BOOKS: CULTURE OF SCIENCE

Does Sex Matter?

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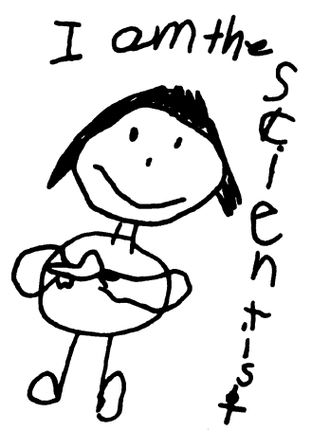
Londa Schiebinger's *Has Feminism Changed Science?* mixes policy, history, and science. Its title makes me wonder, changed from what? I think the answer is debatable, although machismo is certainly still alive and well in science. The pattern of men aggressively taking credit—not only from each other but also from women, including their wives—comes up over and over again. Battles for credit often define the history of science, because they determine whose deeds are worth remembering.

Although the intertwined structure makes the book a compact read, it does not lend itself to easy analysis. Schiebinger first addresses concepts of how science is performed and then considers the effects of gender in different disciplines. Within her discussions of those disciplines she interweaves many different themes. The interwoven discussion made perfect sense to me until a high-level science-policy wonk I could not ignore asked me: "What contributions have women made in science that a man could not have made?" For some silly reason, I initially thought that he had asked an easy question and that this book would provide an informed answer, one more extensive than my limited experience could allow. But Schiebinger does not deal with the topic by directly focusing on isolated events. Her discussion of the role of feminism in science is not a description of the roles women have played in science—roles that are chronicled in histories of science.

Has Feminism Changed Science?
By Londa Schiebinger
Harvard University Press, Cambridge, MA, 1999. 264 pp. $27.95, £17.50. ISBN 0-674-38113-0.

What Schiebinger does do is analyze examples from a variety of fields—medicine, primatology, anthropology, biology, physics, and mathematics—to explore how gender has influenced the content of science. In some cases, her emphasis is not on specific theories but on the general tone of particular fields. For instance, she notes that some physicists use the word "god" to ascribe a higher meaning to their quest. Leon Lederman's *The God Particle* is an example of physicists aggressively placing their field. The discussion of the macho behavior of these scientists will be familiar to any woman who tried to participate in this century's high-energy physics. Even the language depicting the origin of the universe, exemplified in the phrase the "Big Bang," is clearly male in its leaning and begs the question of whether the origin of the universe was a singular event or has happened more than once.

Primatology is one field where the presence of women has clearly been important to the direction and findings of research. Dian Fossey and Jane Goodall both described and documented behavior in primates that men did not see and did not study. The male focus was so strong that female behavior was missed.



A new image. A first-grade girl's drawing of herself as a scientist.

Compared to the physical sciences, the fields of biology and medicine have also been more inclusive of women (starting with the goddesses Hygeia and Isis, who were given roles in health). Female biologists and physicians have contributed much to their disciplines, and there are excellent scientists whose gender contributed to their insights. But ideally, science is democratic: once an idea is presented, anyone can work on it. This implies that males and females can both do the research and that the science should be gender neutral.

In the course of preparing this review, I asked people who think about these topics for their conclusions on the importance of gender to significant contributions made by women scientists. In her reply, Shirley Tilghman discussed Barbara McClintock (who worked on transposable elements in an intellectual vacuum) and Mary Lyon (who deduced X chromosome inactivation from her observations of mice with X-linked coat color mutations). She concluded, "I don't think that the fact they were women is what is important, though. It is that they were true originals." This thoughtful summary illustrates the problem with trying to tease out the specificity of female verses male. Other respondents mentioned many outstanding female scientists—among them Rosalyn Yalow, Rachel Carson, Marie Curie, Florence Nightingale, Clara Barton, Elizabeth Blackwell, Margaret Sanger, Elizabeth Kubler-Ross, and Sally Shaywitz—and noted that some, but not all, of these women would likely think that their contributions were made possible because they were women.

It is hard to demonstrate that particular research would not have been done if a woman (or a man) had not done it, but it is true that the questions of gender difference were not being addressed until women insisted. In her considerations of health policy, for example, Schiebinger clearly demonstrates that women's input has influenced the types of science that are funded. The medical questions asked can be very gender specific. The author generously acknowledges my contributions to policy, but she also gives a rightful place to Bernadine Healy's efforts. Although she was director of NIH for only two years, no other person in recent history so quickly put in place—with science to be done, people to be mobilized, and monies to be spent—a more fundamental program than the Women's Health Initiative. Healy also played a gender-specific role in pressuring to include women in clinical trials. For years, men had studied men so as to avoid the complicating effects of including females, and some researchers still find it irritating that they must consider gender differences in clinical studies. Indeed, it may have taken a female to see the overriding need to have things adequately tested on women.

Schiebinger also mentions Mary Clutter, who has held several positions at the National Science Foundation. Although Clutter is not nearly as visible or controversial as Healy, her dedication to junior scientists has influenced generations of women and she has been specifically helpful to women based in the government bureaucracy.

There is a perception that gender contributions are important to science, but it will always be hard to say that a particular scientific accomplishment was done because the scientist was either male or female. Multiple factors, however, frequently challenge us as we do science, and we cannot ignore our sex and the roles it plays in every part of our lives. *Has Feminism Changed Science?* is extremely useful to those who try to understand the quality of how science is done and the topics people choose. Many of us feel that we know why people pick topics, and often people's choices are attributed to specific events in their lives. In reality, such choices are usually quite complicated and the contributions of individual factors are difficult to assign.

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