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Separate and Unequal

[Alison Winter](#)

The Gender and Science Reader. Muriel Lederman and Ingrid Bartsch, eds. xiv + 505 pp. Routledge, 2001. \$90, cloth; \$29.95, paper.

Athena Unbound: The Advancement of Women in Science and Technology. Henry Etzkowitz, Carol Kemelgor and Brian Uzzi (with Michael Neuschatz, Elaine Seymour, Lynn Mulkey and Joseph Alonzo). vi + 282 pp. Cambridge University Press, 2000. \$74.95, cloth; \$19.95, paper.

Why are there still so few women scientists, especially at the upper levels of the scientific professions?" The opening lines of *Athena Unbound* ask this question, which is also central to *The Gender and Science Reader*. Despite many advances, and in contrast to very striking attainments in law, medicine and business, women have not achieved the same degree of success in science. Although more girls are studying science and excelling at mathematics, and although many more young women are interested in pursuing scientific studies in college and graduate school than in previous generations, this has not translated into a commensurate body of successful, mature women scientists. Not only does science provide a more precarious environment for women apprentices and practitioners than for men, its very content, according to many scholars of gender and science (including the contributors to *The Gender and Science Reader*), is affected by assumptions about masculinity and femininity. Both volumes ask how these assumptions have had an effect on scientists and their work. *The Gender and Science Reader* casts its net widely, addressing these issues by bringing together essays by many scholars, including some of the most prominent writers on the subject. *Athena Unbound* focuses specifically on the questions of what problems women scientists currently face and what reforms are needed.

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The Gender and Science Reader brings together 35 previously published essays spanning the full range of issues related to the participation of women in science and the effects of assumptions about masculinity and femininity on the content of scientific work. The first of six sections focuses on the experience of women as scientists today, combining first-person accounts of experiences in science with quantitative and longitudinal studies of aspects of women's careers ranging from undergraduate and graduate work to the evaluation of competitive grant applications. The next section, "Creating Androcentric Science," is a mix: Some essays argue that science became "male" in certain destructive respects during the scientific revolution and the Enlightenment. A statement on "Methods and Values" by the National Academy of Sciences is included, the editors tell us, because it says that cultural values can affect scientific work. And there is an essay by Sharon Begley on the Science Wars. In this section, and some of the others, there is an odd slippage between gender issues per se and the much more general issue of how cultural factors, broadly construed, affect scientific work. The next section provides a useful guide to the several different theoretical approaches people have taken in the study of gender and science. The final two sections suggest future directions for research and discuss how gender studies of science might have an impact on science itself.

One of the strengths of the book is that it makes available some well-known articles that have become rather difficult to obtain; I will therefore consider offering it to students as a supplementary text when I teach a course on gender and science next winter. *Athena Unbound* presents an interesting contrast to *The Gender and Science Reader*. Although it has a much narrower focus, it seems to me to do a better job of meeting some of the books' mutual goals. It is one of the best studies I have read on contemporary issues relating to women's participation in science. The book is based on qualitative and quantitative studies of the difference between the experience of men and that of women in scientific education and professional life, particularly from graduate school onward.

However, it is not ideal as an introductory text. Many of the essays (indeed, the most substantial ones) are immersed in the language of gender studies—they are written neither for scientists nor for the general public. Some are fairly abstract. The editors' introductory passages don't do enough to make up for this—they seem hastily written and are hard to follow. And although some of the sections are just what they should be (the one on feminist methodologies, for instance, works very well), others, such as the one on women's participation in science, don't cohere, despite some excellent individual inclusions (for instance, the convincing account of problems in

peer review by Christine Wenneras and Agnes Wold). Some of the articles that might have provided the most vivid, tangible sense of scientific issues are all too brief (such as Bonnie Spanier's "How I Came to This Study"). This matters because the most general ambition of the book, the introduction tells us, is to contribute to "a broader awareness of how science is shaped, that is, of the culture of science." This should in turn "open the way for a dialogue among and between scientists and all people." The volume is hampered, though, by its unevenness and, in parts, the inaccessibility of its prose.

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These findings are placed in several useful contexts. There is a nicely judged historical section, drawing on some of the best biographical studies of women scientists since the 18th century. In addition, the development (over the past few decades) of concern about the status of women in science and the different approaches to a solution are discussed. Several sections—the core of the book—trace the obstacles that confront girls and women who wish to study science. First an account (based on the secondary literature) is given of how differences in scientific interest and confidence are inculcated in boys and girls from early childhood through high school; this is followed by a discussion of graduate school and professional life that is based on original research.

Girls and women face an obstacle course of successive impediments at each stage of scientific study. Developmental research indicates that young girls are treated very differently from young boys by their parents—boys, for instance, are interrupted less at play and are expected to be (and become) more risk-taking than girls. By the age of four, American children have a male image in mind when they think of the figure of a scientist, as the authors' own research bears out. In elementary, junior high and high school, girls are expected to have more trouble than boys in science and mathematics classes. They are often encouraged by parents and teachers to give up when the math gets difficult.

Girls who finish high school enthusiastic about science usually report being

inspired by an exceptional teacher. The same is true in college, where there are further "leaks" in the "pipeline"—a single bad experience can derail young women science majors much more easily than the men in their classes, and those who finish undergraduate work with an interest in graduate school usually have had the support and encouragement of a particular mentor.

The first few years of graduate school are then more precarious still, as women students are frequently marginalized from study groups and other informal gatherings; without these supports, it is harder to find a research topic, harder to come to understand the kind of product that is expected at the end of the Ph.D., harder to prepare for qualifying exams, harder to obtain disciplinary repute and credibility, and, of course, harder to maintain one's confidence.

After the Ph.D., women are much more likely than men to give their marriages higher priority than their postdoctoral positions and first jobs—when faced with the "two-body problem," they are more likely to be the ones to compromise, taking lower-prestige postdocs within commuting distance of their husbands. This makes it more difficult to obtain assistant professorships, which, of course, are even scarcer than postdocs for individuals with geographic restrictions. Finally, the conflict between professional life and family can become acute among women assistant professors, who agonize whether to postpone starting a family until after tenure (when it may be too late), to give up on the idea of children entirely or to risk tenure by having children earlier. The authors found that far fewer women than men had children before tenure and that there were disproportionately more childless women than childless men in tenured scientific positions.

I have given a very rough sketch of what the authors have laid out thoughtfully, with carefully chosen pieces of evidence, in a clear but nuanced style. I found *Athena Unbound* so gripping that I read it in one sitting. I expect that many women scientists, and their families, will find that it articulates as a general problem issues they have encountered in their own careers. Much of what is said here is true for academia more generally—I am a historian of science, not a scientist, and many of these issues affected me or my close friends. For instance, I risked my marriage by taking my first job on a different continent from my (academic) husband's and then postponed having a baby until I had finished my first book and had just received tenure. Two of my closest women friends, who began their assistant professorships when I did, chose to have children before tenure (one at an elite private science institute, the other at a state university) and

were both turned down; it seems to them, and also to me, that our respective decisions about children were an important factor in each case. *Athena Unbound* quietly but definitively documents the consequences of such factors when they play out across the whole of science.

Both books under review have a campaigning message. *The Gender and Science Reader* assumes and asserts that the kind of work it showcases will have a positive impact on science itself, in broad terms, whereas *Athena Unbound* calls for more specific, and perhaps more modest, results, in the form of particular changes in policy. I find myself concluding that the quieter approach of *Athena Unbound* in the end carries more conviction. Whether it will have the greater impact remains to be seen.

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