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FEMINIST EMPIRICISM

CATHERINE E. HUNDLEBY

Feminist empiricism draws in various ways on the philosophical tradition of empiricism, which can be defined as epistemology that gives primary importance to knowledge based on experience. Feminist demands for attention to women's experiences suggest that empiricism can be a promising resource for developing a feminist account of knowledge. Yet feminists also value empiricism's purchase on science and the empiricist view that knowers' abilities depend on their experiences and their experiential histories, including socialization and psychological development.

This chapter explores the attractions of empiricism for feminists. Feminist empiricist analysis ranges from broad considerations about popular understandings to technical analysis of narrowly defined scientific fields. Whatever the scope, feminist reworkings of empiricism have two central themes. The first theme is the interplay among values in knowledge, especially connecting traditionally recognized empirical values, such as evidence and objectivity, with moral and political values. The interplay of these values undermines the traditional association of empirical knowledge with individual knowers, and the separation of individual knowledge from the politics of communities, by suggesting that the knower is not an isolated person. In this way, contesting the nature or locus of the knower and

developing new accounts of *agency* in knowledge emerges as the second theme in feminist empiricism.

Most feminist empiricists employ the methodology for developing epistemology known as naturalized or naturalist epistemology. Naturalism is controversial, but it welcomes disputation, takes up new resources for epistemology on an ongoing basis, and encourages multiple approaches to the evaluation of knowledge. This pluralism undercuts naturalism's and empiricism's conservative tendencies and imbues current formulations of empiricism with radical potential.

FEMINIST ATTRACTION TO EMPIRICISM

Empiricism traces in the philosophy of the global North as far back as Aristotle,¹ but it is classically associated with the 18th-century British philosophers, John Locke, George Berkeley, and David Hume. Most recently the noteworthy empiricists include the logical empiricists as well as Willard Van Orman Quine and his naturalist followers. All empiricists emphasize the role of sensory experience in knowledge—evidence, data, and facts—and downplay the role of innate ideas and inborn mental capacities, which rationalists have historically championed. Science provides especially

good examples of empirical knowledge, and most feminist empiricists focus on the types of knowledge produced by science. Although feminists substantially revise empiricism, the traditional association remains attractive because of its rhetorical power to engage practicing scientists and academic philosophers. The naturalist form of empiricism also insists on attention to the social and physical embodiment of knowledge that concerns feminists.

Empiricism's concern with identifying and making the most of the strengths of science provides feminists with a useful point of departure for theorizing about knowledge. Many of the early 20th-century logical empiricists aimed to develop a science that would serve social purposes, including sociopolitical emancipation of various sorts; and so the goal of an emancipatory science is part of the empiricist heritage (Okruhlik, 2003). Attention to the strengths of science supports the development of feminist "successor science projects" (Harding, 1986). Feminist experiences as scientists and feminist analyses of scientific problems orient most feminist empiricist analysis. Yet some feminist empiricists consider knowledge in a wider domain that includes everyday understanding and that draws on diverse sources of experience (Code, 2006a). The experiences from which we gain knowledge do not all arise from scientific methodology and may even include reading fiction (Code, 2006b). This broad view of experience is congruent with Quine's expansive notion of science that includes the experiential knowledge of people with no special training (Haack, 1993; Nelson, 1990).

Representing progressive concerns and liberatory values in empiricist terms is rhetorically powerful, providing persuasive force and thus strategic advantage that eludes more explicitly progressive or revolutionary theories. Scientists and Anglo-American philosophers of science tend to conceive of science in empiricist terms, and the public understanding of science follows suit. In both these rarefied and commonplace contexts, using the terminology of "facts" (Code, 2006a), "evidence" (Nelson, 1993), and "objectivity" (Longino, 1990) provides a valuable discursive authority.

Because of empiricism's historical centrality to the philosophy of science in the global North,

feminist empiricism is analogous to liberal feminism. Both revise traditionally accepted approaches to the problems at hand: empiricist approaches to scientific knowledge and liberal approaches to democratic politics, respectively.² The political mainstream and the culture of science give less currency to more contested socialist, post-structuralist, and post-colonial theoretical orientations (Harding, 1989). Yet traditional rhetoric can convey radical ideas, and, when it does, it can be far more powerful than the more obviously revolutionary approaches. Therefore, a radical future can emerge from feminist empiricism just as Zillah Eisenstein argued it does from liberal feminism (Harding, 1986; Tuana, 1992).

The rhetorical advantage can be strategically essential because it allows feminists to transform the power of science.

The point of feminist science criticism must, in the end, be to change science, and changing science requires changing the practices of scientists. Hence, scientists must be brought into the dialogue. Since scientists are empiricists, that dialogue will have to make room, at least in the beginning, for empiricists and for, at least as a topic of discussion, empiricism. (Nelson, 1990, pp. 6–7)

Appealing to the traditional empirical valuation of experience and logic provides a strategic advantage for feminism. Yet, feminists must rework empiricism and our understanding of what constitutes scientific standards in order to account for the role of sociopolitical values, as must the not-specifically feminist promoters of the empiricist tradition.

Many feminist epistemologists gain inspiration from a late 20th-century development of empiricism known as "naturalized" or "naturalist" epistemology. Naturalists' attention to the situation of human physical and cultural embodiment abandons abstract ideals of knowledge that assume an omniscient god's-eye view of values or ideals, such as knowledge and justice, and provides a concrete account of epistemic agency—*who* knows. The same approaches that naturalists reject on empiricist grounds feminists reject for being implicitly masculine: disassociating ideal understanding from the material realities of human existence excludes or at best

further marginalizes typical or traditional women's ways of engaging the world in the global North and conflicts with the dominant ideals of femininity. Women's experience and knowledge claims gain credibility from their grounding in material and empirical resources for understanding. Naturalism suggests that new ways to address and redress the traditional Western discounting of these forms of understanding can be found in scientific and historical accounts of knowledge (Hundleby, 2002).

Thus, feminist epistemologists, whether or not they consider themselves naturalists or even empiricists, probably demonstrate most thoroughly the use of empirical data to scrutinize science, which is the method of philosophical epistemology that naturalists recommend. Feminist naturalists especially—like any naturalists—appropriate science to provide accounts of knowledge; however, as Phyllis Rooney (2003) argues, feminist naturalism extends to reflexive examinations of the underlying motivations and worldviews of the social and individual cognitive sciences. Background assumptions—about the nature of gender as a dimension for investigating knowledge, for instance—are not merely noted but subject to challenge (Rooney, 2003, p. 226).

THE SPECTRUM OF FEMINIST EMPIRICIST ANALYSIS

Scientific knowledge is popularly considered to be the best of human empirical inquiry, the most systematic and responsible way to make sense of experience. Yet feminist responsibility requires attention to how sexism, racism, and other forms of oppression manifest in scientific understanding, in the very context of scientific theories and claims. Sexism appears, for instance, in cellular biology, as part of accounts of fertilization familiar to knowers with no more science knowledge than they received in grade-school sex education. A more technical area shows that sexism can deeply undermine a whole field of study: the evolutionary study of the female orgasm evinces androcentrism, in Elisabeth Lloyd's analysis (2005). Resisting sexism that can be identified as part of accepted standards of inquiry does not require abandoning all accepted methods. However, it does require questioning how these

methods operate in specified contexts, from broadly cultural to narrowly academic domains.

In both academic microbiology and sex education for children and adolescents, the portrayed relationship between egg and sperm in the process of fertilization reflects androcentrism and other sexist values and is often treated as a fairy-tale romantic courtship. Images of the egg or ovum range from whoring to dutiful wifedom (The Biology and Gender Study Group, 1988) and even to hunted prey (Martin, 1991). At the same time, the sperm appears as a victorious hero reminiscent of characters in the *Odyssey* or the *Aeneid* (The Biology and Gender Study Group, 1988). Even using the term "fertilization" to name the process that can be more accurately described as "cellular fusion" assumes an asymmetry in activity (Longino, 1997). These models attribute to the male sperm cell an active role that invokes social norms of masculinity and attribute to the female ovum a passive role. Both genderings receive reinforcement from explicitly gendered imagery and go far beyond the very limited "sex" we can attribute to a single cell.³

The feminist empiricist response to sexism in the content of science is to scrutinize the interplay among metaphors, values, and evidence: "think through a particular field and try to understand just what its unstated and fundamental assumptions are and how they influence the course of inquiry" (Longino, 1987, p. 62). It is not to demand that the egg's activity be conceived in aggressive terms, which would only play into stereotypes of femme fatales and devouring mothers. Even equalitarian metaphors may be problematic insofar as they encourage us to anthropomorphize cells, argues Emily Martin (1991):

Although the scientific convention is to call such metaphors "dead," they are not so much dead as sleeping, hidden within the scientific content of texts—and all the more powerful for it. Waking up such metaphors, by becoming aware of when we are projecting cultural imagery onto what we study, will improve our ability to investigate and understand nature. Waking up such metaphors, by becoming aware of their implications, will rob them of their power to naturalize our social conventions about gender. (p. 501)

For instance, we must beware how anthropomorphizing gametes attributes intentionality—purposes and feelings—to the egg and sperm. Intervening in defense of such nominal “persons” on the basis of metaphorical understanding might include technological and legal interventions against the will or interest of the very *real* people who produce these cells (Martin, 1991). A range of social and moral views, and actions that science informs, can become loaded with undesirable social assumptions and projected ideals.

By contrast with the breadth and variability in sexist presentations of fertilization, Lloyd (2005) identifies two specific assumptions in the evolutionary science of the female orgasm: androcentrism and adaptationism. Androcentrism is being male centered or, more specifically in the case of sexuality, assuming that females are like males (pp. 1–2), and adaptationism is “commitment to finding adaptive explanations of a trait” (p. 14). The assumption that males are standard or ideal is evident in every available evolutionary account of the female orgasm, in all of the 21 accounts that Lloyd studies, and the assumption that all traits are adaptations is present in 20 of these. Each of the 21 theories fails to apply methodological, logical, and evidential standards with which their researchers are perfectly familiar and which they otherwise accept (pp. 17–18, 221–222). Adhering to these standards would prevent the ubiquitous mismatching of the hypotheses with the available evidence, a disconnect that reflects androcentrism and adaptationism (p. 20). In studies of the female orgasm, *bad* science has been science as usual.

Whereas the feminist empiricist analysis of fertilization directly addresses social complexity and scrutinizes political implications, Lloyd’s analysis is much more constrained, restricted to analyzing the methodological inadequacies of this particular field. She “leaves undeveloped some of the most interesting issues, including the social significance of the science of orgasm, the adequacy and limitation of sexology data in the description of orgasm, and the role of feminist approaches to science beyond merely controlling for sexist bias” (Meynell, 2007, p. 219). The contrast illustrates Sandra Harding’s distinction between “sophisticated” and “spontaneous”

or “naïve” feminist empiricism. Whereas Lloyd’s study exemplifies spontaneous feminist empiricism by focusing narrowly on standards of testing, most feminist empiricists—more “sophisticatedly”—attend to the *dynamics* between theory generation and theory testing, and so to the generation of testing standards and their cultural impact.⁴

Deferring to existing scientific practices to weed out sexism is a strategy defended by Sharyn Clough (2003). She argues that feminists should attend to the local empirical standards of specific sciences and debates and avoid vain attempts to specify the general roles that values have in science. To ask general questions about epistemological justification and to seek a universal epistemology opens the door to questions that lead to global skepticism or universal doubt. We will be unable to claim knowledge of any kind if we demand one theory of knowledge to cover all types of understanding should we fail to develop one that succeeds.

Clough’s rejection of broad conceptions of knowledge is fairly unique, but many feminist empiricists agree with her on the value of localized strategies. Helen Longino (1987), in her classic article “Can There Be a Feminist science?” advises inquirers to refrain from attempting to anticipate the ultimate shape of feminist science:

Accountability [to feminist concerns] does not demand a radical break with the science one has learned and practiced. The development of a “new” science involves a more dialectical evolution and more continuity with established science than the familiar language of scientific revolutions implies. (Longino, 1987, p. 61)

What remains is to “do science as a feminist”: employ the methods and methodologies that help to address the feminist concerns relevant to that particular area of inquiry. Code (2008) also advises modest goals:

Reconsider the value of the small: of small projects that speak specifically from a careful understanding to and about the precise circumstances of a particular species, community, group, or society, and are understood well enough to make such speaking responsibly knowledgeable. (p. 199)

Such localized engagement of feminist concerns raises profound challenges to the way that epistemology and empiricism have operated in the past.

THEMES IN FEMINIST EMPIRICISM

Feminist revisions of empiricism focus on two related themes: epistemic values and epistemic agency. First, sociopolitical values have cognitive or epistemic implications and help to warrant beliefs and theories, argue feminist empiricists. Defying the traditional distinction between epistemic and political values raises questions for feminist empiricists about the significance of communities for knowledge. For some feminist empiricists, not the individual person but instead the community is the locus of knowledge. For all, the agent or the knowing subject is no longer the isolated abstract individual that was identified in earlier epistemologies of the global North, a challenge that provides the second theme in feminist empiricism.

What Do We Want? Epistemic and Political Values

Feminist empiricist analysis considers the interplay among various forms of values or theoretical virtues: empirical values, such as predictive accuracy or testability; other epistemic values, such as simplicity; and non-epistemic values, from subjective or personal values to moral or ethical values and more broadly political or cultural values. In this section, I will explain the standardly recognized empirical and epistemic values and the arguments by feminist empiricists that they are not sufficient to eliminate the political content of scientific theory. Considering the interplay of non-epistemic with epistemic values not only explains observations of sexism in science but also suggests various roles that feminist values might take in science. There is little agreement regarding how scientists and knowers more generally should integrate feminist values as part of their methods of inquiry. Yet the feminist critiques of science have provided ample evidence that feminist practice and values improve scientific knowledge.

The most generally accepted of the cognitive or epistemological values has been *truth*, which

carries realist metaphysical assumptions of an independent exterior world or at least a representationalist view of mind. To avoid such metaphysical implications, most empiricist philosophers of science follow Quine and Thomas Kuhn (1977), who speak instead of truth about *empirical adequacy*, which includes predictive accuracy and retrodictive accuracy (explaining past observations). Likewise, *facticity*, *rationality*, *evidence*, and *objectivity* are values that provide standards for scientific testing and evaluation. The operation of these general epistemological values is the central concern for feminist empiricists, a project that complements feminist standpoint theorists' concern with heuristics and the generation of ideas.⁵

Many feminist and not specifically feminist empiricists (explicitly Longino and Miriam Solomon) hope to steer a middle course between traditional empiricism and the social constructivism of the Strong Programme in the sociology of science that is sometimes read into early Kuhn (1962). The logical empiricists recognized that political matters and social and subjective inspiration affect how theories are generated. Yet they argued that processes of testing or of rational theory choice using distinctly epistemic values eliminate those influences and distinguish views with purely epistemological authority.

Contemporary empiricists, whether or not they identify as feminist, maintain that general epistemic values such as evidence or rationality are manifested or articulated in scientific practice in the form of the following more specific qualities of theories or beliefs: ontological simplicity (Ockham's razor), modesty, internal coherence, external consistency (including theoretical conservatism), predictability, explanatory power (also described as unifying power, generality, or breadth of scope), testability (also described as refutability or predictive accuracy), and theoretical fruitfulness (or fertility). Thus, following Quine and Thomas Kuhn, values receive general acceptance from (mainstream) empiricist philosophy of science.

Whichever of the cognitive values make up the basis for scientific evaluation, the list is never exhaustive for contemporary empiricists, nor can the individual values be applied in a straightforward algorithmic manner. Rarely do we find consensus among theorists about which values are

important or how to apply them, or even how to weigh them against each other. Theoretical fertility or productivity, for instance, can be interpreted in different ways by different investigators and in the context of different research programs—we may ask “fruitful for what?” Also, fruitfulness may be weighted in various ways relative to the other cognitive values (Rooney, 1993), as both Kuhn and Quine recognize. For instance, the detailed focus necessary for an accurate account clearly conflicts with the applicability of that account to a range of phenomena in a range of situations that constitutes breadth of scope (Longino, 1997).

Feminists differ from other contemporary empiricists in arguing that how we identify, interpret, and weigh cognitive values also reflects political commitments (whether we realize this or not). “Responsibility and accountability requirements join verifiability high on the epistemic agenda as epistemic and moral-political issues coalesce and as statements of fact take on a less self-evidently factual demeanour” (Code, 2006a, p. 128). Scientific method and rational theory choice—articulated in terms of predictive success, observation independence, and explanatory power, by Richmond Campbell (1997, pp. 25–27)—are not sufficient to eliminate sociopolitical influences.

[T]here are standards of rational acceptability that are independent of particular interests and values but . . . satisfaction of these standards by a theory or hypothesis does not guarantee that the theory or hypothesis in question is value- or interest-free. (Longino, 1990, p. 12)

Consider how gender roles influence cellular biology and androcentrism influences evolutionary biology, as I described previously, and how racism has informed the study of intelligence (Gould, 1996). Such non-epistemological values from the context of theory generation remain present in those theories that succeed.

Testing only shows a claim to be epistemically superior among the available contending theories, so the process can *entrench* sociopolitical values in scientific practice, as Kathleen Okruhlik argues:

If [the available] theories have been generated by males operating in a deeply sexist culture, then it is likely that they will all be contaminated by sexism.

Non-sexist rivals will never even be generated. Hence the theory which is selected by the canons of scientific appraisal will simply be the best of the sexist rivals; and the very *content* of science will be sexist, no matter how rigorously we apply objective standards of assessment in the context of justification. In fact, the best of the sexist theories will emerge more and more highly *confirmed* after successive tests. (Okruhlik, 1994, pp. 34–35)

Social ideology and sociopolitical values play a substantial a role as “stereotypically scientific issues of evidence and logic” in scientific knowledge (Longino, 1990, p. 3). Both science in general or “as usual” and particular cases of incompetent or “bad” science involve more than purely cognitive or logical concerns.

A more complicated example of the intermingling of political with epistemic values is Longino’s feminist defense of a social-cognitive model over the linear-hormonal, or “biological determinist,” model for gendered differences in human physical and cognitive behavior. No purely cognitive or epistemic decision between the two models seems available according to Longino’s original (1990) analysis, but the values of theoretical unification and simplicity that support the linear-hormonal model cannot be viewed only in cognitive terms. Part of the constitutive force of “simplicity” in this model is due to the operation of gender dimorphism as part of the motivation for the very understanding of biological determinism itself, although gender dimorphism is biologically contested (Rooney, 1993, p. 18). Gender dimorphism, which is assuming that bodies take two distinctly gendered forms, offers the valued “simplicity” in this case because of its resonance with existing social hierarchies; so it seemed rationally preferable because it was socially preferred.

Likewise feminist interests support certain cognitive values over others, and empiricism can support the role of feminist politics in good scientific practice (Campbell, 1998). Yet, feminist empiricists do not advocate any specific methodologies, and some refuse to search for definitive general criteria for evaluating the content of knowledge, even specifically scientific knowledge. Instead of viewing science as a product, Longino urges that we treat it as a practice, that feminist science is not an abstract ideal but a

matter of “doing science as a feminist” (Longino, 1990, p. 188). “We can . . . fashion and favor research programs that are consistent with the values and commitments we express in the rest of our lives” (Longino, 1990, p. 191).

The feminist critiques of science have revealed certain patterns in valuation, a constellation of theoretical values that Longino has started to catalog (1997). Like the traditional empirical values, the feminist set begins with empirical adequacy or accuracy. This accepted epistemic value supports a specifically feminist value: “to reveal both gender in the phenomena and gender bias in the accounting of them” (Longino, 1997, p. 45). The value of *revealing gender* is served by *novelty*, *ontological heterogeneity*, and *mutuality of interaction* in the content of theories and research programs. These values are neither uniquely nor intrinsically feminist, which holds also for values of concern to feminists that are not (or are only distantly) connected to empirical adequacy: *applying science to meet current human needs*, such as those traditionally ministered by women, and *diffusing scientific power* by encouraging general access and participation in science (Longino, 1997, pp. 50–51). The feminist values may complement the more standard set or provide alternatives. For instance, ontological heterogeneity conflicts with an ontological interpretation of (standardly valued) simplicity.

The necessity for sociopolitical values in science implies that nastier—sexist, racist, and so forth—sociopolitical values could be justified and are part of not just bad science but science as usual. Criticizing the role of such values makes it difficult to support a positive role for feminist values in knowledge, a problem described by Louise Antony as the “bias paradox.”⁶ Yet some political values, such as feminism, can be revealed to better support empirical adequacy than others. “Doing science as a feminist” has produced any number of novel and empirically successful theories. Early feminist critiques of science led, for instance, to recognizing the activity of the ovum and to developing the “woman-the-gatherer” hypothesis in anthropology that has proved more successful than the previous “man-the-hunter” alternative (Longino & Doell, 1983). This pattern provides *evidence* of the empirical adequacy of at least some feminist values in one field at a particular point in its development.

The success of multiple feminist critiques of science indicates that feminism has a general empirical adequacy, at least at this point in the progress of science. The empirical advantage is due, at least in part, to feminist attention to the role of values, especially political values, in science; these are not generally recognized components of epistemology or methodology. “Political critique of accepted epistemic values helps reveal existing incoherences in our cognitive practices and suggests remedial options” (Hundleby, 2002, p. 263). A broader base for criticism becomes available, as does a broader horizon for action, because we consider science to be part of the larger community.

A certain number of feminist empiricists, notably Lynn Hankinson Nelson, stress that the operation of science subjects political values to ordinary standards of criticism by which people can dismiss them. Naturalists such as Nelson use scientific understandings of human knowers to account for knowledge, but the standards draw from Quine’s broad notion of science, which incorporates the richness of commonsense reasoning that can be used as a basis for criticism (Nelson, 1990). Perhaps the most general value that requires attention from naturalists is the value of human survival (Code, 1996) because that value underpins human nature according to evolutionary biology. The moral and sociopolitical values dismissed by Quine for being the result of natural selection are vindicated by those origins, according to Nelson. She argues that their evolutionary success provides scientific reason to consider the values cognitively *good*: they meet the common practical needs of societies and of humanity (Nelson, 1990, p. 133). We may use these same standards to evaluate which moral and sociopolitical values have empirical value.

Because it reconfigures the role of bias in science, there is no need to distinguish between good and bad bias in Miriam Solomon’s “social empiricism” (2001). She replaces the traditional epistemological distinction between epistemic or rational (“cold”) and non-epistemic or biasing (“hot”) factors in how scientists decide among theories with an account of *empirical* and *non-empirical* decision vectors. Empirical decision vectors include salience of data, availability of data, egocentric bias toward one’s own data (non-cognitive—but driven by data!), and preference

for a theory that generates novel predictions. Non-empirical decision vectors include ideology, pride, conservativeness, radicalism, elegance, competitiveness, and peer pressure; the list goes on and so includes much more than the sociopolitical values addressed by other feminist empiricists. Solomon argues that all sorts of personal and social values can be part of the motivation behind states of science that are justified. It is the appropriate *social distribution* of decision vectors that makes a scientific decision rational, not whether any particular vectors are present. The only relevant distinction among values is whether they are empirical.

Solomon bucks intuition and argues that dissent—and not consensus—is the scientific norm, in the sense of being the more common and general state of science. *Rational* dissent occurs under the following circumstances:

1. All theories under consideration have some empirical success (explain some observations).
2. All empirical vectors are distributed proportionately to the empirical success of each theory (productive scientific methods fall under theories proportional to their empirical success).
3. The nonempirical vectors are equally distributed.

Dissent occurs more frequently than consensus partly because only a very specific configuration of the decision vectors can justify consensus.⁷ Forming consensus is only appropriate when all the empirical success supports one theory, making it a *limiting case* of dissent.

Thus Solomon, like Nelson, maintains that we can assess the scientific significance of moral and sociopolitical values. Such an assessment will only proceed in the long term, however.

Epistemic practices at their best proceed according to (interim) standards derived from collaborative efforts to produce the best possible investigations, descriptions, and understandings, where “best” includes an ongoing self-reflexive and negotiative commitment to determining and trying out norms and standards, and evaluating their effectiveness and failures. (Code, 2008, p. 194)

While we wait for more evidence to come in, we have some reason to favor feminist values.

“Doing science as a feminist” is thus an open-ended practice.

Who Knows? Epistemic Agency

Traditional empiricists viewed the agent of knowledge as an individual person who has the same sorts of rational capabilities as other persons, a laudably equalitarian account but one that masks real differences among knowers. Individual people have different resources for understanding in accordance with their social location, their socialization, and their developmental history. Addressing these variables requires a more social account of the epistemic agent, and feminist empiricists disagree about what that account should be; they even consider that different models of epistemic agency provide the desired purchase on different projects of inquiry (Code, 2006a).

Feminists have transformed the empiricist concept of the knowing subject through various forms of attention to how individuals depend on communities for knowledge. I will present their accounts beginning with the most individualistic and proceeding through degrees of sociality toward the most communal account, and then to one that disrupts feminist dependence on the notion of community. To start, the traditional view of individuals as agents of knowledge as revised by Heidi Grasswick (2004) becomes *individuals-in-communities*. More radically, granting central roles to the community in which individuals are only secondary participants and not direct agents, Longino and Nelson argue that the practices of people coordinated in their communal relationships allow individual experiences to become significant. Communal processes qualify individual beliefs as *objective* according to Longino (1990), and coherence with communal standards qualifies individual observations as *evidence* according to Nelson (1990). In Solomon’s “social empiricism” (2001), individuals fall completely out of the picture of scientific knowledge, because scientific *rationality* only occurs in relationships among competing theories, and so only at the level of communities. The strength and role of communities in knowledge remains highly contested, leading Lorraine Code (1996, 2006a) instead to adopt a more flexible concept of *society* to account for the social nature of knowledge.

Grasswick (2004) rejects the traditional view of the atomistic, self-sufficient individual but argues that recognizing the (relational, dependent) individual as the agent of knowledge remains necessary to make sense of the possibility of dissent and of how epistemic standards become challenged (p. 97). A dynamic model of epistemic agency becomes possible when we identify agents as individuals-in-communities.

Although Grasswick's location of epistemic agency in individual persons is traditional, her notion of the individual as socially dependent is transformative. Gone are assumptions that the knower has a given set of capacities for reasoning because, with Code (1991), Grasswick insists that cognitive capacities are shaped by psychological development and socialization. "Individual knowers become epistemically differentiated along the lines of their communal histories and memberships" (Grasswick, 2004, p. 102). With Code again, Grasswick emphasizes the need for trust between people and our dependence on systems of authority. Yet Grasswick's focus on communities goes beyond Code's concern with interdependence by giving communities a critical role in the development and support of individual understanding.

Grasswick (2004) insists that communities provide "standards of evidence and bodies of evidence" (p. 96) and that they prioritize some epistemic values over others (p. 104), as Longino (1990, 2004) and Nelson (1990) have also argued. However, Grasswick addresses how individuals are each involved in multiple communities that are conflicting, overlapping, and vague, a complication that Longino and Nelson barely acknowledge. They set aside the complexities of communities to focus on how a community can operate to provide objectivity and evidence for beliefs.

Longino (1990) argues that critical discursive communities grant objectivity to the beliefs of individuals by constraining individual values. "Individual values are held in check not by a methodology but by social values" (p. 102). Scientific practice is independent of individual aims, except that individuals may work toward building the appropriate communities, which are those that engage a maximal number of different points of view. Longino's social standard for assessing the objectivity of scientific discourse

involves four criteria for critical interpersonal engagement. An objective community has the following: (1) avenues for the expression and diffusion of criticism; (2) uptake of, and response to, criticism; (3) public standards by reference to which theories and so forth are assessed; and, (4) equality of intellectual authority (Longino, 1990, 1993). Communities that meet these criteria, to the *extent* that they meet the criteria, produce objective views that individuals may hold.

As inquirers, we choose, at least to a certain extent, the cultures in which we participate, so, as feminists, we can choose to whom we are accountable, which community will guide our beliefs; we can even choose combinations of communities. "The feminist scientist is responsive to the ideals of a political community as well as to some subset of the standards endorsed in her or his scientific community" (Longino, 1990, p. 192). Longino's advice to choose a feminist community does not entail adopting any particular methodology. Nevertheless "doing science as a feminist" requires interpreting empirical adequacy in terms of the concerns of one's chosen community, as described in the previous section on epistemic values.

Similarly, for Nelson, individuals acquire their scientific values from communities, but, for her, the community plays a more comprehensive role. The communal quality of the standards necessary for a person to be said to know any particular thing entails that some community to which that person belongs must be the first and foremost agent of knowledge. Individual people do not have knowledge or evidence at all except insofar as each participates in knowing communities. Background beliefs and standards—for example, regarding the techniques for collecting evidence and how to make inferences from data—that we share with other people provide support in varying degrees for our theories.

Nelson's communal view of knowledge follows from her argument that sociopolitical criteria are among our tools for justifying knowledge claims, again as outlined in the previous section. The importance of sociopolitical values suggests that community is the primary epistemic agent, which also is borne out by some commonsense observations. If any one member of a community knows something, then some other member could also know it—in this limited

sense we may be interchangeable. “Acceptable answers to the question ‘Who knows?’ include ‘Everyone,’ ‘All of us,’ ‘Lots of people,’ ‘Many of us,’ but only very problematically ‘Only me’” (Nelson, 1990, p. 255). Yet, “we know” doesn’t mean “I and you and . . . you,” the “we” formed from people that each of us knows. Especially in “big science,” which brings together people with vastly different skills who complete separate portions of calculation and experimentation, no one participant understands it all. So it seems that “we” must know before any “I” can begin to understand.

Methodologically, for Solomon, as individuals we cannot expect nor should we desire to be free from bias, even to a degree, though we should aim to pursue theories that have empirical success. We can address the role of nonempirical decision vectors *only* in social terms. For individuals to recognize, assess, and redistribute the nonempirical vectors in order to justify the state of science requires a range of techniques.

[T]he identification of decision vectors and improvement of their distribution . . . typically require expertise, and, often, multidisciplinary knowledge and skills. The critical training required to identify presuppositions about gender, for example, is quite different from the psychological training and methods required to detect cognitive bias. And the statistical techniques needed to assess the role of birth order are quite different from scientific and philosophical knowledge of theoretical constraints such as simplicity. (Solomon, 2001, p. 140)

Thus, for Solomon, methodological considerations must be both socially dispersed (as in Nelson’s account) and multidisciplinary in order to reveal imbalances in political values and other nonempirical decision vectors.

Solomon’s naturalist demand for empirical evidence to support epistemological evaluations restrains her endorsement of Longino’s recommendation (her fourth criterion for critical engagement) that we should join or develop egalitarian communities for the sake of improving our investigations. Solomon admits that such social democratization may benefit the identification of political decision vectors. Yet, at best, only political decision vectors might receive improved attention, and we remain without evidence of even that.

Among feminist empiricists, Code stands out for resisting commitment to any particular formulation of the epistemic agent and for recognizing sources of agency aside from individuals-in-communities and human communities that include our relationship with the biological and ecological environment. Although Code treats as fundamental the mutual dependence among individuals by suggesting that knowers are “second persons,” a concept borrowed from Annette Baier (2002), Code’s account resists any reference to communities. She recognizes that knowledge also develops in smaller and more fluid social contexts—in a “society” that remains less clearly defined and correspondingly more flexible than a community. Code suggests that we engage in “imaginaries” (a notion borrowed from Cornelius Castoriadis). *Instituted imaginaries* provide coherence among individual understandings, and *instituting imaginaries* question the social structure and make new meanings possible (Code, 2006a, pp. 30–31).

Imaginaries are “habitats” that provide “places to know,” Code (2006a) argues, in two senses: as places from which we can begin inquiry and as places that we must come to understand if we are to be responsible knowers. Learning about the contexts in which we know is central to the methodology of most feminist empiricism, and it is integral to naturalized or naturalist epistemology. Naturalism treats knowers as part of nature, as subject to empirical investigation, and thus seeks to use empirical evidence especially from science to enrich and strengthen epistemological theorizing.

FEMINIST NATURALISM

Naturalized epistemologists begin with the assumption that people actually have knowledge and hence with an implicit rejection of global skepticism, the worry that knowledge is not at all possible. The means for rejecting skepticism, according to Quine, is to use our science itself to provide the explanation of how some beliefs are justified, or warranted, over others. Final answers regarding standards for inquiry are not the goal, however, for thoroughgoing naturalists. Such concerns risk begging the question about the assumptions underpinning

the sciences of cognition and ignoring the ways that scientific investigation continues to develop. Instead, jumping straight in to work with scientific findings provides a constructive “looping effect” as systems of epistemic valuation are continuously informed by empirical developments (Fellows, 2010).

The relevant sciences for Quine are the sciences of individual cognition, behaviorism, and neuroscience that some feminist naturalists also take up (Antony, 2003; Duran, 1993). Even for Quine, further forms of science may shed light on how people’s experiences can justify their beliefs, and thus his reformed empiricism complements Kuhn’s historicism (Hundleby, 2002). Making use of all of our available resources to scrutinize our understandings reflects naturalism’s inspiration by the 18th-century empiricism of David Hume, which Baier (2002) argues has a distinctly social cast that suits it for feminism (pp. 46–50).

As part of the process of naturalizing epistemology, feminists critically analyze the methodologies and basic concepts of the contemporary cognitive sciences that inform their naturalism—whether the sciences of individual psychology favored by Quine or the Kuhnian and post-Kuhnian social studies of knowledge. Feminist naturalists recognize that the scientific resources for epistemology themselves are subject to *improvement*. After all, science is open-ended in several different ways due to the open-endedness of the future, natural human ingenuity and creativity, and even the concepts we create (Rooney, 2003, pp. 218–219). The feminist treatment of the scientific resources for theorizing about knowledge as dynamic produces “a *verb-sense* of epistemology, . . . a sense of *doing* epistemology, of *reflecting* in a systematic way on knowledge and knowing while drawing ongoing critical attention to particular kinds of motivating concerns, questions, and methods in the way one does epistemology” (p. 207, emphasis original). This reflexive development of empirical standards contrasts with the usual epistemological pursuit of a “final” view, epistemology as a noun: for example, coherentism, positivism, empiricism. Such static treatments of knowledge become dynamic and defeasible in feminist hands, subject to challenge and change over time. In the context of transforming claims about what counts as knowledge, what remains continuous

and distinctive in feminist epistemology, and in feminist naturalism especially, is ongoing information by feminism and by science, even as these change over time (Rooney, 2003).

CONTROVERSIES ABOUT FEMINIST EMPIRICISM

Feminist empiricism rarely receives complimentary treatment in overviews of feminist epistemologies and science studies, in large part because it has been misunderstood. The theoretical conservativeness of empiricism does not entail a political conservativeness. The most potentially regressive approach to feminist empiricism may be naturalism because it defers to scientific input, which inevitably reflects the status quo. Yet the reflexive revolutionary spirit of naturalism challenges even its own empiricist precepts.

The Conservative Quality of Empiricism

Naturalism may seem to resist progress in several different ways. Some concerns involve the critical weakness of naturalism and the patriarchal content of the science it relies on. Another concern is that empirical understanding, naturalized or not, can never be sufficient for political analysis. Feminist naturalists account for the fact that there are always prior epistemologies and other existing influences on the ways that we evaluate beliefs, and they demand continuous scrutiny of these value systems as concrete constitutive circumstances for all our inquiries.

Relying on science, as naturalists do, seems to at least limit and perhaps exclude the possibility of establishing new ideals for human reasoning, not only because science may employ regressive politics but also because formulating ideals is not the job of science—it’s the job of philosophy. At best, science describes only people’s success with respect to accepted ideals, without interrogating those standards, deferring to existing standards in a way that discourages some feminist empiricists, including Longino (1993), from naturalism. Further, naturalism’s tendency toward scientism—deference to scientific evaluations—may be inherently quietist, suppressing dispute. In practice, many of the central tenets of science are beyond scrutiny,

even though in some ideal forms science may be self-revising (Linker, 2003).

The patriarchal social system produces almost all of the science available that might provide empirical standards for evaluating knowledge claims. As a practical political resource, science has a history of resisting social explanations for gendered differences and seeking instead accounts based on biology that portray the differences as relatively immutable. The tendency in the scientific study of knowledge to accept gender as given and ahistorical seems to be especially strong when women's capacities have been judged to be inferior. Consider that some significant gendered differences have been found with spatial ability, but the differences are so small as to be easily explained by differences in socialization. Yet researchers persist in looking for biological reasons for gendered differences in understanding (Fausto-Sterling, 1985, 1992), such that cognitive science seems bent on justifying women's low social status. Psychologists resolutely search for differences, even when empirical results consistently reveal gender parity in verbal ability.

For such reasons, taking up scientific accounts of gender can be regressive and epistemologically dubious, especially when it comes to cognition. For instance, scientific accounts of cognition support claims made by Jane Duran (2001) that women benefit from an especially "relational" view of themselves and the world.⁸ Duran seems to be among the most thoroughgoing of feminist naturalisms because she engages deeply in empirical research in both cognitive science (1993) and contemporary cultural studies (2001). However, that depth is at the expense of considering other empirical factors, including socialization, that reveal how gender dichotomies in cognition can be symptoms of oppression. It ignores a competing account that has more thorough empirical support, the evidence that women are socialized to participate in and even facilitate their oppression.

Adherence to the empiricist tradition also can be used to rule out the relevance of social liberation movements to fostering advances in science (Harding, 1986, pp. 25–26). Thus, empiricism's future can seem to be radical only insofar as its internal conflicts spark a move away from the empiricism itself. As Maureen Linker argues (2003), empirical evidence seems to have little

impact on the normative correction of many forms of human knowledge, such as those assessed in terms of logical, linguistic, and moral truths.

Yet, feminist empiricism involves accounting for the relationship between values traditionally considered to be noncognitive—including social liberation and morality—and their cognitive counterparts, such as empirical adequacy. "Experience," the key concept in empiricism, is a very broad and complex notion for feminist empiricists that extends beyond and complicates simple sensory experience. Cultural resources, including some rudimentary prior epistemology, inform any empirical knowledge. Our studies in psychology and the history of science, for instance, cannot move ahead without some notion of what needs examination, without a functional ontology, an account of the nature of the world that shows how meaningful inquiry can be possible. Cognitive scientists generally assume (1) that knowledge takes the form of discrete propositional beliefs regarding isolated statements of fact (e.g., "the breadbox is larger than the teacup"), (2) that individuals are the agents of knowledge, and (3) that science is the best example of knowledge. However, "stipulation . . . simply begs the question against more robust forms of naturalizing epistemology where questions about the cognitive demarcation and delineation of beliefs are open to question" (Rooney, 2003, p. 216). No scientific authority absolves the need to scrutinize background concepts and values, whether they include the sexism of cognitive science or the empirical adequacy of psychoanalysis.

Background epistemologies belong to the communal resources that Nelson argues are necessary for individual knowledge of any kind. Yet her picture of communities as prior to individual knowledge seems to entail that what can be known is static and that individual knowledge is passive. So Edrie Sobstyl (2004) argues that science and common sense are in constant flux, and in dynamic interaction with individual experience.

This creates opportunities for knowledge to grow and change. . . . The fact that women alter their behavior in order to avoid being targets of sexual assault shows that they recognize the prevailing beliefs of a patriarchal community. But the fact

that women *resist* such constraints on their behavior and demand freedom from sexual predation shows that our common sense and gendered social and political experiences have a concrete impact on what we know. It is not helpful to say that this resistance is entirely derived from the community, because our community has not been particularly willing to warrant such ideals. (p. 131)

Thus Sobstyl argues that we can revise and complete Nelson's holism by allowing for a symmetrical relationship between embodied individuals and communities rather than by giving absolute priority to communities. Individual knowledge may be derived from communal knowledge, as Nelson argues, or it may be situated in or interdependent with communal knowledge in the way that Grasswick and Sobstyl suggest.

There are many reasons to believe that the program of naturalizing epistemology will change substantially in the future. To begin with, naturalizing epistemology is a project currently in its very early stages. Even those who are sympathetic to naturalism or describe themselves as naturalists are "slow to renounce the old modes of legitimation" (Roth, 2003, p. 296), and what the new scientific modes are, exactly, remains unclear. In addition, the development of naturalism has been slow because naturalists have had to spend a good deal of their time defending the importance and viability of naturalist techniques (Rooney, 2003).

Naturalism is a continuous process, and new ways of viewing knowledge constantly emerge from the open texture of science, as Rooney (2003) argues.

At the very least, I maintain, naturalists must have a . . . verb-sense of science—that is, [of] science as a diversity of dynamic disciplines, the concepts, questions, and findings of which are continually being modified in relation to changing conditions, including the changing conditions of empirical investigation and the changing social and political worlds within which such investigation is situated. (pp. 218–219)

New scientific tools may emerge merely because science progresses in addressing people's changing concerns and because science may

respond to new questions that we have about knowledge, including feminist questions.

Naturalism Supporting Rationalism

The self-critical impulse in naturalist epistemology takes the general form of requiring empiricism to be based itself on empirical investigation. The scientific evidence concerning human inquiry thus could turn out to support a nonempiricist view of knowledge, to make available "genuinely novel and transformative philosophical strategies" that explain how bias can play a positive role in reasoning (Antony, 2003, p. 142). Indeed, some evidence supports the rationalist view of mind, harking back to René Descartes, that people have native intellectual capacities, such as for language, and that, in this way, one's ability to know is independent of one's past experience (Antony, 2003).

On the basis of her rationalist (but naturalistically supported) view that knowers rely on innate mental capacities, Antony adopts the further rationalist view that knowers are interchangeable, which most feminists find objectionable because it denies the impact on knowledge of developmental history, social situation, and different forms of embodiment. Moreover, the bodies that do play a role in Antony's work and that provide one's perspective on the world do not have "bias" in the usual sense that differentiates individuals. The forms of prejudgment that are properly called biases at best are merely analogous to the shared cognitive dispositions that can make our bodies seem interchangeable.

Yet, Antony's argument demonstrates that changes in scientific accounts of cognition could, in principle, undermine the traditional empiricist view of the mind and the entailed epistemology (Campbell, 1998, p. 33). Such a turnabout is possible because developing scientific perspectives on knowledge is an ongoing activity, and this is a further reason to view naturalism in a "verb-sense" (Rooney, 2003). One may practice epistemological naturalism continuously, and ongoing naturalist revision entails that feminist empiricists may find themselves engaging in quite different forms of theorizing than that with which they started. Naturalizing is never complete because epistemology is never *finally, ultimately* naturalized.

Empiricism remains, at the moment and for the foreseeable future, a viable starting place or

background epistemology for naturalist methods. Antony's argument does not succeed in its attempt to turn naturalism toward rationalism. Admittedly, a rationalist view of the mind—for example, the view of Descartes or Noam Chomsky—might reflect some evidence better than the behaviorism that Quine favored. Even Quine considers behaviorist psychology useful only for individuating belief states. Behaviorism is not sufficient support for epistemology because behaviors are neither the same as beliefs nor sufficient to explain them—a task for which he suggests biology, especially neurophysiology (Nelson, 1990, pp. 126–128).

Naturalist explanation must also account for the impact of different social situations and different bodies with various levels and forms of cognitive development (Code, 2006a), something only promised by Antony's rationalism and not delivered. These nonbehavioral factors affect neurophysiology, including language development (Nelson, 1990, pp. 286–287), and so have implications not only for Quinean empiricism but also for any rationalism that is accountable to empirical evidence. The need to address how the social world impacts evidence inspired Quine's argument for naturalism (Nelson, 1990, p. 288; Quine, 1960). Therefore, to ignore social influences, as Antony's rationalist move does, is to depart from the basic spirit of naturalism rather than to defeat it on its own terms.

CONCLUSION

Employing empiricism provides feminists with valuable purchase in the dominant culture and access to the power of scientific resources. These advantages imbue empiricism with a radical potential that both critics of feminist empiricism (Harding, 1986) and defenders of it (Campbell, 1998; Nelson, 1990) recognize to include strategic rhetoric and to go far beyond rhetorical significance. Further, supporters argue that feminist naturalism demonstrates the radical future of feminist empiricism because it holds all the strengths of the early alternative approaches known as feminist standpoint theory and feminist postmodernism. Feminist naturalism, specifically, provides clear grounds for evaluating not only beliefs but also values and practices that include political views (Tuana, 1992). The broad scope of naturalist critique allows Antony

to find in it potential support for rationalism, showing that, not only in principle but also in practice, naturalism has revolutionary potential.

Naturalism's open-endedness suggests further that feminist empiricism may be mutually complementary with other feminist epistemologies, and encourages treating epistemological choices as provisional, according to the problem at hand, rather than as definitive. Looking to "small" places in Code's ecological manner requires a dynamic sensitivity, strategizing as *activists*:

Choos[e] . . . points of concentration, of focus; discern . . . the gaps where intervention and contestation have the best hopes of entering, and work . . . to ensure that their effects will spread . . . [A]ctivists, both singly and collectively, have to know a lot just to see what might be possible and may have to develop strategic compromises to be able to work toward sometimes distant and often unstable goals. (Code, 2008, p. 201)

Methodologies may be taken up as guerrilla strategies based on shared oppositional consciousness that "operates like the clutch of an automobile: the mechanism that permits the driver to select, engage, and disengage gears in a system for the transmission of power" (Sandoval, 1991, p. 14). This U.S. third world feminist strategy identified by Chela Sandoval encourages flexibility in taking up the competing political tactics of liberal, Marxist, radical, and socialist feminism, and it denies the need to commit to a final strategy. Likewise, shifting among empiricist and other methodologies keeps inquirers free from the stagnation of any static epistemology. So feminist empiricism continues its radical progression by transforming from a hegemonic strategy into a "processual relationship" (Sandoval, 1991, p. 24) with only tentative "places to know" (Code, 2006a).

Although Code's account most clearly supports recognizing as provisional the naturalist employment of empiricism or of any other epistemology, her view resonates with other forms of feminist empiricism. Consider that because different methodologies and epistemologies, including rationalism, have some empirical support, Solomon would advise methodological dissent. Keeping different options at hand also serves Rooney's "verb-sense" of epistemology that recognizes the open-endedness of human

inquiry. Finally, this pluralism can be expressed without assuming naturalism: Longino's (1990, 2004) requirement of ongoing critical engagement among divergent perspectives can apply to feminist epistemologies and methodologies as much as it does to science itself:

The feminist interventions I imagine will be local (i.e., specific to a particular area of research), they may not be exclusive (i.e., different feminist perspectives may be represented in theorizing), and they will be in some way continuous with existing scientific work. (Longino, 1987, p. 62)

There is no one feminist empiricism, but many feminist empiricisms, an epistemological plurality that can be justified—both politically and epistemologically and from an individual and a community level—according to the various views of feminist empiricists.

Discussion Questions

1. How might a feminist empiricist view of *evidence* or *objectivity* apply beyond the domain of science to everyday knowledge? Consider how a feminist empiricist would shop for groceries or plant a garden.
2. How might scientists apply Code's view of *ecological thinking*?
 - a. Grasswick's notion of knowers as individuals-in-communities may be a helpful starting point. How might a scientist present herself as an individual-in-communities? How might social scientists view their subjects as individuals-in-communities? Will this vary with the level at which we recognize societies or communities?
 - b. What other aspects of scientists and subjects of study must we address to achieve ecological thinking? Is this different for different fields of inquiry?
3. What do you think are the particular strengths and weaknesses of feminist empiricism? Why might it be useful to distinguish feminist empiricism from other feminist epistemologies in some contexts but not in others? Social contexts? Historical contexts? Geographical contexts? Regarding some knowers but not others? Different bodies?

4. Might the different epistemologies work better in addressing different forms of research? Different methodologies? Different disciplines? Different research topics?

Online Resources

The Thinking Meat Project—Explaining Female Orgasm: An Interview With Elisabeth Lloyd

http://thinkingmeat.com/newsblog/?page_id=1201

The Stanford Encyclopedia of Philosophy

<http://plato.stanford.edu/>

This open-source encyclopedia features articles by experts in specific fields that are periodically updated.

- Anderson, E., Feminist epistemology and philosophy of science, March 16, 2011, <http://plato.stanford.edu/entries/feminism-epistemology/>
- Fehr, C., Feminist philosophy of biology, *June 22, 2011, forthcoming*, Fall 2011 edition, <http://plato.stanford.edu/entries/feminist-philosophy-biology/>

Many feminist empiricists, especially Fausto-Sterling, Lloyd, and Longino, have made important contributions to the philosophy of biology.

- Garry, A., Analytic feminism, April 29, 2004, <http://plato.stanford.edu/entries/femaproach-analytic/>

Feminist empiricism can be viewed as the epistemological wing of analytic feminism, given that empiricism has been the central epistemology and essential to the prevalence of the “analytic” approach in 20th-century Anglo-American philosophy.

- Stanford, K., Underdetermination of scientific theory, August 12, 2009, <http://plato.stanford.edu/entries/scientific-underdetermination/index.html>

This theory associated with Quine's naturalism explains the interrelation of epistemic and non-epistemic values for many feminist empiricists.

- Whipps, J., Pragmatist feminism, July 9, 2010, <http://plato.stanford.edu/entries/femaproach-pragmatism/>

Feminist empiricists engage with pragmatist philosophy primarily through the works of Quine, but other feminists engage different elements and authors in the pragmatist tradition.

Relevant Journals

Hypatia: A Journal of Feminist Philosophy

Signs: Journal of Women in Culture and Society

Social Epistemology: A Journal of Knowledge, Culture, and Policy

NOTES

1. Speaking broadly of the global North is not to deny the variability within this historical culture, and is a somewhat artificial description, but it helps to track connections among the various manifestations and implications of European colonization and contemporary capitalism.

2. The connections between empiricism and liberalism may be deeper than a mere analogy, as Steven Shapin and Simon Schaffer suggest in *Leviathan and the Air-Pump* (1989).

3. Although social gender and biological sex are deeply integrated, distinguishing them is valuable for addressing the more flexible social and political influences. Furthermore, the sex of an organism as a whole has no necessary or sufficient connection with an aspect or portion of the body. Not even chromosomes or genitalia sex a body.

4. Lloyd's failure to consider such implications led to some misunderstanding of the intentions behind her research, which she has remedied in follow-up articles by addressing its ramifications for women's sexuality. See the interview with Lloyd listed in the "Online Resources" section of this chapter.

5. Practices of testing and evaluation as well as the standards of factuality, evidence, and objectivity are part of the "context of justification" in traditional empiricism, providing epistemic justification or warrant. By contrast, heuristics and theory generation that concern standpoint theorists are considered part of the "context of discovery."

6. Harding (1986) similarly criticized early or "spontaneous" forms of feminist empiricism for maintaining that social values both matter and do not matter in science.

7. When there is consensus, dissent approaches zero, and the conditions (1) through (3) are met as follows:

1. One theory has *all* the empirical successes (explains all the different observations);
2. *All* the empirical vectors support that theory (productive scientific methods all fall under the theory).
3. With maintained consensus, nonempirical decision vectors *all* begin to support the one theory.

8. Duran bases her view of the feminine self on object-relations theory, which generally falls under feminist standpoint theory (Harding, 1986), but she aims to develop a naturalist version.

REFERENCES

- Antony, L. M. (2003). Quine as feminist: The radical import of naturalized epistemology. In L. H. Hankinson Nelson & J. Nelson (Eds.), *Feminist interpretations of W. V. Quine* (pp. 95–149). University Park: The Pennsylvania State University Press.
- Baier, A. (2002). Hume: The reflective women's epistemologist? In L. Antony & C. Witt (Eds.), *A Mind of One's Own* (2nd ed., pp. 38–52). Boulder, CO: Westview Press.
- The Biology and Gender Study Group. (1988). The importance of feminist critique for contemporary cell biology. *Hypatia*, 3(1), 172–187.
- Campbell, R. (1998). *Illusions of paradox: A feminist naturalized epistemology*. New York: Rowman & Littlefield.
- Clough, S. (2003). *Beyond epistemology: A pragmatist approach to feminist science studies*. Lanham, MD: Rowman & Littlefield.
- Code, L. (1991). *What can she know? Feminist theory and the construction of knowledge*. Ithaca: Cornell University Press.
- Code, L. (1995). *Rhetorical spaces: Essays on gendered locations*. New York: Routledge.
- Code, L. (1996). What is natural about epistemology naturalized? *American Philosophical Quarterly*, 33(1), 1–22.
- Code, L. (2006a). *Ecological thinking: The politics of epistemic location*. New York: Oxford University Press.
- Code, L. (2006b). Skepticism and the lure of ambiguity. *Hypatia*, 21(3), 222–228.

- Code, L. (2008). Thinking about “ecological thinking.” *Hypatia*, 23(1), 187–203.
- Daston, L. (1992). Objectivity and the escape from perspective. *Social Studies of Science*, 22, 597–618.
- Duran, J. (1993). *Knowledge in context*. New York: Rowman & Littlefield.
- Duran, J. (2001). *Worlds of knowing: Global feminist epistemologies*. New York: Routledge.
- Fausto-Sterling, A. (1985). *Myths of gender: Biological theories about men and women*. New York: Basic Books.
- Fausto-Sterling, A. (1992). *Myths of gender: Biological theories about men and women* (2nd ed.). New York: Basic Books.
- Fellows, J. (2010, June 28). The looping effects of objectivity. Paper presented at *Feminism, Science & Values*, a meeting of the International Association of Women Philosophers, University of Western Ontario, London, ON.
- Goldenberg, M. (2010, June 26). Resituating evidence in feminist science studies. Paper presented at *Feminism, Science & Values*, a meeting of the International Association of Women Philosophers, University of Western Ontario, London, ON.
- Gould, S. J. (1996). *The mismeasure of man* (Rev. ed.). New York: W. W. Norton & Company.
- Grasswick, H. E. (2004). Individuals-in-communities: The search for a feminist model of epistemic subjects. *Hypatia*, 19(3), 85–120.
- Haack, S. (1993). The two faces of Quine’s naturalism. *Synthese*, 94, 335–356.
- Harding, S. (1986). *The science question in feminism*. Ithaca, NY: Cornell University Press.
- Harding, S. (1989). How the women’s movement benefits science: Two views. *Women’s Studies International Forum*, 12(3), 271–283.
- Harding, S. (1991). *Whose science? Whose knowledge? Thinking from women’s lives*. New York: Routledge.
- Hundleby, C. (2002). The open end: Social naturalism, feminist values, and the integrity of epistemology. *Social Epistemology*, 16(3), 251–265.
- Kuhn, T. (1962). *The structure of scientific revolutions*. Chicago: University of Chicago Press.
- Kuhn, T. (1977). *The essential tension*. Chicago: University of Chicago Press.
- Linker, M. (2003). A case for responsibly rationalized feminist epistemology. In L. H. Hankinson Nelson & J. Nelson (Eds.), *Feminist interpretations of Quine* (pp. 153–171). University Park: The Pennsylvania State University Press.
- Lloyd, E. A. (2005). *The case of the female orgasm: Bias in the science of evolution*. Cambridge, MA: Harvard University Press.
- Longino, H. E. (1987). Can there be a feminist science? *Hypatia*, 2(3), 51–64.
- Longino, H. E. (1990). *Science as social knowledge: Values and objectivity in scientific inquiry*. Princeton, NJ: Princeton University Press.
- Longino, H. E. (1993). Subjects, power and knowledge: Description and prescription in feminist philosophies of science. In Linda Alcoff & Elizabeth Potter (Eds.), *Feminist epistemologies* (pp. 101–120). New York: Routledge.
- Longino, H. E. (1997). Cognitive and non-cognitive values in science: Rethinking the dichotomy. In L. H. Hankinson Nelson & J. Nelson (Eds.), *Feminism, science, and the philosophy of science* (pp. 39–58). Boston: Kluwer.
- Longino, H. E. (2001). *The fate of knowledge*. Princeton, NJ: Princeton University Press.
- Longino, H. E. (2004). How values can be good for science. In P. Machamer & G. Wolters (Eds.), *Science, values, and objectivity* (pp. 127–142). Pittsburgh: University of Pittsburgh Press.
- Longino, H. E., & Doell, R. (1983). Body, bias, and behavior: A comparative analysis of reasoning in two areas of biological science. *Signs: Journal of Women in Culture and Society*, 9(2), 206–227.
- Martin, E. (1991). The egg and the sperm: How science has constructed a romance based on stereotypical male-female roles. *Signs: Journal of Women in Culture and Society*, 16(3), 485–501.
- McCaughey, M. (1993). Redirecting feminist critiques of science. *Hypatia*, 8(4), 72–84.
- Meynell, L. (2007). Review of “The case of the female orgasm: Bias in the science of evolution” by Elisabeth Lloyd. *Hypatia*, 22(3), 218–222.
- Nelson, L. H. (1990). *Who knows: From Quine to a feminist empiricism*. Philadelphia: Temple University Press.
- Nelson, L. H. (1993). A question of evidence. *Hypatia*, 8(2), 172–189.
- Nelson, L. H. (2000). Empiricism. In A. M. Jaggar & I. M. Young (Eds.), *A companion to feminist philosophy* (pp. 30–38). Malden, MA: Blackwell.
- Nelson, L. H., & Nelson, J. (1995). Feminist values and cognitive virtues. *PSA 1994: Proceedings of the Biennial Meeting of the Philosophy of Science Association*, 2, 120–129.

- Nelson, L. H., & Nelson, J. (2003). Introduction. In L. H. Hankinson Nelson & J. Nelson (Eds.), *Feminist interpretations of Quine* (pp. 1–55). University Park: The Pennsylvania State University Press.
- Okruhlik, K. (1994). Gender and the biological sciences. *Biology & society: Reflections on methodology* (Suppl. 20 of the *Canadian Journal of Philosophy*), 21–42.
- Okruhlik, K. (2003). Logical empiricism, feminism, and Neurath's auxiliary motive. *Hypatia*, 19(1), 48–72.
- Quine, W. V. O. (1960). *Word and object*. Cambridge, MA: MIT Press.
- Quine, W. V. O. (1969). *Ontological relativity and other essays*. New York: Columbia University Press.
- Rooney, P. (1993). On values in science: Is the epistemic/non-epistemic distinction useful? *PSA 1992: Proceedings of the Biennial Meeting of the Philosophy of Science Association*, 1, 13–22.
- Rooney, P. (2003). Feminist epistemology and naturalized epistemology: An uneasy alliance. In L. H. Hankinson Nelson & J. Nelson (Eds.), *Feminist interpretations of Quine* (pp. 205–239). University Park: The Pennsylvania State University Press.
- Roth, P. (2003). Feminism and naturalism: If asked for theories, just say “no.” In L. H. Hankinson Nelson & J. Nelson (Eds.), *Feminist interpretations of Quine* (pp. 269–305). University Park: The Pennsylvania State University Press.
- Sandoval, C. (1991). U.S. third-world feminism: The theory and method of oppositional consciousness in the postmodern world. *Genders*, 10, 1–24.
- Shapin, S., & Schaffer, S. (1989). *Leviathan and the air-pump*. Princeton, NJ: Princeton University Press.
- Sobstyl, E. (2004). Re-radicalizing Nelson's feminist empiricism. *Hypatia*, 19(1), 119–141.
- Solomon, M. (2001). *Social empiricism*. Cambridge, MA: MIT Press.
- Tuana, N. (1992). The radical future of feminist empiricism. *Hypatia*, 7(1), 100–113.
- Tuana, N. (1995). The values of science: Empiricism from a feminist perspective. *Synthese*, 104, 441–461.