax, *Thinking Fragments: Psychoanalysis, Feminism, and Postmodernism in the Contemporary West* (Berkeley: University of California Press, 1990).

13. Judith Butler, *Gender Trouble: Feminism and the Subversion of Identity* (New York: Routledge, 1990).

always shaped by how men and women are defined in every other race, class, or culture in the environment. Gender relations in any particular historical situation are always constructed by the entire array of hierarchical social relations in which “woman” or “man” participates. The femininity prescribed for the plantation owner’s wife was exactly what was forbidden for the black slave woman.¹⁴ The forms of femininity required of Aryan women in Nazi Germany were exactly what was forbidden—and in fact eliminated—for women who were Jews, Gypsies, or members of other “inferior races.”¹⁵ So we cannot meaningfully talk about “women and science” or “women and knowledge” without exploring the different meanings and practices that accumulate in the life of someone who is a woman at any particular historical intersection of race, class, and culture. There are as many relationships between women and science as there are cultural configurations of womanhood (and of science).

Being white or Western or economically advantaged or heterosexual, however, need not be the scientific and epistemological disadvantage that one might expect it to be when one thinks about these identities as parallel to *andocentric* ways of being a man in gender relations. To decenter manliness does not mean that men can make no contributions to feminism or can generate no original feminist insights out of their own particular historical experiences. At least some have already done so. Similarly, white women can (and do) generate original anti-racist insights out of their particular historical experiences as white women. We can demand of ourselves that we do so as a condition of producing analyses and politics adequate to feminism in a global context. But just what we are to demand of ourselves from such apparently contradictory social situations as “male feminist” and “white anti-racist” requires more analysis than it has yet received.¹⁶

(5) The natural sciences are illuminatingly conceptualized as part of the social sciences. What kind of theoretical framework will enable us to understand sciences-in-society and the consequent society-in-sciences? According to one influential tendency in conventional thought,

14. Davis, *Women, Race, and Class*.

15. Gisela Boch, “Racism and Sexism in Nazi Germany: Motherhood, Compulsory Sterilization, and the State,” *Signs* 8:3 (1983).

16. Questions have been raised (by me, among others) about the ability of the feminist standpoint epistemology to deal with differences between women’s lives. Here, however, I defend the theory against these and related skeptical questions.

there is only one standard for what counts as science, and that is provided by the natural sciences. Physics, with its reliance on quantitative methods and its positivist ethos, is supposed to be accorded the highest rank among the natural sciences, with chemistry and then the more abstract areas of biology following behind. The social sciences are even lower on this scale. The “harder” social sciences such as economics and behaviorist psychology (cognitive psychology would now probably be substituted for behaviorism) lead the “softer” fields (softer to the extent that they rely more on “qualitative” studies) such as anthropology, sociology, and history. Some writers have even thought that the natural sciences should be the model for all knowledge, certainly for anything deserving such prestigious words as “scientific,” “rational,” and “objective.” The sciences are fundamentally one, and the model for that one is physics. This internal ordering reflects fairly accurately the power and prestige accorded different fields of research within the sciences today.

Such a conception, however, prevents us from developing *natural* as well as social sciences that are not systematically blinded to the ways in which their descriptions and explanations of their subject matters are shaped by the origins and consequences of their research practices and by the interests, desires, and values promoted by such practices. How can the natural and social sciences be lead to take responsibility for their social locations and thus for their origins, values, and consequences? To ask this is to ask a social science question. Adequate *social* studies of the sciences turn out to be the necessary foundations upon which more comprehensive and less distorted descriptions and explanations of nature can be built. This conclusion is demanded by recognition that the culture “knows” a great deal that we individuals do not. The culture remains the “authoritative knower” of all those things about us for which we neglect or refuse personal and institutional responsibility. It “knows” the Eurocentrism and androcentrism that “natives” in the culture routinely express but cannot detect. If androcentric or Eurocentric beliefs and practices are part of the evidence for one hypothesis over another (inadvertently or not), then as part of scientific practice we must learn how to detect and eliminate them. Although the outcome of the natural sciences is shaped by how well this job is done, the methods of the natural sciences have been the wrong kind to do it. Consequently, it makes good sense to think of the natural sciences as a subfield of the critical social sciences. We will all

have to think further about what this counter-intuitive proposal would mean in practice. Obviously, few fields of contemporary social science have methodologies, institutional structures, or agendas that are competent to identify the kinds of almost culturewide interests, values, and assumptions that end up functioning as evidence “behind the back” of the natural and social sciences, so to speak. Thus, it is one challenge to remedy this situation in the social sciences and another to conceptualize and then institutionalize a relationship between the natural and social sciences that will enable the former to get control of more of their evidence than they can now manage to do.

The Zairean philosopher V. Y. Mudimbe argues that just as European and American imperialists invented an Africa that would serve their purposes (they said they discovered it), so must Africans now invent a West that serves Africans’ purposes. The imperialists claimed to discover in Africa a primitiveness, a prelogicality, an immorality that could serve as the opposite of the purportedly civilized West they were simultaneously inventing. But such an approach can be usefully developed by the other side as well, Mudimbe points out. For Africans today, he argues, a “critical reading of the Western experience is simultaneously a way of ‘inventing’ a foreign tradition in order to master its techniques and an ambiguous strategy for implementing alterity.”¹⁷

The feminist discussions of science and epistemology are similarly engaged: we must “invent” the very Western sciences and institutions of knowledge in which we participate (and which pay some of our salaries) as bizarre beliefs and practices of the indigenous peoples who rule the modern West. We must master their techniques as we simultaneously continue to “discover” the ways in which they are “other” to ourselves and our agendas.

If we in the West can reinvent this part of the West, Western culture can learn things about itself and about the “others” against which it has built mighty conceptual and institutional fortresses. Of course, that will require different practices as well as different thoughts.

17. V. Y. Mudimbe, *The Invention of Africa: Gnosis, Philosophy, and the Order of Knowledge* (Bloomington: Indiana University Press, 1988), 171.