

# *FOCUS: WHAT IS THE VALUE OF HISTORY OF SCIENCE?*

## What Difference Does History of Science Make, Anyway?

*By Jane Maienschein\* and George Smith\*\**

### ABSTRACT

This essay opens up the question of what difference the history of science makes. What is the value of the history of science, beyond its role as an academic pursuit that we historians of science know and love? It introduces the set of essays that follow as explorations that grew out of a seminar on this topic and that arise from the authors' particular concerns both that historians of science do not work hard enough to make their work of value and that others do not know of the potential. That seminar, at the Marine Biological Laboratory, was funded for nineteen years by the Dibner Institute and last year by Brent Dibner. It will continue and carry such discussions forward in new ways as the Arizona State University–Marine Biological Laboratory History of Biology Seminar Series. This set of focused essays seeks to invite lively discussion and response.

**W**HAT DIFFERENCE does history of science make, anyway? This is the question we began asking in 2005, as one of us (George Smith) was working to secure the future of the Dibner Institute for the History of Science and Technology, housed at MIT, and the other (Jane Maienschein) was establishing the Center for Biology and Society, embedded within the School of Life Sciences at Arizona State University, after having been a Dibner Fellow in 2002. What is the history of science good for? we asked, and, in particular, What difference does it make for science? George pointed out that Simon Schaffer had remarked

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This focus section was organized by Jane Maienschein.

to him that never has the market for books on the history of science been greater—and never has the historical accuracy of so many of the most popular books been worse. We worried that scientists and others want history, but they do not know how to tell good history from bad. We also lamented that the history of science as a professional field seemed to be drifting further away from science and more and more to laying out interpretive theories or telling stories that have little larger impact.

It seemed to be time to take a serious look at the question, What is the value of history of science for science? The question was raised in different ways in the early 1990s during the heat of the “Science Wars,” and for some time it was difficult to address it seriously without getting entangled in that divisive debate. Now that we are past that set of controversies, perhaps we can return to this question and examine it from a balanced perspective.

The question includes several different subquestions, of course, starting with the question of what we count as the history of science. We decided to be broadly inclusive, for purposes of developing a collaborative workshop, and we take history of science to include all work that studies science carefully and examines its content, context, and impact. That means that what we count as having value is also inclusive. We also include the narrower subquestion that provoked us initially: Of what value is close historical analysis of texts for anybody but professional historians specializing in a particular area?

Asking about the value of history of science includes questions about science as a whole, as a field or as a body of knowledge or as a way of knowing within the larger world—including through policy, education, and public understanding of science. It also includes questions about scientists as actors doing science and about historians of science as actors who could contribute to doing science. We decided to look at all of these.

Initially we intended to organize a workshop at the Dibner Institute, as part of the institute’s mission. As it became clear that the Dibner would shut its doors permanently in December 2006, we instead embraced the opportunity to reflect on what its fourteen-year run actually meant. We chose the Marine Biological Laboratory (MBL) in Woods Hole, Massachusetts, as our workshop site. Dibner monies have supported the History of Biology Seminar at the MBL since 1989, when the Dibner Fund helped sponsor the History of Neurobiology and Behavior course. This was the second in the series of what were initially offered as courses: the MBL funded the History of Embryology and Genetics course as part of its Centennial Project. Thus, 2007 was the twentieth year of formal history of biology at the MBL, nineteen of those with Dibner support. The MBL has a new director, Gary Borisy, who is enthusiastic about the history of biology and the MBL’s history. Cathy Norton, the director of the MBL-WHOI (Woods Hole Oceanographic Institution) Libraries, has for over a decade been excited about the possibilities for, and understands the importance of, the history of science. It made sense to dedicate our last Dibner-MBL Seminar to examining the question of what value history has for science.

This was also the first year of a new series, the MBL-ASU (Arizona State University) History of Biology Seminars. We had the opportunity, then, to reflect on two decades of courses and seminars at the MBL and on the legacy of the Dibner Institute—and to sharpen and shape our thinking in looking ahead. We lined up a diverse group of mostly younger scholars to help us and set out to think together about the value of history of science from various angles. This special Focus section is the product of that intense week of thinking at the MBL in May 2007.

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We started with the observation that although individuals have studied the history of science for a couple of centuries, history of science as an academic discipline dates from after World War II. From that time, the discipline has struggled to gain a place in the academic world and beyond. Bern Dibner, in forming plans for the Dibner Institute for the History of Science and Technology, hoped that it would achieve two aims: to foster an international community of scholars engaged in advanced research in the history of science and to promote history of science and technology as an academic discipline that, through careful historical investigation, yields a deeper understanding of science and technology. Dibner himself was totally convinced of the extent to which research in the history of science can yield such a deeper understanding, but he had the advantage of having engaged in research in the history of science and technology himself. His goal in his writings, and in founding the Burndy Library and the Dibner Institute, was to convince others of the value that such research produces.

Bern Dibner's example is generalizable. Those who engage in extensive research in the history of science rarely question the value of their historical research. For them, digging into historical details is a way of learning that holds intrinsic value. That lesson, however, entails no conclusions about the value for those who do not themselves engage in such research. Worse, because historians of science interact primarily with one another or with other academics, they tend to be either oblivious or dismissive when those outside the field do not value careful historical research as they do. As a consequence, questions about the value of the history of science for those outside the field have rarely received much beyond *pro forma* discussion among those in it. During its fourteen years, the Dibner Institute itself skirted the issue in that its criteria for the selection of fellows focused on the difference the proposed projects would make to others working in the field of history of science and technology.

We have no doubt that scientists can come to value careful primary source research in the history of their field if they do it—or even if they have had some experience doing it as part of their formal education. A more difficult question is what they get out of reading secondary sources. As every historian learns, one of the most challenging problems in writing history is the selection of which details to include (or exclude). Any decent publication in the history of science includes only a very small fraction of what the author has learned in researching the topic, a fraction ideally selected on grounds of pertinence to the questions the publication is addressing. When scientists read the work, there is no guarantee that they will be doing so from the point of view of the author's questions. Only a slight departure from those questions can make details that the author chose not to include more important than those that were. Every historian is fully aware of this, but those outside the field tend not to be, and this makes them prone to draw what are sometimes seriously mistaken conclusions from reading secondary sources alone, even when these meet the highest professional standards. This complicates the question of the value of professional secondary sources to those outside the field, and we reflected on this complication and its implications throughout the workshop. We placed the onus on ourselves as historians to answer the value question to the satisfaction of those who work in other fields.

We decided to look seriously at the hypothesis that science can actually be made better when it embraces a historical perspective and resolved to explore whether and in what way this is true. We agreed to examine myths about how the scientific enterprise works, emphasizing the importance of accident and local contingency in science, exploring the role of assumptions and choices made in science, and working on examples of how such

selections have shaped scientific results. We started out with a primary emphasis on the way science works and on how history might make a difference. In addition, we agreed to ask what difference it makes to have one view rather than another about how science works: What difference does it make for science, and what difference for the way that we educate students, train graduate students, and interact with the public?

Our larger goal was to develop effective ways that historians of science and scientists can work together to improve the quality and impact of each. We chose to select examples where the history has seemed to matter—or where we can imagine how it could—and to develop those. As we developed the workshop and invited participants, they led us to refine the questions and to expand our scope to ask what difference history of science has had and can have in the public, policy, and education arenas.

This set of essays carries our week-long discussions forward. We began with a serious question, to which we agreed that the answer might be that history of science has little value. We ended the week with the collective conclusion that the history of science has considerable value for various purposes, as discussed in the following essays. But it remains necessary for historians to examine, explore, and extend those values. As historians, we must push ourselves to ask this question continually, and each generation of historians of science must ask it anew. It is not useful to individuals, to the field, or to the profession for historians of science to retreat to their secure studies and preach about the importance of our field. It is not valuable to dismiss popular histories of science that get the details “wrong” but sell volumes, nor to sit in our tenured positions and complain that discussions of policy about climate change or creationism do not take the history seriously.

Like our scientific counterparts, we have roles to play as historians. We need further attention to what those proper roles are, and then we need to think as a community about how to develop the full range of values of the history of science for science in its multiple contexts. We cannot expect each individual to carry out these outward-looking roles, of course. But how can we value those who do, reward them for their contributions, and take their lessons to heart individually and to the heart of the profession?

This is a conversation that has just begun but that Jane Maienschein (as president) and Bernie Lightman (as editor of *Isis*) take seriously for the History of Science Society in particular. Beyond the profession, James Collins (as co-organizer of the MBL Seminar and as head of the Biology Directorate at the National Science Foundation) invites us to bring history to inform decision making at the NSF, for example, and National Research Council staff members invite historians of science to help guide science education. These essays provide suggestions for starting a more serious reflection on the question that George Smith continuously asked as director of the Dibner: What is the value of history of science beyond its own disciplinary self? There is, in addition, a new question that emerged from our workshop: How can we develop our history of science so as to provide the multiple values that we see as possible and important? The essays here ask what the value of history is for education, for policy, for the public and science communication, and for scientists—as seen for a selected case of systematics and for selected laboratory scientists. We consider this a start for what we hope will be a continuing and lively conversation.