Feminist Perspectives on Science

BARBARA IMBER AND NANCY TUANA

In this issue of Hypatia *there is a consensus that science is not value-neutral and that cultural/political concerns enter into the epistemology, methodology and conclusions of scientific theory and practice. In future dialogues the question that needs to be further addressed is the precise role political concerns should play in the formulation of a feminist theory and practice of science.*

There is consensus, in the articles of this issue of *Hypatia*, that science is not value-neutral, that cultural/political concerns enter into the epistemology, methodology and conclusions of scientific theory and practice. Given the non-neutrality of science, the central question being asked is what role feminism should/can play in scientific endeavor. It is agreed that the role of reclaiming women's place in the history of science through writing about contributions of neglected, forgotten or under-represented women in science is a continuing necessity. Likewise, there is agreement on the need to continue a critique of sexism in the practice of science. There is also agreement on the necessity for a feminist presence in the formulation of epistemology and methodology since these are also areas where bias is perpetuated. However, there are many approaches to what forms this presence should take and what issues need to be addressed in order for feminist concerns to be recognized as valid components of scientific theory and inquiry.

In trying to define the components of what constitutes a science that reflects feminist concerns the discussion has increasingly come to focus on an assessment of women's political needs. Science and politics are seen as intricately bound together in all scientific activity, and much of the discussion among feminists revolves around the issue of the role politics does/should/will play in such a science consistent with feminist views.

It is this political component of science that keeps reappearing in feminist critiques on science. Longino states that "scientific inquiry should be expected to display the deep metaphysical and normative commitments of the culture in which it flourishes." She distinguishes two types of values relevant to science—constitutive and contextual. She defines the constitutive component of science as internal to science, that which determines "what constitutes acceptable scientific practice or scientific method," and the external contextual

Hypatia vol. 3, no. 1 (Spring 1988).

component as the "social and cultural context in which science is done." She argues that the constitutive and contextual separation can not be maintained. Contextual values are seen as essential components in the structuring of scientific knowledge. While Longino does not maintain that all science is value-laden, she does maintain that the essential mixture of contextual and constitutive components results in a science that is often not value-free. In other words, the mixture of contextual and constitutive components of science will always result in scientific inquiry being affected by its cultural/political world view, but that the proportions of contextual and constitutive components may differ from case to case or discipline to discipline.

The theory of many leading feminists is that in order to effect the politics of science, women will need to play a part in both the constitutive (inside) and contextual (outside) components of science. Irigaray points out the importance of effecting change from inside, demonstrating the need to begin with language, the very foundation of our society and world-view, while Evelyn Fox Keller and Ruth Hubbard point out the necessity of change coming from both inside and contextual areas of science. Keller and Hubbard argue that until a sufficient number of women are in positions of power, positions which can influence change in the practice of science, there will be little chance of including feminist concerns in science. But, both Keller and Hubbard warn that women are often subsumed by the very system of science they sought to change, or that because they have had to suppress gender differences in order to succeed, see no need for change. Hubbard shows how past scientific change may have come from inside, but as a self-perpetuating activity "by the chosen for the chosen." Therefore, while the inclusion of a greater number of women holding positions of power in science is essential if the changes that come from "inside" are to include feminists interests, it is not sufficient in itself to effect change. To effect change feminists will have to work both from the inside, constitutive area of science, and from the outside, contextual area.

Two examples of how feminists have effected change can be seen in anthropology and in the field of women's health. Changing a discipline from the inside can be illustrated by anthropology. By questioning the way in which evidence was accumulated and interpreted, feminist anthropologists, especially in cultural anthropology, have greatly broadened the parameters of that discipline. For example, it had often been the practice of male anthropologists to interview only male informants. This was not always done by choice. In many cultures it would not be deemed proper for a female to spend the necessary interview time with an unrelated male. However, many questions also went unasked because women's answers were considered of less importance than men's. Also, questions asked usually reflected male concerns and beliefs, and the way in which evidence was interpreted sometimes reflected androcentric biases. Rosser points out how feminists have questioned both

the method of collecting data and its interpretation, and have thereby been able to effect a revolution in the whole conceptual framework of anthropology by including the importance of women's experience.

Anthropology has been able to include feminist concerns, but not just because its membership includes a good number of women. Equally important has been the ability of anthropologists to be flexible and to adjust their conceptual framework to meet new demands. In contrast, the medical profession has been unwilling to adjust its traditional framework of androcentric biases and has only very slowly begun to grudgingly admit to the legitimacy of some of the programs emanating from feminist concerns.

In the case of medicine some changes have occurred due to the increased number of women physicians with their empathy for women's concerns about birth technologies, gynecology, etc., but all too often women physicians have been desensitized and subsumed by the very system involved in becoming an M.D. (as have many male physicians). However, even with an increased number of women physicians willing and able to see the necessity of changing the medical system's attitude toward women's health, the majority of physicians have still been male and unwilling to change. Therefore, in the case of the women's health movement, feminists have been most effective when operating outside of the traditional hospital structure. The women's health movement has been very successful, in spite of the male medical establishment, because it has been able to work both from within and from without. In working outside the established structures—in women's health clinics, self-help groups and alternative birthing methods—and by being able to demonstrate that there has been a positive response to the availability of non-traditional forms of medical care, feminists have been able to show traditional medicine the need for change (or at least reevaluation). On the other hand, the availability of an increased number of women physicians has helped to effect change inside the power structure.

Rosser's evaluation of anthropology applies to both anthropology and the women's health movement when she says that feminist approaches which may run counter to the prevailing way of interpreting science can sometimes result in yielding information that provides "a more complete picture of reality." The concept of "a more complete picture of reality" is an important one to consider because in it we are making a direct connection between a concept of reality and a political agenda. So we are not necessarily calling for science that is value-neutral. We are not calling for the removal of contextual elements. What we are calling for is the validation of difference—other approaches and alternative approaches.

One of the issues we need to be working on is the concept of difference and what we mean by difference. The concept of difference is currently being used in several ways. For instance, Keller says that we need a conceptual framework that "enables us to conceptually and perceptually negotiate our

way between sameness and opposition, that permits the recognition of kinship in difference and of difference among kin; a language that encodes respect for difference, particularity, alterity without repudiating the underlying affinity that is the first prerequisite for knowledge." Keller's analysis of difference includes difference as a conceptual framework for scientific inquiry, that is an acceptance of the validity of differing methodologies, but also includes the concept of difference as a respect for differing ways of knowing, of perceiving, of being.

Judith Genova also makes an appeal for the validity of difference, while denying a hierarchy of value. If a concept of "value-neutrality" can in any way be attached to feminism, then perhaps it is in the area of hierarchy that it can be best understood, since the notion of difference carries with it a notion of equality which is non-hierarchical. Hierarchical systems of science have traditionally assigned inferior status to the activities of gender and race other than male and white, and feminists warn against assuming the same hierarchical biases in the guise of feminist science. Longino points out the danger of substituting feminist bias for androcentric bias and thinking that because the science eliminates bias towards women, follows a political program amenable to feminism, that the results produced are somehow "truer" or "better." She reminds her readers that we "cannot restrict ourselves simply to the elimination of bias, but must expand our scope to include the detection of limiting frameworks and the finding or construction of more appropriate frameworks.

Sandra Harding points out that although science directed by politics is not necessarily a bad thing, that feminism is an emancipatory movement in which there is no place for hierarchies. Not only are women seen to benefit from the expansion of conceptual frameworks through the elimination of hierarchies and the validation of difference, but other under-represented groups in society benefit as well. For example, the Biology and Gender Study Group has demonstrated how gender bias has been historically linked to racial bias. Therefore, validating a concept of difference means the acceptance of difference not only for the way in which science is done, for differing epistemologies, but for differences of gender or race.

By extension, respect for difference with its concomitant elimination of hierarchies implies a broadening of the parameters of science on a participatory basis. Hubbard points out the relationship between integrating feminist politics into science and the need for a more participatory form of science. She points out that a "wider range of people would have to have access to making scientific facts and to understanding and using them. Also, the process of validation would have to be under more public scrutiny, so that research topics and facts that benefit only a small elite while oppressing large segments of the population would not be acceptable." In other words, a science that reflects feminist concerns is seen by many feminists as a science where theory

and practice are intrinsically related—both drawn from and reflecting a non-hierarchical, participatory and egalitarian society that validates difference.

However, this definition leaves a great many questions unanswered, questions that we will need to address further in future dialogues. The most obvious question is that given the recognition of the contextual part played by cultural/political values in scientific inquiry, and the recognition of its necessary inclusion in feminist goals for science, how do we justify our political goals over those of traditional science? Is the participatory nature of our science, the fact that many feel it more truly reflects reality, sufficient legitimation? How do we convince politically conservative scientists (both male and female) that our politically liberal approach constitutes "better" science? For that matter, is it necessary to do so, given the recognition of difference? Would it be sufficient to have a separate science, or does the idea of continued gender discrimination qualify the tolerance for difference?

Is difference then to be qualified? Exactly how should it be further defined and what role is it to play in feminist theory, in other theories of science? If feminist views of science are to have an overtly political component, where should the line between politics and science be drawn? Should a line be drawn? When does science become politics and no longer science? Isn't there a danger that science could dissolve into propaganda? How do we prevent such problems from occuring? By staying within the theoretical guidelines of scientific method—when scientific method has allowed for such blatant mismeasure of women?

How do we insure a participatory science? How do we effect a science by the people for the people? How do we change the practices of a scientific community whose science has depended on a particular world-view without first changing that world-view? Can we change the current androcentric world-view? Can we do it alone? Who will be our allies in this venture?

These are some of the questions feminists are currently considering when trying to define the character and role of feminists in science. Hardly an easy task, but one that needs to be discussed if feminists are to continue to effect beneficial change in science's attitudes toward women. Hilary Rose has reviewed some of the ways that feminist writers of science fiction have perceived the outcome of this dialogue between androcentric and feminist views of science. Sadly, the majority have seen the future as one of separation, with either the continued subjugation of women or with society reduced to only one sex. Those societies where equality has been reflected in their culture and science, tend to be alien. Hopefully, history will not imitate fiction. Meanwhile, to quote Longino, while "remaining committed to an abstract goal of understanding, we can choose to whom, socially and politically, we are accountable in our pursuit of that goal. In particular we can choose between being accountable to the traditional establishment or to our political comrades."

NOTE

*This essay was written by Barbara Imber, with help from Nancy Tuana. The bibliography was compiled by Nancy Tuana, with help from Barbara Imber.