

Stronger Objectivity for Sciences From Below¹

Sandra Harding

1 Problems with “good research.”

A distinctive standard for maximizing objectivity in research emerged from feminist discussions of the 1970's and 80's. The standard had to be stronger than the prevailing ones since the latter had permitted sexist and androcentric assumptions and practices to shape some of the very best research in biology and the social sciences. Of course one could expect social values and interests to influence the results of research projects that failed to insist on the most rigorous methods. But “bad science” was not the main target of criticism here. The offending projects did already meet the prevailing research standards in their disciplines, whether quantitative or qualitative. The problem was that “good science” lacked the methodological resources to detect widely-held sexist and androcentric assumptions and practices that had shaped these results of research.²

Was the value-free standard for objective research the only reasonable one? Most people thought so. In spite of earlier intimations of deep problems with the prevailing standard, at least for the social sciences (e.g., Bernstein 1982), no viable alternatives had been proposed. In the context of the women's movements of the 1970's, a few voices were heard calling for the abandonment of the ideal of objectivity. But these calls came primarily from a few qualitative social scientists—ethnographers especially--where struggles to justify the value of qualitative research had to contend with critics among their colleagues who thought only quantitative research, presumed to be value-free, could be informative in a way that advanced the reliability, the predictive power, of social research.³ In contrast, feminist researchers in the natural sciences and most who worked in the social sciences wanted stronger, more competent standards for objectivity, whether quantitative or qualitative research was at issue. They wanted clarity about the nature of women's reproductive systems and of women's reasoning powers, about the causes of women's impoverishment and exclusion from economic and political decision-making, and about the illegitimacy of sexual assaults and domestic battery. Cultural relativist arguments, frequently used in anthropology, for example, were not acceptable in these contexts, they insisted.

Yet they had to figure out how to deal with the commonly perceived tension between the reliability of the results of research and the direction of research by political, social, and/or economic motives and interests, whether of scientists, sponsoring institutions, or the funders of research. Most natural scientists,

1 This paper (except for the “Afterword”) appeared as Chapter 2 in my *Objectivity and Diversity: Another Logic of Scientific Research*. Chicago: University of Chicago Press, 2015. An earlier version of that chapter was published as “Objectivity for Sciences from Below” in *Objectivity in Science: New Perspectives from Science and Technology Studies*, Flavia Padovani, Alan Richardson and Jonathan Y. Tsou, Eds. Dordrecht: Springer, 2015.

2 For examples of this kind of claim in early feminist research, see Bleier 1979, Brighton Women and Science Group 1980, Fausto-Sterling 1994, Haraway 1989, Gilligan 1982; Harding 1987; Harding and Hintikka 1983; Hubbard, Henifin, and Fried 1982; Kelly-Gadol 1976; Lowe and Hubbard 1983, Millman and Kanter 1975; Reiter 1975.

3 Just how value-free quantitative research can be is itself a controversial issue. Conflicting views of the nature of mathematics, and especially of such fields as statistics, sporadically trouble notions that mathematics is or can be value-free (Cf. Bloor 1977, Kline 1980, Restivo 1992).

quantitative social scientists, and philosophers of science found no reason to doubt that social/political values and interests could only damage the reliability of the results of research. The advance of “pure science” and “basic research” were considered the most important goals of good science.

What were these sexist and androcentric assumptions identified by feminist critics that had shaped what was regarded as the very best research? The literature here is immense, so just a few examples will have to suffice for now.⁴ In biology, medical and health research, women’s bodies tended to be conceptualized as no different from men’s except for their hormonal and reproductive systems, their smaller physical size, and the supposed limitations of their brains. Yet women suffered unnecessary sports injuries until coaches learned to recognize the distinctive anatomical differences that affected their performances. An influential metastudy of sex-difference studies found only six significant differences in boys and girls, men’s and women’s innate skills and capacities (Maccoby 1966). Women’s normal bodily processes, such as menstruation, pregnancy, childbirth, and menopause were consistently treated as problems that needed management by medical and pharmaceutical industries. The relief of depression in women was to be treated with drugs such as Valium rather than by addressing the causes of their depression, which were mostly to be found in oppressive social relations. Women’s beliefs and behaviors revealed them to be either immature forms of men, or inferior forms of human, according to the dominant assumptions. Biologists and philosophers of science challenged virtually every form of biological inferiority attributed to women in a rich series of studies beginning in the early 1970’s.

In the social sciences, the gender-stereotyped lenses of the disciplines led to women’s natures and activities either being ignored as natural, or misdescribed. To start, it was gender relations, not sex differences, that were primarily responsible for women’s conditions, feminists argued. Presumed sex-differences were reexamined through empirical studies that identified the normative social relations that created women’s supposedly “natural” daily lives. For example, “woman the gatherer’s” everyday activities turned out to be the main source of economic resources for everyone. The daily fare of such societies consisted primarily of seeds, berries, greens, roots, and the small mammals and birds caught by women. “Man the hunter’s” economic contributions were relatively infrequent treats, it turned out, not the day-in, day-out source of sustenance anthropologists had claimed. Women, not men, were the main “bread winners” in hunter-gatherer societies. Economists went on to challenge the way “work” was conceptualized such that women’s part-time, temporary, and seasonal work, their manufacturing and service work done in the household, their housework, “caring labor” for children, kin, and other dependents, sex-work, and work for voluntary organizations didn’t count as work. (We return to this issue in Chapter 3.) Moreover, most anthropological accounts were based on interviews and observations only by male anthropologists of only men in non-Western societies. Often women were not permitted to speak to men outside their families. Yet those male informants, like their Western counterparts, often knew little about women’s activities and social relations. The Western interviewers and observers tended to project Western gender stereotypes onto other cultures’ social relations.

Political theory assumed that “the political” was only what men engaged with in statehouses, courthouses and diplomatic circles. Yet gender relations in households and workplaces were also fully structured by relations of power and authority, the critics pointed out. Moreover, women’s voting patterns did not necessarily simply follow those of their husbands or fathers, as had been assumed. Women and men had different interests in households. Benefits to households or to “heads of household” were not distributed equitably within those households. Thus women and men had different interests in various public policy issues. The “women’s vote” turned out to be an important determinant of electoral politics. Sociologists assumed that the relevant social relations on which to focus were only the public, dramatic ones in which men engaged, ignoring most of women’s social relations.

Linguists charted the different speech patterns of women and men and the power relations each articulated and enforced. Psychologists critically examined the ethics of rights that has grounded liberal democracies. This ethics centers conflicts between autonomous adults who are capable of articulating their

4 A more extensive analysis of one particular field of research—feminist criticisms of assumptions shaping development policies and practices in the Global South—is provided in Chapter 3.

needs and desires. Feminists insisted on a complementary ethics of care and of responsibility, originating in the challenges women faced in making moral choices between the needs of, for example, the small children and the elderly and sick who were in their care, none of whom were autonomous or fully articulate adults. In every disciplinary organization, women's caucuses and feminist research collectives formed to challenge dominant disciplinary assumptions and to pursue neglected questions to which women wanted answers. So-called women's issues could not simply be added to disciplinary knowledge. The pursuit of such issues often challenged basic assumptions of the disciplines. Thus recognizing and valuing this kind of diversity in social values and interests would increase the reliability of the results of research, feminists argued. And by using a methodology that answered questions that women wanted answered, women gained resources to advance their interests and desires. What was this methodology?

In epistemology, philosophy of science, sociology of knowledge and political theory "standpoint theories" began to emerge from this new women's movement research.⁵ Taking inspiration from the Marxian "standpoint of the proletariat," these theorists argued that in societies structured by inequalities, the prevailing knowledge and belief tended to represent primarily the interests of the dominant groups. Yet these groups were made up virtually entirely of men. Women had been excluded from full participation—or even any participation—in such groups. Thus the dominant conceptual frameworks of the disciplines were by no means value-dominant group men. The research results produced within such frameworks then was used to design social policy that "made real"—installed in social life—only men's points of view. Catherine MacKinnon (1983) famously argued that "the state is male" to the extent that it understands rape only from the perspective of the men perpetrators. The more "objective" a claim appeared to the judicial system, the less it represented women's point of view. "Objectivity" had come to mean men's point of view, she pointed out.

One can summarize the range of such feminist criticisms of what was supposedly good, maximally objective, natural and social science research by noting that sexist and androcentric biases had shaped virtually every stage of research processes. They had shaped the selection of what could count as interesting or important scientific and technical problems, and what counted as relevant concepts and hypotheses on which to focus. They had shaped the design of research processes, what counted as relevant evidence, and the interpretation of data. They had shaped the conclusions drawn from the data, and to whom the results of research were disseminated. Most importantly, women had not been recognized as legitimate participants in the kinds of situations found problematic in the first place. As mainstream researchers have taken a long time to recognize, identification and serious consultation with all of the important stakeholders in a research process is crucial to avoiding the rest of the kinds of projects listed here.⁶ Similar criticisms have been produced in anti-racist, anti-class, postcolonial and the science projects of every other liberatory social movement.

The standpoint accounts proposed that in order to obtain more objective accounts of nature and social relations, researchers should start off research from outside the dominant conceptual frameworks—namely in the daily lives of oppressed groups such as women. Here I focus on the "strong objectivity" proposal that emerged from the standpoint theories, though the terminology and particular way it is explained here are mine. This strong objectivity proposal has several advantages. As indicated it starts off with clear recognition of how science is actually practiced in the real world today. It does not start off from an abstract ideal for what would make perfect science. Moreover, in light of this situation, it tries to identify the exact site of the main problem with conventional practices for achieving value-free research: the homogeneity of research communities, which is both "natural" (for example, only men) and trained (through disciplinary instruction). That is, such communities attract and admit only citizens with a distinctive set of elite social values and interests, and then train them into research practices that further advance such distinctive values and interests. Furthermore, the strong objectivity proposal is focused on answering questions about the relation between

5 The original papers by sociologist of knowledge Dorothy Smith, political theorist Nancy Hartsock, sociologist of science Hilary Rose, philosopher Alison Jaggar, historian of science Donna Haraway, sociologist Patricia Hill Collins, and myself are reprinted, along with a number of critical and reflective later essays, in Harding 1987. See also my 1986 and 1991.

6 Influential discussions of this issue with respect to diverse forms of discrimination can be found in Jasanoff 2005 and Reardon 2005.

the conditions of the subjects' lives and the larger social relations that shape those conditions. Additionally, it identifies in existing achievements in women's movement research just what the researchers did to achieve such successes, and recommends how to replicate such achievements in future research. It is grounded in existing "best practices" rather than an abstract ideal imposed from outside them. Finally, its assumptions and practices align with insights of the social studies of science and technology movement, an issue to be discussed in section 4 below. These characteristics make it simultaneously a methodology, an epistemology, a philosophy of science, and a sociology of knowledge. Hence the strong objectivity proposal and its standpoint approach have found homes in multiple disciplines.

The next section explains the strong objectivity proposal. Section 3 clarifies what this does and does not do by considering several familiar criticisms of it. Section 4 notes how standpoint methodology and its strong objectivity project are aligned with important insights of the post-Thomas Kuhn (1970) social studies of science movement. This alignment (unintentionally) locates the powerful analytic tools of the social studies of science movement on the side of standpoint theory and its strong objectivity proposal. In turn, the successes of the feminist analysis provide a kind of missing case study for these features of science studies.

I should note first, however, that the standpoint accounts were not the only feminist attempts to transform the notion of objectivity so that it could function more effectively. For example, such proposals have come from physicists Karen Barad (2007) and Evelyn Fox Keller (1984), and philosophers Heather Douglas (2009), Helen Longino (1990, 2002), and Miriam Solomon (2001), to mention the best known of such proposers. The projects of these theorists differ from mine. None have *started off* their projects from how knowledge is produced in the real world where corporate and state sponsors and funders shape so much of scientific research in the industrialized countries of the West, let alone around the globe. Some of them do take up the effects that such funders have on scientific work. Yet that is not the same as starting off research with questions that arise from the lives of those who receive disproportionately small benefits and must bear disproportionately large costs of that real world.. It is this context of everyday knowledge production, from the design and management of which women have been excluded, that shapes so much public policy that has such powerful effects on women's lives. Thus the standpoint projects intend to put desired resources for social transformation into the hands of women themselves, as well as policy-makers committed to improving the conditions of women around the globe.

2 What is "strong objectivity"?

No single meaning or referent for "objectivity." First, it is important to recognize that there is no single, fixed meaning of the term objectivity. Indeed, historians have shown how it is an essentially contested concept. In modern societies it remains a persistent site for controversies over conflicting claims to authority—in law and social policy no less than in science. Robert Proctor points out how claims to the value- neutrality of science sometimes are used to advance and sometimes to retard the growth of knowledge. Moreover claims to neutrality have been made both on behalf of and against democratic research tendencies (Proctor 1991, 262). Claims to value-neutral objectivity are always embedded in the larger political and social tensions of particular eras.

I have argued that the ideal of value-neutrality must be seen in political context. The neutrality of science is not the consequence of a logical gulf between fact and value, nor the natural outgrowth of the secularization of theory, nor even the outcome of the adoption of physical science methods into the social sciences. It is a reaction to larger political movements, including the changing use of science by government and industry, the professionalization of the separate disciplines, attempts to isolate science from sensitive questions of the day (Ibid. 267).

In addition to its shifting meanings, the term also lacks a fixed referent. Objectivity, or the incapacity for it, has been attributed to individuals or groups of them, such as in uncomplimentary dismissals of women, African Americans, or the indigenous knowers of non-Western cultures as tending toward self-interest and subjectivity. They are dismissed as incapable of producing the reliable knowledge claims that supposedly men, whites, Westerners, or some other elite group can produce. In another usage on which Thomas S. Kuhn (1970) focused, objectivity has been attributed to the particular kinds of inquiry communities that are characteristic only of modern science. Trained to hold a skeptical attitude to received beliefs, such communities must also develop principles of mutual respect and trust if such skeptics are not to suffer for articulating their critical perceptions. In such communities the lowest level graduate student is encouraged to think critically about dominant assumptions and claims, supposedly including those of his Nobel Prize-winning lab director. Often the term is used to describe the results of research. The facts produced are objective. Yet one can wonder what this use of the term adds to assertions that these research results are highly confirmed. Here “objective” seems to be a substitute for “true” or truth-like. Indeed, philosopher Ian Hacking has argued that abstract terms such as objectivity are only “elevator words,” intended to improve the scientific status of whatever is at issue.⁷

In actual research contexts the term is often used to refer to research methods. By this is usually meant data collection techniques such as observation, interviews, surveys, archival research, or statistical strategies. But in the account here, it is *methodology*, or theory of method, that is the concern. The question is how to go about doing research that simultaneously advances the comprehensiveness and reliability of the results of research and also produces resources for answering the kinds of questions most important to an oppressed group.⁸ In the writings of the standpoint theorists, these methodology issues are often referred to as “methods” of research, but it is always clear that it is not the techniques of data collection but rather the shape and purpose of the research project that are at issue.⁹

The core of a commitment to objective research. Does the term “objective” slip and slide around too much to provide clear meaning and referent? It does not. We can extract at least a shared core of commitment in these multiple meanings and referents. Objective research should be fair to the evidence, fair to one’s critics, and fair to the most severe criticisms one can imagine even if no one has yet articulated them. Of course this is the core of the conventional ideal of objective research. Thus “strong objectivity” is faithful to the central commitments of the standard view in spite of its rejection of the value-free ideal. Strong objectivity is indeed “real objectivity:” it is more competent to achieve such fairness goals than the version of objectivity that is linked to a value-free ideal. Keeping a focus on the objectivity of research methodologies draws attention to how a certain kind of political and intellectual ideal of diversity can be advanced through a distinctive research strategy that simultaneously advances the growth of comprehensive and reliable knowledge claims.

How should we operationalize maximizing objectivity? How is the epistemic/scientific goal of objectivity made functional in research, or “operationalized” as philosophers of science used to put the point? Good methods are supposed to be able to identify social values, interests and assumptions which researchers bring to the research process. (And they are supposed to be able to eliminate them, as we will shortly discuss). If a different researcher or research team repeats the procedures first used to support a claim, the same results are supposed to be found. Such a practice confirms the reliability and validity of the procedures. However, if those repeating the observations come up with different results, the cause of this difference may well be found in the values, interests, and assumptions which one or another observer or team of them brought to research. Of course it can have other causes, such as different observational or technical skills or practices, an inadvertently different population of phenomena studied, a dirty test tube, or a faulty statistical practice, etc. It turns out to be immensely difficult to replicate research processes from one lab or field station to another (Latour and Woolgar, 1979).

7 Hacking (1999, 21ff) is certainly right about how often the term is used in this way. Yet, as we will see below, I suggest there are still interesting things to be said about the objectivity of scientific ideals and practices.

8 McGill 1992 provides a similar list of referents for the term.

9 Of course feminists have also questioned data collection techniques, but that is not the main focus of standpoint methodologies.

This procedure of scientists repeating others' research processes certainly does work well to identify those values, interests and assumptions that differ between individuals or teams of researchers. But in cases where social values, interests, or assumptions are shared by all or virtually all the researchers in a given field, as has been the case for male-supremacy, white supremacy, or Eurocentrism, for example, repeating observations within such a field will not bring into focus shared social commitments. So how are such shared values and interests to be detected? It seems that the familiar standards for objective research do not have the self-critical resources to detect such widely-shared social commitments. Such standards evidently can only produce "weak objectivity." They are not competent to produce the "view from nowhere" that conventional philosophies of science have demanded. These days, because research tends to be expensive, the perspectives that tend to prevail in research are those of already-advantaged groups that can access funding. Consequently it is their economic, political, and cultural assumptions, intended or not, that tend to shape results of research. "Weak objectivity" is too narrowly focused to maximize the objectivity of research. (As we shall shortly see, in another respect it is also too broadly focused to advance that ideal.)

Start research from outside dominant conceptual frameworks. The strong objectivity program argues that starting off research from "outside" a discipline can enable the detection of the dominant values, interests, and assumptions that may or may not be widely prevalent, but that tend to serve primarily the most powerful social groups. "Dominant" can be used in a geographical sense to mean most widely used, and that may be the sense in which some people think of modern Western science as "universally valid." (Though scientists will mean by the latter term that, for example, the laws of physics hold everywhere in the world, not just for the interactions with nature of this culture or that one.) Here the term "dominant" refers rather to those that serve primarily the values and interests of the most powerful groups. Thus dominant conceptual frameworks serve the values and interests of the economically and politically most vulnerable groups only in those cases where everyone holds the same values and interests. For example, modern Western medicine has served most people's values and interests in its attention to communicable diseases, since the King no less than his slave can catch the measles or HIV/AIDS. But it has not done so in its preoccupation with health problems that affect mostly rich people, or that when it produces remedies that only rich people can afford.

What does it mean to start research from outside one's discipline? Of course one can never get completely outside of one's socialization into a research discipline, let alone outside of one's historical era more generally, in order to float freely above culture and history, as the conventional philosophies of science have imagined possible. No one can see everywhere in the world from no particular location in it at all. No one can attain "the view from nowhere" that Donna Haraway (1988) has memorably referred to as "the God Trick." But finding or creating even just a little distance from prevailing assumptions and interests can be sufficient to enable critical perspectives to illuminate issues in new ways.¹⁰

How can this critical distance be located and used to maximize the objectivity of research? One important way to do so has been to create missing diversity in research communities. "Affirmative action" can turn out to provide scientific and political benefits for communities as well as for the individuals newly joining them. Of course not every kind of apparently missing "diversity" will assist in this project. We don't need to invite supposedly missing white supremacists, neo-Nazis, or male supremacists into research communities in attempts to advance the growth of knowledge. While their perspectives can usefully themselves be objects of critical scrutiny, we already are all too familiar with the kinds of assumptions and methodologies they use and the results of research that their perspectives tend to produce. Indeed, it is their assumptions that all too often have so deeply permeated prevailing research standards that strong objectivity is required to identify and dislodge them. Rather, it is the perspectives of economically, politically, and socially oppressed groups that can bring valuably novel kinds of insights to research projects. So the strong objectivity project problematizes the uncritical recommendation of mere diversity of human bodies--mere multiculturalism--in scientific communities. That is a widely-held liberal position that fails to recognize just what is so scientifically

10 Recollect that Kuhn (1970) had noted that researchers who are well trained in one scientific discipline can often bring useful insights to another discipline.

and politically valuable about thinking from the lives of oppressed groups. Mere diversity doesn't have the theoretical and analytic resources to capture what is so valuable about "missing perspectives."¹¹

Another strategy has been to form alternative research communities. All of the recent social justice movements have pursued this project. These two strategies have often combined in the institutionalized structure of disciplinary organizations in the United States. The standpoint of poor people, of racial and ethnic "minorities," of people in other cultures, of women, of sexual minorities, and of disabled people are perhaps the most widely-used diversity standpoints from which dominant knowledge claims in every discipline have begun to be reevaluated. Such groups have not been the ones who designed and today maintain the dominant institutional policies and practices that disadvantage them. Such institutions do not provide disadvantaged groups with the knowledge and power they need in order to manage their own lives in their own terms. Consequently, like "the stranger" in the classic sociological narratives whose perspective can identify things invisible to "the natives," researchers "from below" can bring a focus to features of the dominant economic, political, legal, educational, ethical, and family institutions that the dominant groups either can not or refuse to recognize¹²(Collins 1991). Moreover, national differences often become visible in international disciplinary organizations. These days, many of the deep cultural commitments of the modern West in its sciences and their philosophies are also finally becoming visible in the West. We are beginning to learn how to respect the critical perspectives on the West that arise from the point of view of other cultures' situations and their legacies. Postcolonial science and technology studies has been especially helpful in this regard (Harding, 2008, 2011).

Which values and interests advance the growth of knowledge? However, it is not enough simply to be able to identify culture-wide assumptions that shape our own research projects. Strong objectivity demands interrogation also of just which cultural commitments can advance growth of the kinds of knowledge a particular community desires. Weak objectivity was too narrowly focused to detect the values and interests that most powerfully shape research. Yet in another respect it has been too broadly focused to maximize objectivity. It demanded that all social values and interests originating outside research processes be eliminated from them. Yet in our real world, it cannot be that all useful knowledge that social communities might want could be produced by sciences funded primarily by profit-making corporations, militaries, and imperial governments. Researchers may themselves (at least theoretically) be completely free of oppressive social values and interests, and yet find that their interests in so-called pure science and so-called basic research lead them to do research that clearly advances the values and interests of their sponsors and funders. This kind of situation has created the enduring drama of the dilemmas of the physicists working on the atomic bomb project. After all, if sustainable environments, the eradication of poverty world-wide, and the elimination of political, economic and social inequality were actually the values and interests of the dominant groups, not just what they claimed to believe important when caught in practices that deteriorate movement toward such goals, those threats to human flourishing would have been eliminated long ago.

Societies with different values and interests have in the past, do now, and will continue to produce kinds of reliable knowledge claims that conflict with ones emerging from dominant Western interests and values. Particular kinds of societies are co-produced with the particular kinds of sciences they want: each enables and limits the other. This insight emerged from all of the anti-authoritarian social movements of the 1960's and from newly decolonized states. It has subsequently been articulated by the field of science studies, to which we shortly turn. The values and interests of anti-authoritarian, pro-democratic social movements appear to be promising candidates for research communities to call upon in order to increase the comprehensiveness and reliability of the results of research.

A logic of inquiry. So this is the "logic of inquiry" that begins from recognition of how today's natural and social sciences are in fact deeply entangled in everyday social and political policies, and practices, and

11 Yet it is not usually either necessary or desirable to ban such research. More productive is open, broad-scale democratic deliberation about what kinds of research best serve the goals of multicultural democracies, which is one of the over-arching themes of this study. Note, also, that this restriction on what should count as desirable diversity distances the account of this book from calls for "mere diversity."

12 The language of "from below" originates in thinking of the ruling "top" and the ruled "bottom" of hierarchical social systems.

especially those promoted by corporations, militaries, and nationalisms—by the most powerful forces within states and around the globe. Our sciences are by no means value or interest free. The research projects that even the very best intentioned scientists find interesting and can get funded (and most scientists are such well-intentioned ones), tend to align with the values and interests of those powerful institutions. Thus regardless of the intentions of scientists, scientific research has become linked in only a pale and fragile way with democratic social movements when it is sponsored and funded by such institutions.

Some readers may bristle at using the language of “logic of inquiry” to characterize standpoint epistemology and methodology. That phrase is associated with logical positivists’ attempt to achieve a “rational reconstruction” of what they took to be modern Western science’s distinctive ontology and method of inquiry. They intended to draw a sharp border between the “context of justification,” where hypotheses were rigorously tested to eliminate value commitments that might have slipped into scientific thinking, and the “context of discovery,” where social values and interests clearly shaped which problems were considered worthy of scientific examination, what the favored concepts and hypotheses would be, and the design of research projects. The reliability of the results of research could only be increased by keeping clear the importance of this distinction through rigorous supervision of, and only of, the context of justification. Scientific creativity would be suffocated, they thought, if there were any attempts to police the context of discovery. After all, think of all the insights originating serendipitously, such as x-rays that turned out subsequently to be valuable.

Such projects have for some time largely been openly abandoned by philosophers of science, even though much of their spirit and continues to enliven thinking in philosophy and in research disciplines, creating a horizon of reasonable thought about scientific methodology that has been hard to move beyond. The very term “logic” suggests a unique thought procedure or model of rationality to which there are no reasonable alternatives. The project of this book is positioned against such assumptions and practices.

Yet we use the term “logic” in an everyday way to mean simply a reasonable procedure: “There is a logic to the reason the squirrel buries his acorns in my flower pot.” I am arguing that standpoint methodology in fact proposes another, different, reasonable procedure for conducting scientific research. Starting off research from the questions that arise in the lives of groups excluded from significant participation in designing and managing our social institutions and practices permits us to recognize new and valuable—often to us, privileged groups also—kinds of questions and procedures for answering them that did not, and perhaps could not, occur to people from the groups who did design and manage our social worlds. So, I am arguing, we have here another “logic of scientific inquiry.” There is no reason to give up the powerful term “logic” just because we now think that logical positivists were mistaken in taking their rational reconstructions of scientific processes to describe the one and only reasonable kinds of such processes.

One further issue: what is the relation of standpoint methodology to disciplinarity? It initially emerged from several disciplines, as indicated earlier: sociology of knowledge, sociology of science, political philosophy, epistemology, philosophy of science. Overtly it is critical of conventional disciplinary frameworks. However, its practitioners tend to use it to criticize the particular frameworks of their own disciplines. They want to transform sociology, social and political theory, epistemology, or the philosophy of science, among other disciplines, so that they serve women’s interests and desires, for example. Consequently, standpoint methodology can take different forms in different research contexts as it engages with particular disciplinary histories of theory and practice focused on relations between experience and knowledge, society and science. In this sense it is deeply disciplinary. Indeed, practitioners in one discipline frequently seem unaware of standpoint theory’s career in other disciplines.¹³ It is also multidisciplinary, since its practitioners regularly use insights from feminist work in at least several other disciplines to strengthen their arguments against the particular assumptions of their own disciplines. In whatever discipline it functions it opens up new possibili-

13 Compare, for example, the two readers addressed respectively to Dorothy Smith’s and Nancy Hartsock’s particular formulations of standpoint theory (Campbell and Manicom 1995; Kenney and Kinsella 1997). Each originated in panels from those author’s respective disciplinary organizations. There is virtually no mention in either volume of the standpoint project at the same time emerging from feminist work in the other discipline.

ties for debate about the relations of experience to knowledge, as social theorist Fredric Jameson (2004) has put the point. And because it does so in a methodological way it is also a transdisciplinary logic of research. So, to summarize, standpoint methodology is anti-disciplinary, deeply disciplinary, multidisciplinary, and trans-disciplinary.¹⁴

It is also an *organic* epistemology/ methodology. Whether or not the language of standpoint and strong objectivity is used, every oppressed or marginalized group “stepping on the stage” of local or global history tends to say something like “from the perspective of our lives, things look different.” And then they go on to organize the development of answers to the kinds of questions important to them, for them to flourish: to become a group “for itself” rather than only “in itself”—that is, recognized only in terms provided by others, rather than by themselves-- as Marxists put the point. This organic quality helps to explain why standpoint approaches to the production of knowledge have independently appeared in social movement after social movement in the last half century: the U.S. Civil Rights movement, the anti-apartheid movement in South Africa, poor people’s movements around the globe, the lesbian, gay, bi-sexual, and trans gender movements, disability movements, and now recently Occupy Wall Street movements, and the Arab Spring uprisings. In each case groups have organized to promote the production of answers to the kinds of questions about nature and social relations that have been important to them. In the process, greater diversity in the production of knowledge has greatly increased the comprehensiveness and reliability of everyone’s knowledge, and this research methodology has in turn produced powerful resources for diverse progressive groups.

Shock! What a change from the relations between scientific research and social and political interests that were imagined by the logical empiricists (logical positivists) who created modern philosophies of science during and after World War II. For them, race- and class-based sciences had become a huge problem. Nazi science, articulated in the holocaust, was race-based, and Soviet science, articulated in the Stalinism of the collectivization of peasants and the hideous punishments of the Gulags, was class-based. How could these philosophers, scientists, and their students from the 1950’s and 1960’s, the latter of whom are now senior faculty in philosophy, natural and social science departments, think that the “diversity” tendencies in contemporary politics and philosophies of science are a good idea? New ways of thinking about this particular issue in the history of the philosophy of science are examined in Chapter 5. But it will be valuable to pause at this point and briefly review the most common criticisms of standpoint methodology and its strong objectivity program, as well as the responses standpoint theorists have made to these criticisms.

3 Criticisms and Challenges

This notion of strong objectivity and its standpoint methodology have disseminated widely across disciplines. As indicated earlier, their practices have also independently emerged wherever social justice movements claim authority for the distinctive ways that they see the world. In the U.S. and Western Europe, both standpoint methodology’s fans and its critics have sometimes tried to fit it into methodological practices and epistemological positions already familiar to them. This tendency frequently misreads both the strengths and limitations of this approach. Alternatively, critics can tend to fault the standpoint approaches for not grounding their claims in precisely the older philosophies of science to which standpoint methodology and its strong objectivity object. Additionally, a number of the criticisms of it that were raised in its early years have become moot. In some cases it is now generally understood that the critics of standpoint approaches misrepresented its claims. In response to such critics standpoint theorists have more carefully articulated their claims. Yet other critics have raised interesting questions that cannot yet be settled.¹⁵ Here I will summarize the

14 I do not use the term “interdisciplinary” because it tends to conflate three of these meanings (all except deeply disciplinary).

15 In addition to the two readers addressed respectively to Dorothy Smith’s and Nancy Hartsock’s work mentioned above, two extended analyses and critiques of standpoint theory by distinguished feminist theorists appeared in *Signs: Journal of Women in Culture and Society*, each with responses by some of the original standpoint theorists (Hekman 1997, Walby 2001). A recent reader brings together the original standpoint essays plus a number of diverse readings and criticisms of it (Harding 2004). Additional analyses and criticisms can be found in book reviews of the work of the standpoint theorists as well as in the work

main criticisms of standpoint theory by anti-feminists as well as adherents to other feminist epistemological and philosophy of science approaches, and responses to them.¹⁶

Does the strong objectivity program introduce politics into otherwise value-neutral sciences? No. It identifies how prevailing politics have already directed research projects and how these show up in the results of research. And it shows how some other kinds of politics (anti-male-supremacist, anti-white supremacist, etc.) can in fact advance the growth of knowledge.

Does the strong objectivity program advance an “identity politics?” Several questions can be intended here. One is whether strong objectivity’s procedure of “starting from women’s lives” (or the lives of some other oppressed group) assumes that women share some set of values or experiences, and thus an identity. In some cases researchers may indeed make such an assumption. But there is nothing in the “logic” of stand point methodology that demands this feature. Note that it is always some particular sub-group of an oppressed group from which researchers are to start off their projects—for example, mothers incarcerated in federal prisons in the U.S., or women graduate students at Tier 1 universities in the United States. Assumptions about what this particular group of women share may be warranted or not. Obviously attention to economic, political, social, cultural, and other differences between women, their values, experiences, and identities is crucial for the reliability of the results of research.

Another misunderstanding here can be that standpoint approaches hold that the knowledge claims made by members of oppressed groups are always correct, that they are incorrigible.¹⁷ But no knowledge claims can gain automatic assent. Standpoint claims are as corrigible as any others. Recollect that the unreliability of a knowledge claim cannot be established by showing that the researchers had any particular motives or interests in producing it. As noted earlier, many reliable knowledge claims are produced by research funded by corporate and military research, not to mention health, environment and other obviously highly motivated concerns.

Yet another misunderstanding is that only those who are themselves members of a particular oppressed group can develop and use a research or policy standpoint that comes from that group. For example, only Latinas, or Muslim women can develop research projects that start off from those particular daily lives. Yet Latinas differ from each other in class, ethnicity, sexuality, nationality and other ways, and so, too, do Muslim women. Is each of us the only reliable experts on our own lives? If this were so, social science would be impossible. Moreover historians and therapists, not to mention Marx and Freud, inform us of the many ways in which we can not even claim to be experts about our own lives! In the case of the anti-authoritarian social movements, the very point of developing such standpoints was to change the consciousness not only of members of the group itself¹⁸ but also of others who might be convinced to see social relations the way oppressed peoples do. Whites and African Americans who were highly educated and/or had already been voting were recruited to join the Civil Rights movement in the 1960’s, not just those who suffered the most extreme deprivations created by white-supremacist policies and practices. . Of course these recruits could not have the *same* experiences as the standpoint initiators. Nor would they be as sensitive to the more subtle forms of discrimination and oppression that the standpoint initiators experienced. Yet oppressed groups *want* the rest of us to start off thinking and research from daily lives that are not our own when we do research and make policy about health care, family practices, educational policy and other issues. They *write books* and file lawsuits to change how everyone else thinks and acts. Feminisms always have *wanted* men to learn to think about their own behaviors from the standpoint of women’s daily experiences, not

in philosophy of feminist empiricists, such as Grasswick 2007, Longino 1993, and Potter 2006.

16 This account expands on the one given in Harding 1992.

17 In early writings I used the language of “epistemic privilege” to describe what was at issue in standpoint theory. I was thinking of the constantly reported lack of credibility attributed to reports by women of rape and domestic battery, of their bodily experiences as reported to physicians, of their harassment and otherwise unequal treatment in workplaces, etc. However, this term misled some readers to assume I meant that such reports were incorrigible, and this was so in spite of my accounts of how we often revise our reports of our experiences in light of observations by therapists, historians, etc; they are always corrigible. I no longer use this language.

18 To turn women into a group “for itself” (that is, conscious of the structural causes of patterns in our lives) instead only “in itself” (that is, as others define us).

through the male-supremacist stereotypes that have directed so much public policy and practice as well as behavior in intimate relations.¹⁹

Standpoint theory does argue that researchers who seek out the perspectives of economically, politically, and/or socially vulnerable groups that have not designed and managed the dominant institutions, their cultures or practices, can gain the resources of an important source of new research questions, and new information and insights that increase the scope and reliability of the results of research.

Can strong objectivity be relevant to the natural sciences? Don't they already have adequate safeguards against social biases? Such critics presume that eventually social and cultural elements of research are always winnowed out leaving the resounding successes of physics, chemistry, and biology as “pure science” or “basic research.” Certainly a lot of such removal of social and cultural elements does happen in the life of a research project and its knowledge claims. However, studies by sociologists, historians and ethnographers of how research is organized and how its results are produced in biology, medicine, environmental studies, engineering, and even physics and chemistry have shown how these processes, too, are co-constituted with their social orders and will share distinctive social features with them. To be sure, one should not expect to find the kinds of now-obvious social features in the more abstract sciences that are easily visible in sciences focused on human relations. But the former are still co-constituted with their social orders. They, too, can benefit from questions arising “elsewhere,” as critiques by later generations and ones posed by observers from other cultures have compellingly demonstrated. Yet social justice movements cannot wait for the large-scale social transformations that will enable the detection of widely held erroneous assumptions that support what are now powerful inequities. Rather, they hold that such transformations must themselves be hastened by challenges to false and oppressive knowledge claims.

Is strong objectivity too modern? Is it too postmodern? Does strong objectivity retain too much of the Enlightenment, or positivist, or logical empiricist conceptual frameworks? Or, alternatively, does it abandon concerns for truth and the reliability of scientific knowledge claims? The prevalence of both criticisms reveals that standpoint methodology is doing something different from the principles of both camps (Harding 2004). It does not give up Enlightenment, positivist, and logical empiricist concerns that research should be fair to the empirical evidence, to its strongest critics, and to the highest ethical principles and the goals of social justice, as indicated earlier. Of course what counts as fair in each of these cases has differed from generation to generation and culture to culture. Standpoint projects importantly advance Enlightenment goals as these make sense for our world today.

Yet the updated “modern” that is the goal of the social justice movements is not the modernity cherished in the 1950's, let alone in earlier eras. Thus stalwart devotees of the Enlightenment and its modernization theory have often not been happy with standpoint theory and its strong objectivity attempts to move past older notions of the modern. Yet as I have argued elsewhere, ironically postmodern critics often themselves make kinds of *modernist* assumptions that standpoint projects challenge. For example, in their rejection of philosophies of science, they, too, assume that there can be one and only one set of institutions and practices to which the term “science” can apply. They assume, along with the positivists they criticize, that only Science (modern Western) can count as science. They are unfamiliar with the postcolonial science studies discussions as well as with mainstream Western science studies (Harding 1988). For these kinds of reasons, discussions of whether standpoint theory and its strong objectivity are too modern or too postmodern tend to be mainly confusing, in the view of this observer.

19 Can children, mute people, mentally disabled people and others not able to articulate their experiences and values in the kinds of ways that can fully-abled adults develop standpoints? Can those who can't organize as a group- for- itself do so? What about animals? Can we who are fully-abled adults start off from the daily lives of members of such groups to develop their standpoint? On the one hand, such possibilities cannot assume all of the powers of social justice groups that standpoints theorists intended to activate. On the other hand, there may be good reasons to consider standpoints a continuum of possible positions with varying powers. This interesting issue cannot be pursued further here.

Does strong objectivity embrace or fall into relativism? Does strong objectivity endorse the position that every group is “its own historian,” as prize-winning historian Peter Novick (1988) despaired? He was discussing how the discipline of history was losing its coherence through anti-authoritarian challenges to the very standards of value-free objectivity that had enabled history to professionalize and become a discipline. Does strong objectivity abandon the importance of truth, value freedom, and universally valid claims and practices about nature and social relations? In my opinion, there are two acceptable ways to answer this question. One is to argue, as I have above, that strong objectivity standards simply recognize realities about nature and social research practice that could not be detected in earlier eras. For example, there is no “view from nowhere” position that ever could exist from which one can see every social and natural reality past, present, and future. So one must take advantage of the distinctive kinds of knowledge that can be produced from previously disregarded starting points. As indicated earlier, new human desires for knowledge are forever emerging, the world is too indeterminate and too complex to permit such a “total” understanding of nature and social relations, and nature keeps appearing to us in surprising forms. Think of tectonic plates, ozone holes, melting ice caps, “dead” areas in the oceans, and retro viruses. (This issue is pursued in Chapter 5.) So such new apparent truths require new kinds of scientific standards and practices. Again, the reliability of a knowledge claim is not dependent on the motives for producing it.

But at this point one could use the term “principled relativism” to refer to standpoint theory and its strong objectivity, as did Frederic Jameson (1988). Strong objectivity is not committed to all knowledge claims being equally valid; it is not committed to “anything goes,” as Paul Feyerabend (1975) put the methodological point. It is committed rather to “situated knowledge,” in Donna Haraway’s (1988) words.²⁰ That is, it is committed to the inevitability of deeply conflicting knowledge claims, each trailing impeccable evidence in the eyes of its holder. Yet the situations of such knowers always both enable and limit what they can know. In support of such a position we can recollect that most research in the natural sciences is “mission directed” to improve health, generate greater profit, produce effective weapons, defeat global warming, and so forth. Yet no one thinks the results of such research invalid because such projects were undertaken for such human purposes. As we will see in Chapter 5, it is harder for issues about relativism to arise if we can also block questions about scientific realism. With that teaser I leave for Chapter 5 pursuing this discussion further.

Is strong objectivity too Western? Is it too white? Of course this epistemology here in this volume has itself been produced at a particular time and place for specific purposes and within the discourses available to their creators and users. Philosopher Uma Narayan (1989) points out that the validation of women’s experience, on which Western feminists insist, cannot carry the same kind of critical edge in a society where women’s different experience is already validated. She points to Hindu society where the genders are conceptualized as having complementary rather than hierarchical relations. Women are not lesser than men, in this kind of gender system; men and women are simply different from each other. Of course such societies can and do oppress and exploit women no less than in societies with hierarchically organized gender. Yet Narayan’s comment suggests that some other epistemological/methodological strategy is needed for feminist work in such circumstances.

Moreover, Narayan notes that standpoint theory and strong objectivity were developed in opposition to positivist norms in Western research. Yet positivism has not had the hegemonic status in other societies, such as India, that it has had in many Western natural and social sciences. Indian feminists face other problems with their local research establishments and need different epistemic/methodological tools for their projects. Confirming this perception, Chela Sandoval (1991) has developed a form of standpoint methodology that she finds more useful for U.S. women of color, and Patricia Hill Collins (1991) and bell hooks (1990) have given it distinctive transformations to serve their needs as Black feminist theorists.²¹

20 Note that Haraway’s essay where she introduced this term originated as a commentary on my *The Science Question in Feminism* at a Pacific Division meeting of the American Philosophical Association.

21 I am not claiming that hooks and other authors who do not explicitly refer to standpoint theory or strong objectivity in fact are merely tweaking the arguments developed by the feminist standpoint theorists cited earlier. Rather, I proposed earlier that the strong objectivity and standpoint positions tend to emerge whenever new groups that oppressed peoples organize on their

Indeed, it is clear that there are a number of other distinctive cultural assumptions that shape much Western feminist work. For example, few feminists have critically examined the distinctively Christian and Protestant religious and spiritual commitments that have been identified as embedded in a Western secularism that is also a foundational commitment of Western sciences and their philosophies and methodologies, including feminist varieties. We return to this issue in Chapter 6.

Finally, Third World U.S. feminists and feminists in other cultures find useful critical tools in their own traditions, as Sandoval, Collins, and hooks demonstrate. The standpoint methodologies and strong objectivity program developed in the U.S. and Western Europe can be useful outside such contexts, but they cannot be the only such useful feminist methodology.

These criticisms and the responses to them indicate how figuring out the most useful articulation of standpoint methodology and its strong objectivity project has been and remains a work-in-progress. Its proposals run counter to deeply-held beliefs about the appropriate relations between science and society, knowledge and experience. Yet its fundamental perceptions and claims can be supported also by noting their alignments with arguments emerging from the social studies of science and technology over the last half century.

4 Alignments

A number of the insights and strategies of standpoint methodology and its strong objectivity program align with those of the social studies of science and technology research field (SSST) that was started off by Kuhn's *The Structure of Scientific Revolutions* (1962) and by the work of sociologists of science such as Jerome Ravetz. (1971).²² I say "align with" since the SSST has only rarely in the past raised issues about the implications for its own science projects of pro-feminist, multicultural or postcolonial political and scientific goals.²³ The recent studies of "sciences from below" that use a standpoint methodology, whether or not it is so named, can seem to have little in common with the laboratory studies that were so innovative in the first generation of sociologies, histories, and ethnographies of the natural sciences. Indeed, the field of SSST has been slow to see the relation of postcolonial and feminist studies to their iconic lab studies, let alone as capable of making important contributions to the kinds of themes on which SSST has focused. And this is so in spite of iconic early analyses by such scholars as Donna Haraway (1989), Evelyn Fox Keller (1983), and Sharon Traweek (1988).²⁴ Was this iconic status of laboratory studies in part responsible for the disinterest in the anti-authoritarian social movement science studies work? Those studies were immensely illuminating. Yet postcolonial, anti-racist, and feminist work has been marginalized, at best, in the ways the field presented itself, for example in its series of handbooks and readers.²⁵

Fortunately, the field is currently in the midst of a thoroughgoing transformation in this respect. Recently there has been a welcome participation in the disciplinary organization of this movement—the Society for the Social Studies of Science (4S)—of scholars from around the globe focused on non-Western perspectives on the social production of science.²⁶ Yet, I am arguing, the field had earlier arrived at insights that in important respects are in a mutually supportive relation with analyses from the anti-authoritarian social movements. Here I identify just four of these science studies arguments with which the standpoint methodology and its strong objectivity program align.

own behalf ("for themselves") critically evaluate the inadequacies of dominant views. The strong objectivity program and its standpoint theory are organic "logics of scientific inquiry" for creating "sciences from below."

22 See, for example, these subsequent handbooks: Jasanoff et al 1995, Biagioli 1999, Hackett et al 2007.

23 Anderson 2009 identifies several kinds of alignments between postcolonial theory and the social studies of science and technology (SSST). However, my focus is on alignments between advocacy of "strong objectivity," on the one hand—which, I argue, appears in all recent democratic liberation struggles—and, on the other hand, SSST.

24 Nor, I note, have the issues in Harding 1986 or Harding and Hintikka 1983 been taken up by the field.

25 See citations in note 17. To be sure, it is not that the leaders of the science studies community were completely unaware of these issues. Rather, the critiques of science from the anti-authoritarian social movements evidently seemed to people working in SSST to offer no challenges or opportunities for them to reposition their own analyses.

26 See, for example, the call for papers for the next, fourth, Handbook of the Society for the Social Studies of Science (to be published in 2016) at the 4S website as of July 2013.

Objectivity is dynamic; it has a history. One such alignment can be found in the evidence that objectivity ideals and favored strategies for achieving them have social histories; that is, they change in response to shifts in scientific methods and goals, as well as from processes in and pressures from society (Daston and Galison 2007, Jasanoff, 2004, 2005, Novick 1988, Porter 1995, Proctor 1991). Historians Lorraine Daston and Peter Galison show how standards for objectivity shifted as new technologies of observation were introduced in the production of scientific atlases over the last several centuries. For example, the introduction a century and a half ago of photography and other mechanical transcribers of nature's regularities enabled a new notion of objectivity which Daston and Galison refer to as mechanical objectivity. With this shift objectivity became detached from the goal of "true to nature" that had characterized the earlier beautiful engravings of plant species one can find in atlases.

In this account objectivity thus becomes one more feature of research ideals to lose its aura of universal validity and become located in particular historical contexts.²⁷ Thus a recent emergence of practices of strong objectivity in the context of increasing demands on states and their sciences for accountability to the needs and desires of social justice movements can be contextualized as just one more such moment in the history of this research ideal. Showing that objectivity has a history is an example of the more general trend in science studies to "deconstruct" supposedly universally valid ideals of Western philosophies of science, identifying their historical specificity.

Sciences and their societies are co-produced or co-constituted. This central theme of SSST was mentioned already in the first chapter. Steve Shapin and Simon Schaffer (1985) introduced into SSST the image of the co-constitution or co-production of sciences and their societies. They did so with their study of the correspondence between Hobbes and Boyle as these two influential figures struggled to bring into existence distinctively modern democracies and sciences respectively. Subsequently, Sheila Jasanoff (2004, 2005) demonstrated how different national anxieties and political cultures required different strategies to secure the objectivity of biotechnology decisions in Germany, England, and the United States. In Germany, memories of the hideous political and scientific decisions of the fascists have made leaders of the scientific community especially anxious to insure that every kind of stakeholder is represented in the initial design of biotechnological research. "Never again," is their motto. So maximizing objectivity requires that researchers exert great efforts to get critical perspectives on such research designs from every kind of group that might be affected by the research results. In England, maximizing objectivity requires that the heads of research teams be scientists with long successful experience in the relevant kind of research and with impeccable ethical characters. In the United States, risk assessment and its quantitative results of research are regarded as necessary to maximize objectivity because dissatisfied people in the United States often take their complaints to law courts, and this kind of evidence tends to be most compelling for convincing juries. Thus Jasanoff showed that the scientific institutions and practices of different societies can exhibit different standards for maximizing objectivity, or, at least, different practices to reach maximal objectivity in a particular local political context.

This language of co-production and co-constitution of sciences and their societies was a welcome replacement for the earlier language of the "social construction" of science, which had emerged in the early days of the development of the social studies of science and technology. The co-construction language even had a better fit with Thomas S. Kuhn's argument five decades ago that the very best sciences exhibited an "integrity" with their historical era; they made the kinds of assumptions and focused on the kinds of problems characteristic of their particular social moment, but not necessarily of earlier or later ones (Hollinger 1996, Kuhn 1962). Such sciences might be autonomous from their societies in the sense that no economic, political, or social authority was explicitly directing their agendas. Yet this kind of autonomy has gotten scarcer in recent decades as research has gotten more expensive and as information has increasingly become the most important "capital" of the global political economy. But even with this kind of autonomy, sciences still shared with their

27 Cf. Shapin 1994 on truth; Schuster and Yeo 1986 on scientific method; Lloyd 1984 and Prakash 1999, among others, on rationality.

societies values, interests, and, one could say, focuses of curiosity that were distinctive of the era. However, ensuing discussions of the social construction of the very best scientific knowledge misleadingly seemed to suggest to some participants that nature played no role in such social constructs of science. Of course no SSST researcher ever held such a silly position. The constructivist discourse also misleadingly suggested that “the social” somehow existed outside of and prior to scientific projects. Instead, the co-production theorists argued that the social and the scientific were always continuously in relations of providing resources for the other. Any science was always fully inside its society, and any society inside its sciences. This is not to say that sciences were socially-determined “dupes” of their historical moment, but only that they tended to participate in the various concerns of their historical era.

Yet well before the Shapin and Schaffer account, anti-racist, feminist and class theorists were already arguing that discriminatory and less than maximally reliable results of research were the expectable outcome of sciences supported by powerful groups in hierarchically organized societies. Moreover, such sciences would tend to provide further resources for the dominant groups in such societies. They insisted that it would take changes in these unjust social orders to legitimate sciences that were more accurate and that better aligned with democratic social relations, and that such sciences would in turn help to transform such societies.²⁸ Similar arguments appeared in the postcolonial science studies literature that was available in English by the early 1980’s. So the co-constitution/co-production understanding of how change occurs simultaneously in sciences and their societies is aligned with standpoint methodology and its strong objectivity ideal. Unfortunately, with important exceptions, this postcolonial work has remained mostly under the radar of mainstream Western science studies.

This co-production work showed the internal relations between how we live and what we can know—between being and knowing. It challenged the older understanding of the history of scientific achievements as about either the internal “logic of science” or how external social, economic, and political forces had effects on scientific practices. That is, it refuses to fit into the categories of internalist or externalist histories of science. In these newer accounts, “the social” reaches deeply into what were thought of as the foundations of our knowledge of the world, a point to which I return. Because of this dynamic nature of sciences, their borders continually shift. What counts as nature or as “real science” in one era frequently is at odds with the commitments of another era. Of course the same is true for what counts as a multicultural democratic society.

Multiple scientific and technical expertises. Harry Collins and his colleagues (2007) have argued that scientific expertise has been far too narrowly restricted. It tends to exclude lots of non-professionals whose *experiences* enable them to “know what they are talking about.” Wouldn’t the producers and users of indigenous knowledge qualify here, as will be addressed in the next chapter? Wouldn’t women’s knowledge of our bodies, of the needs of our dependents, of the local environments with which we interact in the work we do also qualify? Relatedly, Ulrich Beck (1997) has argued that today the production of scientific knowledge is being “demonopolized” from the control of official scientists in a variety of ways (Harding 2008). David Hess (2007) and Karin Backstrand (2003) have charted the importance today of many kinds of “civic science” and “citizen science” in which non-scientist citizens engage in formulating questions for inquiry, advocating for funding of such research, sometimes collecting initial data themselves, and a host of other aspects of the production of scientific knowledge.²⁹

Revaluing Intervention. A related focus in science studies has been on how Western philosophy of science has tended to overvalue representing nature’s order at the cost of an adequate appreciation of the importance of scientific intervention in it. So argued Ian Hacking (1983) in an influential study. This argument undermines the claimed superiority of theoretical scientific achievements over practical ones, and thus of scientific over technological innovation. On this account, knowing-how is much more important than

28 Philosopher Sarah Richardson (2010) provides a useful account of the institutional practices (conferences, journal issues) in the history of feminist philosophy of science from the 1970’s on that made it immensely influential outside of philosophy even though it has remained marginalized within the field.

29 For classic examples, see Epstein (1996) and the Boston Women’s Health Collective (1970).

philosophers and scientists preoccupied with “knowing-that” could recognize. Recently a few philosophers of science have started off from the lives of indigenous knowers to identify the practices that have so powerfully advanced their knowledge systems.³⁰ Again, this work uses the standpoint methodology, without so naming it, to achieve greater fairness to available evidence of non-Western cultures’ knowledge systems.

I have been arguing in this section that although the standpoint methodology argument may appear unfamiliar to philosophers and to the field of the social studies of science³¹, in fact several central themes in the field of science and technology studies align with the standpoint claims. Such alignments can give support to the reasonableness of the standpoint arguments. And they can draw attention to the silences in the science studies accounts about the relevance of the feminist work to such science studies projects.

5 A new harmony of multiple conflicting sciences?

What kinds of sciences do we want for today’s multicultural, democratic societies? What kind do we want for a West that is already encountering repeated “decentering” in today’s global political economy? These are not the issues faced by the influential philosophers of science of one and two generations ago. Yet many of us share with these intellectual and political legacies commitments to developing more fair and socially responsible societies and the kinds of sciences that can serve such goals. We share the desire to work cooperatively in local and international contexts. We share valuing knowledge of how our worlds actually work—of what are their regularities and underlying causal tendencies. We can commit ourselves to a new kind of “world of sciences” through strategizing how to maximize and harmonize the scientific and political benefits of multiple scientific questions, conceptualized from multiple social perspectives, with a multiplicity of useful methods. Such harmonizing must never aim for a single “theory of everything;” it must not aim for a “singularity,” as will be discussed in the following chapters, since working toward such a goal always results in silencing dissenting voices. Rather, the “harmony” desired must always be partial, tentative, and fragile, and created through negotiation and compromise. Of course negotiation and compromise already occurs within the everyday practices of Western sciences themselves. Perhaps the conflict negotiation literature so useful in improving labor relations, international relations, and marital relations could benefit philosophies of science also! To be sure, we all understand that we want our airline pilots and heart surgeons justifiably confident that they are doing the absolute best possible under the circumstances they encounter. We want them to hold the closest anyone could come to absolute, universally valid truths, even if we know none such are in fact possible, that all scientific method can ever produce are claims that we judge to be less false (for the moment) than all and only the others so far tested.

Just how we could succeed at such goals in today’s world requires public discussion in local and global contexts. Unfamiliar terms and concepts can become comprehensible through public discussion of their benefits and limitations. (Think of genes, tectonic plates, biodiversity, ozone holes, black holes in space.) Since we now can see that sciences and their societies are co-constituted, we can try starting off from the society side of the co-constitution in today’s social justice movements to identify research ideals and strategies that address progressive, though multiple and often conflicting, science and politics goals. Adopting such ideals and strategies will, in turn, advance both sciences and their societies. Such projects raise puzzling questions, but those are the relevant ones on which we could focus. Strong objectivity and its standpoint theory provide one useful way to begin such projects.

30 See, for example, James Maffie (2009) David Turnbull (2000), Helen Verran (2001) and Helen Watson-Verran and David Turnbull (1995), as well as my 1998, 2008, 2011.

31 But see Elam and Juhlin 1998.[For Chapter 2 of *Objectivity and Diversity*. Taken from pre-University of Chicago Press draft.]

Afterword: February 2019

Since June 2016, I have taken my own advice above and helped to found an innovative new journal: *Tapuya: Latin American Science, Technology and Society*. This journal is a standpoint project that is making original contributions not only to Latin American thinking, but also, equally important, to international science and technology studies.

Tapuya publishes articles, literature reviews and book reviews in English, with abstracts of the articles also in Spanish and Portuguese. It is published by a top-ranked Northern publisher, Routledge/Taylor and Francis, though all of its editorial decisions are made by its Latin American editorial team. It is electronically available only, and Open Access, though any author, North or South, whose research is unfunded may request and will get a fee waiver. Because it is authors and not library or individual subscriptions which fund the journal, anyone, located anywhere around the globe, may download any article from the journal for free. At this writing, it has completed an exciting 2018 Volume 1, and has more than two dozen manuscripts headed toward 2019 Volume 2 that are currently already going through its editorial and production processes.

It welcomes submissions of articles, literature reviews and book reviews concerned with issues of Latin American interest, regardless of where their authors may be located around the globe.

References

- Anderson, Warwick. 2009. "From subjugated knowledge to conjugated subjects: science and globalization, or postcolonial studies of science?" *Postcolonial Studies* Vol 12, no. 4. 389-400.
- Anzaldúa, Gloria. 1987. *Borderlands/La Frontera*. San Francisco: Spinsters/Aunt Lute.
- Backstrand, Karin. 2003. "Civic Science for Sustainability: Reframing the Role of Experts, Policymakers, and Citizens in Environmental Governance," *Global Environmental Politics* 3:4. (Reprinted in Harding 2011.)
- Barad, Karen. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, N.C.: Duke University Press.
- Beck, Ulrich. 1997. *The Reinvention of Politics: Rethinking Modernity in the Global Social Order*. Cambridge, U.K.: Polity Press.
- Bernstein, Richard. 1992 *The Restructuring of Social and Political Theory*. Philadelphia, University of Pennsylvania Press.
- Biagioli, Mario, ed. 1999. *The Science Studies Reader*. New York: Routledge.
- Bleier, Ruth 1984. *Science and Gender: A Critique of Biology and Its Theories on Women*. New York: Pergamon Press.
- Bloor, David. 1977. *Knowledge and Social Imagery*. London: Routledge and Kegan Paul.
- Boston Women's Health Collective. 1970. *Our Bodies, Ourselves*. Boston: New England Free Press.
- Brighton Women and Science Group. 1980. *Alice Through the Microscope*. London: Virago Press.
- Campbell, Marie & Ann Manicom. 1995. *Knowledge, Experience, and Ruling Relations*. Toronto: University of Toronto Press.
- Collins, Patricia Hill. 1991. *Black Feminist Thought: Knowledge, Consciousness, and the Politics of Empowerment*. New York: Routledge. (Reprinted in Harding 2004.)
- Collins, Harry and Robert Evans. 2007. *Rethinking Expertise*. Chicago: University of Chicago Press.
- Daston, Lorraine and Peter Galison. 2007. *Objectivity*. Brooklyn, N.Y.: Zone Books.
- Douglas, Heather E.. 2009 *Science, Policy, and the Value-Free Ideal*. Pittsburgh: University of Pittsburgh Press.
- Elam, Mark and Oscar Juhlin. 1998. "When Harry Met Sandra: or Using a Feminist Standpoint to get the Right Perspective on the Sociology of Scientific Knowledge." *Science as Culture* 7:1,
- Epstein, Steve. 1996. *Impure Science: AIDS, Activism, and the Politics of Knowledge*. Berkeley: University of California Press.

- Fausto-Sterling, Anne. 1985. *Myths of Gender: Biological Theories about Women and Men*. 2nd Ed. New York: Basic Books.
- Feyerabend, Paul. 1975. *Against Method*. London: New Left Press.
- Gilligan, Carol. 1982. *In a Different Voice*. Cambridge: Harvard University Press.
- Hackett, Edward J. et al. 2007. *The Handbook of Science and Technology Studies*, 3rd ed. Cambridge: MIT Press.
- Hacking, Ian. 1983. *Representing and Intervening*. Cambridge: Cambridge University Press.
- _____. Forthcoming. "Let's Not Talk About Objectivity," *Objectivity in Science*, ed. Flavia Padovani, Alan Richardson, Jonathan Tsou.
- _____. 1999. *The Social Construction of What?* Cambridge: Harvard University Press.
- Haraway, Donna. 1988. "Situated Knowledges: *The Science Question in Feminism* and the Privilege of Partial Perspective," *Feminist Studies* 14: 3. (Reprinted in Harding 2004)
- _____. 1989. *Primate Visions: Gender, Race, and Nature in the World of Modern Science*. New York: Routledge.
- Harding, Sandra, 1986. *The Science Question in Feminism*. Ithaca: Cornell University Press.
- _____, ed. . 1987. *Feminism and Methodology*. Bloomington: Indiana University Press.
- _____. 1988. "Feminism, Science, and the Anti-Enlightenment Critiques," in *Feminism/ Postmodernism*, Ed. Linda Nicholson. New York: Methuen/Routledge & Kegan Paul. 83-106.
- _____. 1991 "Strong Objectivity and Socially Situated Knowledge," Chapter 6 of *Whose Science? Whose Knowledge?* Ithaca: Cornell University Press.
- _____. 1992 "Rethinking Standpoint Epistemology: What is 'Strong Objectivity'?", in *Feminist Epistemologies*, ed. Linda Alcoff and Elizabeth Potter. New York: Routledge.
- _____. 1998. *Is Science Multicultural? Postcolonialisms, Feminisms, and Epistemologies*. Bloomington: Indiana University Press.
- _____, ed. 2004. *The Feminist Standpoint Theory Reader*. New York: Routledge.
- _____. 2008. *Sciences From Below: Postcolonialities, Feminisms, and Modernities*. Durham: Duke University Press.
- _____, ed. 2011a. *The Postcolonial Science and Technology Studies Reader*. Durham: Duke University Press.
- _____, and Merrill Hintikka, eds. 1983 (2003). *Discovering Reality: Feminist Perspectives on Epistemology, Metaphysics, Methodology and Philosophy of Science*. Dordrecht: Reidel (Springer).
- Hartsock, Nancy. 1983. "The Feminist Standpoint," In *Discovering Reality*, ed. S. Harding and M. Hintikka. Dordrecht: Reidel (Springer). (Reprinted in Harding 2004)
- Hekman, Mary. 1997. "Truth and Method: Feminist Standpoint Theory Revisited," *Signs: Journal of Women in Culture and Society*, 22, no. 2 (341-65) (Reprinted in Harding 2004.)
- Hess, David J. "Science in an Era of Globalization: Alternative Pathways," Chapter 2 in *Alternative Pathways in Science and Industry: Activism, Innovation, and the Environment in an Era of Globalization*. Cambridge: MIT Press, 2007. (Abridged in Harding 2011.)
- Hollinger, David, 1996. *Science, Jews, and Secular Culture*. Princeton: Princeton University Press.
- Hooks, bell. 1983. *Feminist Theory from Margin to Center*. Boston: South End Press.
- _____. 1990. "Choosing the Margin as a Space of Radical Openness," in *Yearning: Race, Gender, and Cultural Politics*. Boston: South End Press, 145-53.
- Hubbard, Ruth, M.S. Henifin, and Barbara Fried, eds. 1989 *Biological Woman: The Convenient Myth*. Cambridge, Mass.: Schenkman.
- Jaggar, Alison. 1988. "Feminist Politics and Epistemology," in her *Feminist Politics and Human Nature*. Totowa, N.J.: Rowman and Littlefield. (Reprinted in Harding 2004)
- Jameson, Fredric. 1988. "'History and Class Consciousness' as an Unfinished Project." *Rethinking Marxism* 1: 49-72. (Reprinted in Harding 2004.)
- Jasanoff, Sheila. 2005. *Designs on Nature: Science and Democracy in Europe and the United States*. Princeton: Princeton University Press.

- _____. ed. 2004. *States of Knowledge: The Co-Production of Science and Social Order*. New York: Routledge.
- _____. et al, eds. 1995. *Handbook of Science and Technology Studies*, 2nd ed. Thousand Oaks, CA: Sage Publishers.
- Keller, Evelyn. 1983. "Gender and Science," in *Discovering Reality*, ed. Sandra Harding and Merrill Hintikka. Dordrecht: Reidel/Kluwer.
- Kelly-Gadol. 1976. "The Social Relations of the Sexes: Methodological Implications of Women's History," *Signs: Journal of Women in Culture and Society*. 1, no. 4. 810-23.
- Kenney, Sally and Helen Kinsella, eds. 1997. *Politics and Feminist Standpoint Theories*. New York: The Haworth Press..
- Kincaid, Harold, John Dupre and Alison Wylie, eds. 2007. *Value-Free Science? Ideals and Illusions*. New York: Oxford University Press.
- Kline, Morris. 1980. *Mathematics: The Loss of Certainty*. New York: Oxford.
- Kuhn, Thomas S. 1962. *The Structure of Scientific Revolutions*. Second Edition. Chicago: University of Chicago Press.
- Latour, Bruno and Steve Woolgar. 1979. *Laboratory Life: The Social Construction of Scientific Facts*. Beverly Hills, CA.: Sage.
- Levey, G.B. and Tariq Modood, eds. 2009. *Secularism, Religion and Multicultural Citizenship*. New York: Cambridge University Press.
- Lloyd, Elizabeth. 1996. "Science and Anti-science: Objectivity and its Real Enemies," *Feminism, Science and the Philosophy of Science*, ed. Lynn Hankinson Nelson and Jack Nelson. Dordrecht: Kluwer.
- Lloyd, Genevieve. 1984. *The Man of Reason: "Male" and "Female" in Western Philosophy*. Minneapolis: University of Minnesota Press.
- Longino, Helen E. 1993. "Feminist Standpoint Theory and the Problems of Knowledge," *Signs: Journal of Women in Culture and Society*, 19:1, 201-12.
- _____. 1990. *Science as Social Knowledge*. Princeton: Princeton University Press.
- _____. 2002. *The Fate of Knowledge*. Princeton: Princeton University Press.
- Maccoby, Elinor E. ed. 1966. *The Development of Sex Differences*. Stanford: Stanford University Press.
- McClellan, James E. 1992. *Colonialism and Science: Saint Domingue in the Old Regime*. Baltimore: Johns Hopkins University Press.
- Megill, Alan. 1992. "Rethinking Objectivity," in *Annals of Scholarship* 8:3, ed. Alan Megill.
- Mignolo, Walter. 2000. *Local Histories/Global Designs: Coloniality, Subaltern Knowledges, and Border Thinking*. Princeton: Princeton University Press.
- Millman, Marcia and Rosabeth Moss Kanter, eds. 1975. *Another Voice: Feminist Perspectives on Social Life and Social Science*. New York: Doubleday Anchor.
- Narayan, Uma. 1989. "The Project of a Feminist Epistemology: Perspectives from a Non-western Feminist." In *Gender, Body, Knowledge*, ed. Susan Bordo and Alison Jaggar. New Brunswick, N.J.: Rutgers University Press.
- _____. 1997. *Dislocating Cultures: Identities, Traditions, and Third World Feminism*. New York: Routledge.
- Novick, Peter 1988. *That Noble Dream: The "Objectivity Question" and the American Historical Profession*. Cambridge: Cambridge University Press.
- Padovani, Alan Richardson, and Jonathan Tsou, forthcoming. *Objectivity in Science*.
- Porter, Theodore M. 1995. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton: Princeton University Press.
- Potter, Elizabeth. 2006. "Feminist Epistemology and Philosophy of Science," in L. Alcoff and E. Kittay, eds. Pp. 235-253.
- Prakash, Gyan. 1999. *Another Reason: Science and the Imagination of Modern India*. Princeton: Princeton University Press.
- Proctor, Robert. 1991. *Value-Free Science? Purity and Power in Modern Knowledge*. Cambridge: Harvard University Press.
- Ravetz, Jerome R.. 1971. *Scientific Knowledge and Its Social Problems*. New York: Oxford.
- Reisch, George A. 2005. *How the Cold War Transformed Philosophy of Science: To the Icy Slopes of Logic*. Cambridge: Cambridge University Press.

- Reiter, Rayna R., ed. 1975 *Toward an Anthropology of Women*. New York: Monthly Review Press.
- Restivo, Sal. 1992. *Mathematics in Society and History: Sociological Inquiries*. Dordrecht: Kluwer.
- Richardson, Sarah. 2010. "Feminist Philosophy of Science?" *Synthese* 177, pp
- Rose, Hilary. 1983. "Hand, Brain and Heart: A Feminist Epistemology for the Natural Sciences," in *Signs: Journal of Women in Culture and Society*, 9:1. (Reprinted in Harding 2004.)
- Sandoval, Chela. 1991. "U.S. Third World Feminism: The Theory and Method of Oppositional Consciousness in the Postmodern World," *Genders* 10, pp. 1-24.
- Schuster, John A. and Richard R. Yeo, eds. *The Politics and Rhetoric of Scientific Method: Historical Studies*. Dordrecht: Reidel, 1986..
- Shapin, Steven. 1994. *A Social History of Truth*. Chicago: University of Chicago Press.
- _____ and Simon Schaffer. 1985. *Leviathan and the Air Pump*. Princeton: Princeton University Press.
- Smith, Dorothy E.. 1987. *The Everyday World as Problematic: A Sociology For Women*. Toronto: Toronto University Press.
- _____ 1990. *The Conceptual Practices of Power: A Feminist Sociology of Knowledge*. Toronto: Toronto University Press.
- Solomon, Miriam. 2001. *Social Empiricism*. Cambridge: MIT Press.
- Tobach, Ethel and Betty Rosoff, eds. 1978, 19979, 1981, 1984. *Genes and Gender*, Vol 1-4. New York: Gordian Press.
- Traweek, Sharon. 1988. *Beamtimes and Lifetimes*. Cambridge, Mass: MIT Press.
- Turnbull, David. 2000. *Masons, Tricksters, and Cartographers: Comparative Studies in the Sociology of Science and Indigenous Knowledge*. New York: Harwood Academic Publishers.
- Verran, Helen. 2001. *Science and an African Logic*. Chicago: University of Chicato Press.
- Walby, Sylvia. 2001. "Against Epistemological Chasms: The Science Question in Feminism Revisited." *Signs: Journal of Women in Culture and Society*. Vol 26, no. 2.
- Watson-V erran, Helen and David Turnbull. 1995. "Science and Other Indigenous Knowledge Systems," in *Handbook of Science and Technology Studies*, ed. Sheila Jasanoff et al. Thousand Oaks, Calif.: Sage. 115-39.