

Rethinking Sarton's Institute for History of Science and Civilization—Virtually

*By Jane Maienschein**

ABSTRACT

George Sarton's original vision in establishing *Isis* and *Osiris* carried beyond these two publications. His particular view of history of science is worth revisiting to reflect on the values he embraced and the context in which he worked. His idea of an Institute for the History of Science and Civilization is even more provocative. Although Sarton's ideas and, especially, his way of framing them would probably be rejected by most today, there is at least one major emphasis worth recovering and reasserting: his commitment to taking the science and its technical aspects seriously.

AS WE NEAR A CENTURY OF *ISIS*, it is difficult not to marvel at the changes. Both history and science have evolved in so many ways that it is difficult to see how one journal can be enough to include all the areas of scholarship relevant to the history of science profession. George Sarton's original vision in establishing a publication for the field seems so distant that few read his words any more. This is especially true since he believed in scholarship in multiple languages, which relatively few scholars have mastered, and in his own work he seems to have gotten stuck in the distant past.

Yet Sarton sought to establish a scholarly journal for articles to appear in multiple issues throughout each year, *Isis*, and another to be published once a year for more sustained consideration of specified topics, *Osiris*. He had a particular view of history of science, and it is worth revisiting the values he embraced. Even though his ideas and, especially, his way of framing them would probably be rejected by most today, there is at least one major emphasis worth recovering and reasserting. This is his commitment to taking the science and its technical aspects seriously.

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SARTON'S VISION

In addition to journals, Sarton imagined an institute for the history of science. During 1916 he busily wrote to scholars throughout the United States to gather support for an American institute. The time has come, he wrote in his letter to the Yale biologist Ross Harrison, “to devote to the history of science at least as much attention as is given to the history of other aspects of human life.” Furthermore, “it is necessary to undertake these studies in a systematic and thoroughly scientific way. Historical studies have been brought into disrepute through their inaccuracy, but if they are pursued in the right way, they are just as scientific as any other studies.” Not only that, but “we also believe that these historical studies are of great importance for a deeper understanding of the principles and of the real signification of each science and that there is no better way to keep the scientists interested in one another’s work and broadminded, despite the increasing need of specialization, than to undertake them.”¹ Scientists should be not just consumers of the history of science but also participants—for the good of their own work.

Harrison was an embryologist, head of the biology programs at Yale, active in shaping the National Research Council, editor of the *Journal of Experimental Zoology*, and one of the leading scientists of the day. It is not at all surprising that Sarton would have appealed to him when recruiting scientists to back his idea for an institute. Importantly, he was very much seeking to recruit scientists as supporters. The list of those he had already signed on by the time he wrote to Harrison included David Starr Jordan, Stanford’s most famous biologist; Frank Rattray Lillie, director of the Marine Biological Laboratory in Woods Hole and the Department of Biology at the University of Chicago; Jacques Loeb, already known for his work in what the historian Philip Pauly has called engineering life; and scientists in other fields. Harrison did not join Sarton’s cause, but many others did.

As he composed his letters soliciting support, Sarton’s thinking evolved a bit; by the time he published his ideas in *Science* in 1917, he was calling the enterprise “An Institute for the History of Science and Civilization,” and in this period of war he appealed to American pride in establishing advantages that would be “greater than those offered abroad.” He argued that “*the history of science is the essential basis of any philosophy of science, indeed of any philosophy which is not mere metaphysics or literature.*” And “*the more science enters into our lives, the more it must be ‘humanized,’ and there is no better way to humanize it than to study its history.*”²

As he laid it out, Sarton’s institute would have students, with equipment and a place to work that would connect them with expert historians of science; it would help scholars acquire research materials at cost for use at their home institutions, with technicians and equipment to collect and photograph materials; it would bring together scientists interested in history, historians interested in sciences, and philosophers in a common meeting place for the exchange of ideas; it would collect research materials together in ways that were not then known in the United States; and it would publish journals to spread new knowledge, with *Isis* as the model. The institute would be a place, with scholars and students and staff, and it would also have a broader reach to the profession and the wider community. If only such a great idea could be realized, Sarton enthused; “it would place

¹ George Sarton to Ross Granville Harrison, 2 Nov. 1916, Harrison Papers, Yale University Archives, New Haven, Connecticut.

² George Sarton, “An Institute for the History of Science and Civilization,” *Science*, 1917, 45:284–286, on p. 284. See also his follow-up letter with the same title, *ibid.*, 1917, 46:399–402; and Sarton, *The History of Science and the New Humanism* (Cambridge, Mass.: Harvard Univ. Press, 1962), p. 191.

the New World in another light if there could be founded here, especially at this time, an institute that might in the near future become the cradle of new intellectual movement, of a new humanism.” For Sarton, “the study of history, and especially of the history of science, may thus be regarded, not only as a source of wisdom and humanism, but also as a regulator of our consciences: it helps us not to be complacent, arrogant, too sanguine of success, and yet remain grateful and hopeful, and never to cease working quietly for the accomplishment of our own task.”³

A year later Sarton continued his campaign, turning further to scientists as supporters and arguing more forcefully that they needed history of science, just as that history needed science. He wrote in an essay in *Scientific Monthly* that even those who supported the idea of including the historical study of science in their work did not know how to do the job. They asked how they should go about teaching science in light of history. Sarton worried especially about those philosophers who felt that just teaching about a few figures from the past, like Thales or Pythagorus, was enough to be historical. They asked what more he wanted; Sarton emphasized that “I wanted so much more and I felt that they were so deeply ignorant of the most elementary facts of science, so unaware of their real significance, so innocent of the true spirit of science, that I often gave up explaining anything. But I became more and more convinced of the necessity of insisting above everything else on the scientific foundation of the history of science.”⁴

It was not that the history should become scientific instead of historical but, rather, that the history of science must be about the science. And it was not that being serious about science meant that the history of science should be “internalist,” or only about the internal logic and workings of science. Rather, history of science needed to take the texts and the contexts seriously. Sarton noted that “the chief requisite for the making of a good chicken pie is chicken; nay, no amount of culinary legerdemain can make up for the lack of chicken. In the same way, the chief requisite for the history of science is intimate scientific knowledge; no amount of philosophic legerdemain can make up for its absence.”⁵

A CENTURY LATER

Indeed, it does seem essential to have science for the history of science. This emphasis on taking the science seriously and placing it centrally still makes sense today, and it is probably even more important for scholars to hear now than it was nearly a century ago. Today, scientists largely ignore history, except as anecdote or to give students a sense that science does, in fact, have a past and is, in fact, done by real people. That is not surprising, and yet it is gratifying that, given half a chance, a few scientists have jumped at the opportunity to learn about and even to help do history.⁶ It is equally important when historians jump at the chance to learn science and bring it into their history and to bring their history to the science. Many historians, I fear, have swung too far in the direction of social and cultural contexts and have left the texts and practices of science too far behind.

This does not, however, mean that we should revert to Sarton’s particular vision. Even

³ Sarton, “Institute for the History of Science and Civilization,” p. 286.

⁴ George Sarton, “The Teaching of the History of Science,” *Scientific Monthly*, 1918, 7:193–211, on p. 194.

⁵ *Ibid.*

⁶ See the special Focus section, “What Is the Value of History of Science?” in *Isis*, 2008, 99:318–373. In addition, the Arizona State University/Marine Biological Laboratory History of Biology Seminar (formerly supported by the Dibner Institute for the History of Science and Technology) promotes such interdisciplinary conversations, leading to robust collaborations.

colleagues at the time and reflecting on the occasion of Sarton's death did not share all aspects of the vision he proposed. Lynn Thorndike made it clear that Sarton intended to direct the institute he envisioned and recalled that he had tried to dissuade Sarton from the idea of heading up an institute with a building, a librarian, a secretary, an annual report, administrative duties, and "what not." I. B. Cohen commented that Sarton was insecure about his role in the profession; and James Conant noted that Sarton's influence through teaching remained limited and that, when he failed to achieve his grand vision, he settled into a lonesome life in Widener Library Room 185 rather than trying to build support slowly or for parts of his plan.⁷ In fact, Sarton did not establish an institute, but his appeal did resonate with many, including scientists. Why? And what can we learn from revisiting his ideas?

I do not want to repeat the arguments already made that it is, in fact, valuable to study history for science (and therefore of interest to scientists) or science for history (and therefore important for historians) or science and history for history of science (and therefore important for all of us). Let me just assert that historians and scientists need each other to help translate across fields in order to address a wide array of problems and questions of shared interest.

Instead, I want to pick up with at least some of what Sarton seems to have been thinking in that period dominated by World War I and give it a virtual new twist. How can we teach science, history, and civilization? Concerns about preserving what they have seen as "civilization" were on people's minds then—and now. How shall we teach younger generations in order to preserve values we hold dear? And do we even know what those are? What do we actually care about? What role does the history of science play? These are some among the many questions that swirl around the understanding of science and history. Are there new ways of addressing them?

As historians of science who read *Isis* and perhaps also review for and even write in the journal, we surely care about scholarship. As members of the History of Science Society and other professional societies, we surely care about community and civilization. We care to develop a community of scholars committed to studying the history of science and its social contexts and implications. We care to develop an international network of those who share that commitment. Different scholars emphasize different problems and methods and periods and subjects. What brings us together is a commitment to the study of science and of the texts and contexts of science. Whether or not we agree with Sarton in seeing this as promoting a new humanism, we certainly are studying civilization.

To do this it is not enough, as Sarton complained, for philosophers to assert that they study some figures from the history of philosophy and that therefore they do history of science. Nor is it enough for historians to assert that they include some scientific figures or point to some episodes where science was involved and that therefore they do history of science. It is not enough for scientists to add a few stories taken from popular secondary sources and feel that they have embraced the history. Instead, we need robustly to take both the science and the history seriously. In the remainder of this essay, I will look at the possibilities for developing a different kind of institute—virtual rather than physical—that addresses Sarton's core goals of providing a place and a way for scholars to come together across disciplines to do research in the history of science, collecting and making available

⁷ Lynn Thorndike, "Some Letters of George Sarton," *Isis*, 1957, 48:323–334; I. Bernard Cohen, "George Sarton," *ibid.*, pp. 286–300; and James Conant, "George Sarton and Harvard University," *ibid.*, pp. 301–305 (these pieces appear in the George Sarton memorial number of *Isis*).

research materials and publications, and enhancing graduate education in ways that take seriously both the science and the society in which science is produced.

As to place: there is no physical Institute for the History of Science and Civilization just like the one George Sarton imagined. It seemed briefly that the Dibner Institute for the History of Science and Technology at MIT could become such a thing, and it went some way toward doing so. As directors, Jed Buchwald and George Smith cared deeply about the technical scientific work and about the quality of the historical study of that technical work. They cared about communicating to and with scientists and engineers. But the Dibner Institute no longer exists, though its wonderful library and collections continue at the Huntington Library in Pasadena, California, and scholars have the opportunity to use the research materials there. Other efforts to bring scholars together, such as the Max Planck Institute for the History of Science in Berlin, offer promise of various sorts, but with different emphases and strengths than those Sarton envisioned.⁸ This is not surprising.

We are not in the midst of a world war quite like that faced by Sarton. We are no longer in a situation where the European world has great scholarship and libraries and the United States is struggling to establish its own presence. Nor are we at a point where scientists and historians largely talk completely past each other. We are not fighting battles about whether scholars must look only at the internal logic of science or, alternatively, at the social context; we recognize both as essential parts of the same whole. We have made progress in many ways.

Yet despite the great potential of our scholarly field for linking with others in robust ways, the History of Science Society and the profession generally have for decades focused very directly on building strong connections with the profession and practices of history. The Society's stated goal is "to foster interest in the history of science and its social and cultural relations, to provide a forum for discussion, and to promote scholarly research in the history of science."⁹ This has been interpreted since at least the 1970s as meaning that the Society should recruit members from among historians, train graduate students to work in history departments, and, as a consequence, set the objective of meeting the standards of professional historians. Many of these historians treat science as a distant object of study and often of critique, and they frequently lack the technical competence to understand the logical and intellectual dynamics of the enterprise of the science they wish to study. They are left with local stories, which have value in themselves; but they have few opportunities to have a broader impact, and any broader claims about patterns and processes of science and its causes and effects are not well grounded.

I remember entering graduate school at Indiana University in 1972 and being asked whether I would take my required minor in history or in philosophy. I said, "In biology, of course." Sam (Richard) Westfall was quite surprised by the idea, though he was in the end supportive. He sincerely felt that my career hopes could be met only if I hitched my wagon to the history profession. This approach has had its advantages, but the role of historians of science has not grown substantially in many history departments in the United States, and the emphasis on science among historians has not always been a comfortable and easy fit. This is not to say that we should not do history, of course, or that

⁸ For information about the Burndy Library at the Huntington see <http://huntington.org/burndy.htm>. For information about the Max Planck Institute for the History of Science in Berlin and the Virtual Laboratory Project there see <http://www.mpiwg-berlin.mpg.de/en/index.html>.

⁹ For more on the History of Science Society see <http://www.hssonline.org>.

there is no place for the social and cultural interpretations that have so much come to dominate the field.

Rather, it is worth rethinking the balance of emphases and worth rethinking Sarton's vision at least to imagine what can be gained by hitching our professional wagons to fields in addition to the traditional historical ones. In some cases the best connections will be to philosophy—and indeed history and philosophy of science have proven friendly allies at times. For our purposes here, however, I want to look at opportunities for linking history of science more directly with sciences, perhaps even in direct collaborations with scientists that would involve housing historians in science departments.

We are doing just this at Arizona State University, and the experiment of embedding historians and philosophers in the School of Life Sciences is working astonishingly well. Biologists ask a lot of questions and stop by for “history of science lab meetings” and weekly discussions, and graduate students are getting mixed up—in the good sense of learning from each other. The result is that we are forced to articulate what we are doing and why—and thus to become more reflective about our own work. And we are enticed to take up questions that others find intriguing but that we initially did not—until we see the ideas or scientific practices in new ways. In addition, we have multiple collaborations going on that have already led to joint publications, scientific grant proposals with history included, and postdoctoral fellowships that bring historians to visit to develop their own collaborations. Our first graduate students are finding jobs in unusual places, and they are also finding themselves rather successful in being accepted to present papers, publish their work, and be part of research teams. There is great promise in this approach. The history is informing the science and the science is informing the history. Philosophers are in the middle of the mix, always asking questions and prodding everybody to probe more deeply.

Of course, this is a model that will not work in many places. I point to it only because I know it well, and we have worked hard, with solid support from creative administrators, to make it work. Nonetheless, most historians of science are still trained to be historians and to feel comfortable among historians. Many historians of science are directed to cultural and social history exclusively, missing out on the opportunity to add intellectual history or history of scientific practice to their professional expertise. They learn the professional tools and values of history—but not those of other closely related fields. This is a good start, but it is not enough. It is also true that few places are open enough to historical (and philosophical) work as part of a life sciences tenure profile. Establishing the first goal of a new institute—namely, setting up a place for scholars to work together—is challenging and not easy to accomplish in one physical place. But are there other options?

A VIRTUAL INSTITUTE

What about a virtual institute, a network of scholars with shared needs who reap mutual benefits from working together? Could such an effort meet Sarton's three objectives of providing a place and a way for scholars to come together across disciplines to do research in the history of science, collecting and making available research materials and publications, and enhancing graduate education so that it takes seriously both the science and the society in which science exists? The National Science Foundation Program in Science and Society offers an opportunity for individuals to prepare to be part of such a research effort. Scientists can pursue a professional development option to learn how to do history of science, and historians can professionally develop their scientific knowledge. Few do,

however. It is difficult to take a year or more out of one's career path to pursue what others may see as sidetracks or even dead ends.

Another approach is to develop virtual places to work and ways of working across space and time, by developing virtual collaborative projects. This is one approach that we are pursuing with the NSF-funded Embryo Project.¹⁰ The associated online open-access Encyclopedia provides a place for defined targeted projects by multiple researchers and for single or jointly authored publications; thus it is a place for research as well as a place for producing and collecting materials of research. We are bringing together the study of such elements of past science as the people, places, and practices involved (including organisms, experiments, equipment, publications and texts, illustrations, conventions about evidence and data, etc.), with a focus specifically on the scientific study of embryos. We study the texts and images and other aspects of scientific research and products. In addition, we look at the social, political, legal, bioethical, and other scientific contexts of embryological research. The dynamic Fedora library-based system allows us to collect and link publications and images, including photographs, videos, and audio materials. The "we" is a collaborative network of researchers, including graduate and undergraduate students, who are distributed across countries, institutions, disciplines, specializations, and kinds of work. Formal partners include the Max Planck Institute for the History of Science in Berlin, the Marine Biological Laboratory, and CalTech.

The project is just getting established, and we are already learning a tremendous amount from our scientific colleagues about how to amass and archive collections of materials and from our computer science and IT colleagues about how to link and identify relationships that can be captured in the interactive federated Fedora system. There is a science and technology of doing this kind of history, though we are only beginning to learn how to do it well. This approach and the resulting kinds of projects involved begin to address Sarton's goals of establishing a place for people to work and enabling scholars to interact across boundaries.

This leads us directly to Sarton's second goal: collecting and creating research materials and publications. Projects like the Embryo Project Encyclopedia and the Max Planck Institute's Virtual Laboratory—which collects, creates, stores, and links multiple kinds of knowledge—provide one way to collect and create new research materials. These projects also develop new search strategies and linkages to help scholars and other users in scattered research sites have access to a broad range of original and interpretive materials. *Isis*, *Osiris*, and all the other formal publications related to the history of science are another, more traditional way to make materials available.

Library collections, like those at the Marine Biological Laboratory and the Burndy Library at the Huntington, are another source of materials, bringing together traditional collections with sophisticated electronic intelligence systems for linking and carrying out federated searches in the local and distributed collections. Libraries today are leaders in making research materials available and useful, and librarians are keen to partner with scholars in developing ways of collecting that will facilitate both the most productive ways of doing scholarly research and wide accessibility. These linkages break down disciplinary boundaries because, with effective search strategies, any user can access both research materials and scholarly interpretations.

Historians thus get wonderful databases of materials available at their fingertips, and

¹⁰ See <http://embryo.asu.edu>.

scientists are led to find historical research more easily. Scientists are mostly not going to read *Isis* without provocation, but if a database that contains material they are using links to the historical articles they may well be so provoked. As historians of science, we need to do more than publish our research according to our highest scholarly standards in journals like *Isis*; we should also seek to create other entry points to lead scholars to our work—as well as helping to develop and ourselves following links to other work, including scientific research. The new *Isis* Focus sections and essays provide a place to try out ideas and to reach new audiences.

One challenge for *Isis* and its sibling publications is to get more scientists who take history seriously to write about how and why and to what effect the history matters to them. We could also invite science writers, some of the best of whom take both the science and the history quite seriously, to bring a different perspective to bear and, again, to provide additional entry points to our historical documents and interpretations. There is considerable potential here to link to communities beyond traditional historians and to include work that adopts other than the traditional methods, approaches, and problems of history.

There is also considerable potential to embrace publication approaches beyond the traditional peer-reviewed journals and books. Moderated, edited wikis can compile tremendous amounts of material in effectively searchable forms—if only the system is set up usefully. Blogs apparently work for undergraduates—both as a resource, including a source of ideas about which they might engage in critical analytical thinking, and also as a way for them to compile their own ideas and work at how to present them effectively and persuasively. There are many opportunities for innovation in creating and collecting research materials and scholarship.

What about the third objective—namely, achieving a new type of graduate education that engages the science? A virtual collaborative project can work for some purposes. And there are many projects besides ours that offer a wide range of such opportunities. But what about other possibilities? Sarton wanted to provide a place for students to work together and learn from each other. Virtual networks can help do that, and if students have computers they can get access to vast networks of materials.

Historians have not yet done a lot with blogs or online discussions; but scientists and philosophers of science have, and historians can learn. Historians of biology have learned to develop small workshops to bring historians, philosophers, social scientists, and scientists together around papers, discussions, and “happy office hours” (these are office hours in the sense of senior scholars being open to junior visitors—and when they take place in the context of the local pub or tea house it makes the interactions happy for everyone). Such meetings can lead to hours of informal exchange of ideas. The initial exchange can take place in person and then be followed up virtually. The International Society for the History, Philosophy, and Social Studies of Biology (“Ishkabibble”) is doing just that, with graduate students, postdocs, and young scholars taking the lead. This moves toward addressing Sarton’s first and third goals. And it definitely moves us toward civilization.

I would argue that we could do even more, including developing virtual graduate seminars conducted by faculty members at more than one institution. In my dreams, they could include scholars from more than one discipline, who work together on common problems and learn from each other how the different approaches and methods can yield richer and more robust results than any one alone. Why not develop a range of traditional graduate seminars, courses in historiography, and other offerings and make them available to graduate students and scholars beyond the local institution? Where one institution has great historians of technical

physics, another has molecular biologists. Or one has scholars of medieval medicine, and another social historians of eugenics. We cannot all do everything in our education programs. We can give graduate students bibliographies and lists of things to know for a qualifying exam, for example, but we can also do more than simply set them loose to go find everything on their own. Virtual graduate seminars could add a lot.

We should be able to make all these opportunities for innovation in producing new kinds of places, publications, and people even stronger by serving not only historians but also scientists and by making the expertise not just local and contingent but shared and extended. Together, perhaps, we can move closer to a twenty-first-century Institute for the History of Science and bring science and history into close communication in mutually beneficial ways. We may not choose to emulate Sarton's version of the new humanism exactly, but we would do well to remember his motivations, grounded as they were in promoting civilized discourse in a troubled and divisive time of increasing specialization and disunity. If we can help turn negative forces into positives, as Sarton sought to do, we will surely all benefit. If we can extend the reach of history of science beyond historians, we will surely also benefit.

It is easy to dismiss such optimism as Pollyanna-ish and as naive in thinking that it is even possible to engage in effective, high-quality work that reaches across the disciplines of history and science and takes the texts and the technical work seriously. Yes, it is true that fields such as molecular genetics, mathematical modeling, quantum electrodynamics, and biogeochemistry are very challenging. It is hard to see how one person can be really competent in such fields and also have all the skills and knowledge of a professional historian. To be fair, though, current science has no monopoly on technical difficulty. Ptolemy's *Almagest*, Newton's *Principia*, and the thousands of pages of the Darwin archives are all just as intimidating—or they should be. Furthermore, the creators of the science of earlier centuries are no longer around to help us understand. The creators of current science are.

Sarton saw it as beneficial for scientists and historians to come together and learn from each other and contribute together to graduate education, all with the goal of forging a new humanism. Our experience as a profession has taught us how difficult it is to realize his vision in a traditional way, with our traditional institutions and ways of doing research and education. It is just here that the possibilities for a virtual institute hold promise. Virtual connections can help bridge disciplinary and institutional boundaries and do collectively what one place or person cannot do alone. Now that components of such an institute are starting to emerge, perhaps the idea is not so Pollyanna-ish or naive after all.

Suppose I am right about all of this. Does this mean that everyone must join such an institute? Of course not. The many current ways of doing the history of science well are not diminished at all by adding another place for and way of working, another way of creating and collecting research materials, and another way of educating graduate students. We are all enriched by embracing diversity and letting the many flowers bloom. The garden of history of science is nourished by carefully exploring the scientific texts as well as the complexities of scientific practices, and also by cultivating the study of social, cultural, and other contexts. It is fine if not everybody wants to join the history of science garden party in the same way. But those who are working to create a twenty-first-century version of an Institute for the History of Science and Civilization are having great fun, and there is plenty of opportunity for others to join in.