

Bringing Reason and Context To the Science Wars

Beyond the Science Wars: The Missing Discourse about Science and Society

▶ Edited by Ullica Segerstråle
State U. of New York Press, 2000.
\$59.50, \$19.95 paper (238 pp.).
ISBN 0-7914-4617-4,
ISBN 0-7914-4618-2 paper

Real Science: What It Is, and What It Means

▶ John Ziman
Cambridge U. Press, New York,
2000. \$39.95 (399 pp.).
ISBN 0-521-77229-X

Reviewed by Craig McConnell
and Robert H. March

It is high time for peace talks in the “science wars,” the series of contentious and vitriolic disputes between some members of the scientific community and a faction within the group of humanists who study science, particularly those in “science and technology studies.” Contributors to *Beyond the Science Wars*, edited by Ullica Segerstråle, and author John Ziman of *Real Science*, insist that the debate be understood in historical context and lament the unfortunate fallout that has accompanied the science wars.

Science and technology studies was born as a field in the 1940s, with the laudable goal of enhancing public understanding of science in a society increasingly defined by rapidly evolving technology. From the outset, it paid particular attention to the process by which scientific knowledge comes into being. Thomas Kuhn’s celebrated monograph, *The Structure of Scientific*

Revolutions (U. of Chicago Press, 1962), brought science and technology studies to the attention of broad segments of the academic community.

Originally the province of historians and philosophers, science and technology studies soon attracted a number of young sociologists. By the early 1970s, a group at the University of Edinburgh proclaimed a new objective, which they called the “strong program,” defined as an approach to studying science based on sociological methodology—including impartiality (no theories or observations should be ratified as “true” by the sociologist) and symmetry (oxygen and phlogiston theories, for example, should be considered by sociologists to be symmetric in terms of their attempts to describe nature). This methodological purism led to a major break from the tradition in science and technology studies of explaining science to the lay public in terms scientists would approve. The strong program led subscribing sociologists, philosophers, and historians of science to treat not just the process of science but also the knowledge content of science as “social constructs.” By the 1990s, a number of scientists struck back, and the fat was in the fire.

Paul Gross and Norman Leavitt struck hardest with the publication in 1994 of *Higher Superstition: The Academic Left and Its Quarrels with Science* (Johns Hopkins U. Press). Painting with a broad brush, Gross and Leavitt conflated the aims of the strong program with the writings of French postmodern deconstructionists, who treated scientific texts with the same methodology used in the critique of literature. In 1996, Alan Sokal, a theoretical physicist, published an article in *Social Text*, a leading journal of cultural studies, under the title “Transgressing the Boundaries: Toward a Transformative Hermeneutics of Quantum Gravity,” an unabashed hoax, which Sokal later revealed in the pages of *Lingua Franca*. Sokal’s foray deepened the rift between the two communities. What it proved is problematic, beyond the fact that Sokal knew more about the jargon of science and technology studies than the editors knew about quantum gravity. But it was generally accepted

in the scientific community that the science and technology studies practitioners had egg on their faces.

As Segerstråle and the other contributors attest in *Beyond the Science Wars*, the science wars have flamed up at professional conferences, in the headlines and op-ed pages of major newspapers, and in the pages of scientific journals and science and technology studies journals. Segerstråle is a sociologist at the Illinois Institute of Technology in Chicago. She has assembled a collection of essays (including two of her own) by science and technology studies practitioners with a broad spectrum of views, most of whom feel that science and technology studies has, in effect, run off the rails. Segerstråle is motivated by a fear that the current atmosphere of antagonism is harmful to science, and potentially catastrophic for science and technology studies.

The authors included in *Beyond the Science Wars* strive to examine the way science and technology studies and scientists got into this predicament and propose a variety of routes out of it. Most of the authors maintain that the science wars have been waged by a small but vocal minority in science and technology studies against a similarly small yet vocal minority within the scientific community. They hope to raise the visibility of nonconstructivist voices from science and technology studies who make up the vast majority of the choir. Only one contributor, Steve Fuller, remains an unregenerate relativist, insisting that if there is a misunderstanding here, it is the scientists who have misunderstood. At the other extreme, Henry Bauer, a chemist who has been involved with science and technology studies since the 1960s, explains his “intellectual dissatisfaction” with the direction science and technology studies has taken. His essay is poignant testimony to the difficulties of maintaining a dispassionate tone while discussing the implications of the social study of science.

In *Real Science*, on the other hand, theoretical physicist John Ziman readily admits that, since science is a social institution, its findings inevitably qualify as social constructs. Ziman, who

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retired from the physics department at the University of Bristol in 1982 to pursue a second career in science and technology studies, concedes that scientific facts are unavoidably “theory-laden” and that the social institutions that support science have a strong influence on its agenda. For Ziman, the heart of the science wars can be understood in terms of a breakdown in communication. Science and technology studies scholars have hidden behind the word “construction” while naively or antagonistically denying the impact of its many negative connotations. Ziman accepts a constructivist view of science, but he maintains that science still has characteristics that distinguish its assertions from, say, a religious belief or a political ideology. He cautions scientists against responding to the relativism of science and technology studies by retreating to the naive scientism of what Ziman calls “The Legend,” the mythological view of science as the product of the entirely rational and selfless efforts of dispassionate humans.

Everyone who has participated in research knows that it is an untidy process, guided as much by intuition as by logic, the work of reasonably intelligent beings with all the incumbent faults and frailties. Its “objectivity” is far from perfect, residing not in the individuals who practice it but in the scientific community, and especially in its systems of communication, which Ziman calls “collective skepticism.” Refereed journals, conferences, and less formal contacts help to root out bias and error. The end result falls far short of perfection, but it does represent a body of facts and theories that a reasonably prudent individual can use as a guide to practical action.

Ziman uses the controversy as a “bully pulpit” to expound on what really worries him: the gradual emergence of what he calls “postacademic science,” the convergence of academic and industrial modes of research. University research is increasingly supported by industrial sponsors and mission-oriented government agencies that exercise control of the research agenda and restrict the dissemination of findings that is so essential to the process of science. This potential bias is likely to further erode public confidence in science. He sees no way to buck this trend. Scientists must find new modalities to maintain their collective integrity. Scientists, sociologists, philosophers, and historians alike would be better served paying attention to the issues surrounding postacademic science than continuing the petty battles of

the science wars.

Much of the antagonism of the science wars can be traced to the well-established academic practice of stating one’s views in extreme form to stir up a controversy and thereby attract the kind of attention that can actually enhance a career. This is common practice in the humanities and not unknown in natural science. Understanding the source of the antagonism and misunderstanding between scientists and science and technology studies practitioners is key to getting beyond the science wars, and both of these volumes make significant steps in this direction. Any scientist interested in establishing a more constructive dialogue with the science and technology studies community would be well-advised to read these works.

Einstein in Love: A Scientific Romance

▶ Dennis Overbye
Viking/Penguin, New York, 2000.
\$27.95 (416 pp.).
ISBN 0-670-89430-3

Einstein: The Formative Years, 1879–1909

▶ Edited by Don Howard
and John Stachel
Birkhäuser, Boston, 2000. \$54.95
(258 pp.). ISBN 0-8176-4030-4

The “Einstein Industry” is flourishing as never before. Since the appearance of Abraham Pais’s best-selling and still unsurpassed scientific biography of Albert Einstein, *‘Subtle Is the Lord...’* (Oxford U. Press, 1982), at least four other, more “popular” biographies have been published, as well as several other Einstein-related books such as a collection of quotations and Einstein’s love letters to his fiancée. Now Dennis Overbye, a well-known science writer and deputy science editor of the *New York Times*, has added his *Einstein in Love* to the list of Einstein biographies for a general audience.

Is there a need for yet another biography? Obviously Overbye thinks there is. In his prologue, he claims that this book is not a biography in the strict sense of the word, but rather “an attempt to bring the youthful Einstein to life.” The somewhat strange title, that suggests a musical comedy rather than a serious biography, must be seen in this light: The Einstein portrayed here is a man full of vigor and love—for physics as well as his com-

panions, both female and male. Despite this somewhat different approach, Overbye’s book contains the usual biographical ingredients, such as a narrative of the well-known facts of Einstein’s life and an exposition of his science.

The latter is less successful than the former; although Overbye’s prose is clear and his style is polished, his discussion of the science, aimed at a general audience, is not always accurate. His description of Max Planck’s work on radiation theory, for example, and his summary of Hendrik Lorentz’s electron theory are not only inaccurate but sometimes downright misleading.

But where Einstein as a person comes to the foreground, *Einstein in Love* makes for good and entertaining reading. In a well-balanced account, Overbye succeeds in making Einstein come to life in all the complexities of his personality, which is no small achievement. He portrays Einstein as a human, not as a saint, and he makes no secret of the darker sides of Einstein’s personality—such as his less than exemplary behavior as a husband and father—without, however, giving them undue emphasis.

The book ends rather abruptly and unsatisfactorily around 1920, after the confirmation of general relativity’s prediction of the deflection of starlight by the Sun, which turned Einstein into a public figure almost instantly. It remains unclear why this cutoff point was chosen. Perhaps it is because Einstein’s correspondence up to 1918 is easily available, both in German and in English translation, and with detailed commentary, in the volumes of the *Collected Papers of Albert Einstein* that have been published so far. In any case, Overbye has made good use of the Einstein edition, enlivening his text with many well-chosen quotations. Despite the shortcomings noted earlier, his book is a useful addition to the Einstein literature.

Einstein: The Formative Years, 1879–1909, aims at a more specialized audience. This collection of essays is the eighth volume in the Einstein Studies series, edited by the well-known Einstein scholars Don Howard and John Stachel, and is partly based on papers presented at a meeting held in 1990.

As the title indicates, the volume focuses on the first 30 years of Einstein’s life, the years before he held an official academic position—the years during which he produced or laid the foundation of his most important work. In eight papers, the contributors to this collection explore the new material that came to light during preparation of the early volumes of