The Two Cultures of Scholarship?

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ABSTRACT

This essay examines different approaches to writing the history of science in light of the increased importance of microhistorical studies in the past two decades. It specifically examines the role of microhistory within the history of science and the importance of Thomas Kuhn's concept of the "normal exception" in early methodological statements about the function of microhistory. It also considers the possibilities for writing archivally based history of science for a general readership as a means of bridging the divide between specialized research within the subfields of the history of science and more general accounts of the nature and growth of science.

> Attempts to divide anything into two ought to be regarded with much suspicion.
> —C. P. Snow

SOME YEARS AGO, a senior colleague—not a historian of science but a friend of the field—confessed that one of the reasons he enjoyed attending the History of Science Society's annual meeting was that, as he joked, it was the last place outside of a meeting of classicists where one could find fifty historians in a single room who had all read the same text and were ready to debate its interpretation. Reading and debating the essential texts—both the fruits of scientific inquiry such as the writings of Galileo, Newton, and Darwin, to name a few of the best examples, and those historical accounts that have offered the boldest interpretations of the nature and narrative of science—has played a fundamental role in the formation of the history of science as a discipline.[1] While that observation holds true for virtually any field of scholarship, it is perhaps especially true within the history of science. From the start, we have been a methodologically self-conscious field, struggling to give shape to a form of intellectual inquiry that straddles the humanities and

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[1] The epigraph is from C. P. Snow, *The Two Cultures* (1959; Cambridge: Cambridge Univ. Press, 1993), p. 9. Some of the most important examples of historical accounts that have offered interpretations of the nature and narrative of science are Herbert Butterfield, *The Origins of Modern Science, 1300–1800* (London: Bell, 1949); Alexandre Koyré, *From the Closed World to the Infinite Universe* (Baltimore: Johns Hopkins Univ. Press, 1957); Charles C. Gillispie, *The Edge of Objectivity: An Essay in the History of Scientific Ideas* (Princeton, N.J.: Princeton Univ. Press, 1960); Thomas S. Kuhn, *The Structure of Scientific Revolutions,* 2nd ed. (Chicago: Univ. Chicago Press, 1970); and Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton, N.J.: Princeton Univ. Press, 1985).

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sciences while being heavily inspired by and in dialogue with the social sciences.[2] We are a discipline that embodies all the promise and challenges of bridging the so-called two cultures.

Part of the challenge, increasingly, has to do with our changing vision of the field itself. The modern discipline of the history of science was founded on certain intellectual premises that unified it more strongly several generations ago than they do today. In the middle of the twentieth century a significant convergence of scientific, political, technological, and intellectual developments convinced a handful of historians and historically minded scientists, philosophers, and sociologists of the urgent necessity of creating a bold historical narrative that described the emergence of modern Western science. Taking the (barely named) "Scientific Revolution" as its starting point, they crafted and recrafted a powerful story of the emergence of new explanations of different aspects of the natural world, arguing that the era roughly inaugurated by Copernicus and concluded by Newton was a fundamental moment in the development of modern science. Telling the story of science *in medias res* allowed historians a privileged vantage point from which to construct an account of Western modernity in which science played a central role.[3] The practitioners engaged in this enterprise were not "scientists," but they became the forerunners of the men and women of learning who bore this name by the early nineteenth century. The sociologist Joseph Ben-David found this historical account so compelling that his famous study, *The Scientist's Role in Society* (1971), hinged entirely on the presupposition that the scientist's role emerged piecemeal during the late Middle Ages and the Renaissance and found its institutional niche in mid-seventeenth-century England.[4]

My own field—traditionally called "the Scientific Revolution" and, more recently, "early modern science"—has played a fundamental role in crafting a generalist vision of the history of science. When Thomas Kuhn composed *The Structure of Scientific Revolutions* in 1962, he rightly observed how little work had been done on the history of contemporary science in comparison with that done on the seventeenth century, so influential had the latter period been for the formation of the history of science as a discipline. The historians engaged in this enterprise may have disagreed on many of the particulars of their subject, but they shared a common enthusiasm for telling the story of science from its early modern origins as an object lesson for understanding the place of science in contemporary society.[5] Regardless of whether one felt that the history of science should

[2] Two recent studies offer an excellent starting point for understanding the historiography of the field. See Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Cambridge: Cambridge Univ. Press, 1998); and John V. Pickstone, *Ways of Knowing: A New History of Science, Technology, and Medicine* (Manchester: Manchester Univ. Press, 2000).

[3] In this respect, the narrative of science crafted in its early historiography bears comparison with the equally rich historiography of the Renaissance as a harbinger of modernity; on this subject see especially William Bouwsma, "The Renaissance and the Drama of Western History," *American Historical Review,* 1979, *94:*1–15; Randolph Starn, "Who's Afraid of the Renaissance?" in *The Past and Future of Medieval Studies,* ed. John Van Engen (Notre Dame, Ind.: Univ. Notre Dame Press, 1994), pp. 129–147; and Anthony Molho, "The Renaissance: Made in the USA," in *Imagined Histories: American Historians Interpret the Past,* ed. Molho and Gordon Wood (Princeton, N.J.: Princeton Univ. Press, 1998), pp. 263–294.

[4] Sydney Ross, "'Scientist': The Story of a Word," *Annals of Science,* 1962, *18:*65–86; and Joseph Ben-David, *The Scientist's Role in Society: A Comparative Study* (1971; Chicago: Univ. Chicago Press, 1984).

[5] The historiography of the Scientific Revolution has been well discussed in many places, but esp. in Roy Porter, "The Scientific Revolution: A Spoke in the Wheel?" in *Revolution in History,* ed. Porter and Mikuláš Teich (Cambridge: Cambridge Univ. Press, 1986), pp. 290–316; H. Floris Cohen, *The Scientific Revolution: A Historiographic Inquiry* (Chicago: Univ. Chicago Press, 1994); and Steven Shapin, *The Scientific Revolution* (Chicago: Univ. Chicago Press, 1996). For an interesting reading of the historiography of science in the tradition

look backward or forward from this moment in time, or whether or not one considered the Scientific Revolution truly "revolutionary," the fact remains that it gave shape to a story of science *emerging;* the Scientific Revolution has been a subject that allows historians to explore foundational questions regarding the modern shape of knowledge.[6] Despite their profound intellectual differences—try reading Kuhn's *Copernican Revolution* (1957) in tandem with Frances Yates's equally magisterial *Giordano Bruno and the Hermetic Tradition* (1963)—what strikes me, in retrospect, is the virtually universal agreement among all of these scholars that the *longue durée* of the history of science was a project worth undertaking.[7]

This expansive vision of the history of science has been gradually replaced by the rise of microhistorical studies. "Two cultures" is not only C. P. Snow's classic formulation of the growing divide between the humanities and the sciences; it also might be a way of imagining the different ways in which we conceive of historical inquiry as both art and science. Yet, as in the original "two cultures" debate, closer inspection of different approaches to the history of science reveals the interconnections rather than the divergences between grand narratives and specific episodes. Interestingly enough, microhistory is a genre of historical writing that emerged from the study of the same period that produced the sweeping narratives of scientific revolution. Its most powerful practitioners have been historians of the late medieval and early modern era, among them Carlo Ginzburg, Emmanuel LeRoy Ladurie, and Natalie Zemon Davis.[8] Collectively, they argued in the 1970s and 1980s that a close reading of singular episodes producing unusually rich documentation, preferably of people whose voices might otherwise go unheard, revealed a different and more complex understanding of the past. Historians sifted through documents, much as archaeologists, geologists, and paleontologists dig through the earth's strata in search

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of Hayden White's *Metahistory: The Historical Imagination in Nineteenth-Century Europe* (Baltimore: Johns Hopkins Univ. Press, 1973) see William Clark, "Narratology and the History of Science," *Studies in History and Philosophy of Science,* 1995, *26:*1–71.

[6] The most passionate and well-argued plea for the less common view of writing the history of science backward came from the pen of Frances Yates: "I would thus urge that the history of science in this period, instead of being read solely forwards for its premonitions of what was to come, should also be read backwards, seeking its connections with what has gone before. A history of science may emerge from such efforts which will be exaggerated and partly wrong. But then the history of science from the solely forward-looking point of view has also been exaggerated and partly wrong, misinterpreting the old thinkers by picking out from the context of their thought as a whole only what seems to point in the direction of modern developments. Only in the perhaps fairly distant future will a proper balance be established in which the two types of inquiry, both of which are essential, will contribute their quota to a new assessment." Frances Yates, "The Hermetic Tradition in Renaissance Science," in *Art, Science, and History in the Renaissance,* ed. Charles S. Singleton (Baltimore: Johns Hopkins Univ. Press, 1967), p. 270.

[7] Thomas S. Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (Cambridge, Mass.: Harvard Univ. Press, 1957); and Frances Yates, *Giordano Bruno and the Hermetic Tradition* (Chicago: Univ. Chicago Press, 1963).

[8] Carlo Ginzburg, *The Cheese and the Worms: The Cosmos of a Sixteenth-Century Miller,* trans. John Tedeschi and Anne C. Tedeschi (Baltimore: Johns Hopkins Univ. Press, 1980); Emmanuel LeRoy Ladurie, *Montaillou: The Promised Land of Error,* trans. Barbara Bray (New York: Braziller, 1978); and Natalie Zemon Davis, *The Return of Martin Guerre* (Cambridge, Mass.: Harvard Univ. Press, 1983). Readers interested in a methodological discussion of the value of microhistory should consult Edward Muir, "Introduction: Observing Trifles," in *Microhistory and the Lost Peoples of Europe,* ed. Muir and Guido Ruggiero, trans. Eren Branch (Baltimore: Johns Hopkins Univ. Press, 1991), pp. vii–xxviii; Carlo Levi, "On Microhistory," in *New Perspectives on Historical Writing,* ed. Peter Burke (University Park: Pennsylvania State Univ. Press, 1991), pp. 93–113; Edoardo Grendi, "Ripensare la microstoria?" *Quaderni Storici,* 1994, *86:*539–549; Jacques Revel, "Microanalisi e costruzione del sociale," *ibid.,* pp. 549–575; and Florike Egmond and Peter Mason, *The Mammoth and the Mouse: Microhistory and Morphology* (Baltimore: Johns Hopkins Univ. Press, 1997).

of clues about the past, in order to create a new archaeology of knowledge.[9] New ways of handling evidence and an entirely new sensibility about the archive itself emerged from this remarkable historical work.

Discussions of the methodological implications of microhistory owe a great deal to Kuhn's framework for the history of science. The Italian social historian Edoardo Grendi famously described microhistory as the search for the "normal exception"—the kind of unique documentation that gives us a privileged viewpoint from which to examine aspects of society that are not, in fact, extraordinary but shed light on widespread social practices and cultural belief systems. Similarly, Carlo Ginzburg and Carlo Poni cited Kuhn's concept of anomaly as an example of the phenomena whose observation "bring[s] the old paradigm back into the arena of discussion, thus helping to create a new paradigm, richer and better articulated." Ginzburg would later discuss the value of microhistory as "a conjectural paradigm," citing Kuhn as his direct inspiration. Most recently, Florike Egmond and Peter Mason have advocated the value of "a morphological method" that attempts to move beyond the local nature of most microhistories in favor of a new vision of macroanalysis built from these ingredients.[10]

To what degree are recent developments in the history of science microhistorical? While not explicitly a microhistory, Steven Shapin and Simon Schaffer's *Leviathan and the Air-Pump* (1985) embodies many of the features of this genre in a form that historians of science have found very appealing. It made a single controversy about an instrument, played out over two decades, stand for a much larger discussion of the relationship between the nature of knowledge and the definition of a community of knowers. It read the natural philosophical writings of Robert Boyle, Thomas Hobbes, and their contemporaries against the grain—not quite to the degree of Pietro Redondi's *Galileo Heretic* (1983), the only history of science to appear to date in Einaudi's famous Microstoria series, but with far more wide-ranging implications for the field. Similarly, Mario Biagioli's subsequent study of Galileo eschewed the more traditional genres of scientific biography and intellectual history in favor of a fine-grained thematic study of Galileo's courtly strategies as a specific exploration of the more general relationship between science and power.[11] All three of these studies—and many other projects in the history of early modern and modern science, too numerous to cite in a short essay—presumed that the details *do* matter in a way that Kuhn and his predecessors did not. So perhaps there is an ironic coda to the inspiration that Kuhn offered to pioneers of microhistory by writing a grand narrative, in light of the function of anomalies in destabilizing the explanatory power of prevalent scientific theories. He inadvertently played a role in inspiring microanalysis as a means of rethinking commonly received historical narratives. By the 1990s the *petite histoire* had replaced the *longue durée.*[12]

[9] See esp. Carlo Ginzburg, "Clues: Roots of an Evidential Paradigm," in *Clues, Myth, and Historical Method,* trans. John Tedeschi and Anne C. Tedeschi (Baltimore: Johns Hopkins Univ. Press, 1989), pp. 96–125.

[10] Edoardo Grendi, "Microanalisi e la storia sociale," *Quad. Stor.,* 1977, *35:*506–520, on p. 512; Carlo Ginzburg and Carlo Poni, "The Name and the Game: Unequal Exchange and the Historiographic Marketplace," in *Microhistory and the Lost Peoples of Europe,* ed. Muir and Ruggiero (cit. n. 8), pp. 1–10, on p. 8; Ginzburg, "Clues," p. 118 (see also p. 200 n 1); and Egmond and Mason, *Mammoth and the Mouse* (cit. n. 8), p. xi.

[11] Shapin and Schaffer, *Leviathan and the Air-Pump* (cit. n. 1); Pietro Redondi, *Galileo Heretic,* trans. Raymond Rosenthal (Princeton, N.J.: Princeton Univ. Press, 1987); and Mario Biagioli, *Galileo, Courtier: The Practice of Science in an Age of Absolutism* (Chicago: Univ. Chicago Press, 1993). The Italian edition of Redondi's book was originally published by Einaudi in 1983. For an important critique of this controversial and fascinating book see Vincenzo Ferrone and Massimo Firpo, "From Inquisitors to Microhistorians: A Critique of Pietro Redondi's *Galileo eretico,*" *Journal of Modern History,* 1986, *58:*485–524.

[12] There are important exceptions to this general tendency. In my own field, Katharine Park and Lorraine

To a certain degree, we have all become microhistorians. The professional requirements of doing scholarly research demand it. Brilliant as many of the earlier studies I have cited were, they do not meet the standards of evidence that we now hold ourselves to. Nor can an article be published in *Isis* today simply because one of George Sarton's successors thinks the author's work is worthy of appearing in print, without soliciting the opinion of experts in a particular specialty regarding its content—as Sarton himself seems frequently to have done.[13] We are immersed in archival materials, cognizant of the wide variety of documents that allow us to excavate the past as fully as possible. Such work requires a great deal of patience and technical skill to accomplish; its empirical contribution to the history of science can be quickly measured by glancing at the variety of publications catalogued each year in the *Isis Cumulative Bibliography* and comparing the expanded scope of such surveys as the new *Cambridge History of Science,* written by large teams of specialists, with earlier, single-authored textbooks in the field.

I personally consider these developments to be largely a good thing, even while recognizing that it is hard to construct a new "big picture" from this mass of detail.[14] Writing the history of science only from a handful of published books, as a number of earlier scholars did, can be a creative and highly stimulating endeavor when it leads us to read such works with new comprehension. Nonetheless, this classic approach to the history of science as the history of its best ideas ignores the fact that the vast majority of scientific activity in the premodern world *never* made it into print, partly because it was difficult and expensive to be published and partly because practitioners preferred to circulate many of their ideas, techniques, and inventions in other ways; overwhelmingly, modern and contemporary scientists also prefer to write articles and circulate preprints rather than compose books. If we are to catch them in action, we have to identify where the most interesting activities occur—and they are not necessarily on the printed page.[15] Even those books that truly are *summa* of a particular moment in science are best understood when read in the context of discussions that occurred prior and subsequent to their appearance, as well as in and out of print.[16] In short, having a more sophisticated understanding of evidence has made the history of science a richer field of scholarship.

The mineshaft of history, of course, is not without its perils. The cost of becoming well-equipped specialists is apparent in the difficulties we now face in constructing a common

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Daston's *Wonders and the Order of Nature, 1150–1750* (New York: Zone, 1998), demonstrates how effective and illuminating a long history of an important phenomenon can be—though it is perhaps worth noting that it took two historians to write it. See also William Eamon, *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Culture* (Princeton, N.J.: Princeton Univ. Press, 1994).

[13] See I. Bernard Cohen, "The *Isis* Crises and the Coming of Age of the History of Science Society," *Isis,* 1999, *90:*S28–S42, esp. p. S34.

[14] On this subject see James A. Secord, ed., "The Big Picture," special issue, *British Journal for the History of Science,* 1993, *26:*387–483.

[15] I am paraphrasing Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Mass.: Harvard Univ. Press, 1987). For two different approaches to the role of print culture in the making of scientific knowledge see Pamela O. Long, *Openness, Secrecy, Authorship: Technical Arts and the Culture of Knowledge from Antiquity to the Renaissance* (Baltimore: Johns Hopkins Univ. Press, 2001); and Adrian Johns, *The Nature of the Book: Print and Knowledge in the Making* (Chicago: Univ. Chicago Press, 1998).

[16] Recent examples of this approach include Ann Blair, *The Theater of Nature: Jean Bodin and Renaissance Science* (Princeton, N.J.: Princeton Univ. Press, 1997); and James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception, and Secret Authorship of* Vestiges of the Natural History of Creation (Chicago: Univ. Chicago Press, 2000). See also Marina Frasca-Spada and Nicholas Jardine, eds., *Books and the Sciences in History* (Cambridge: Cambridge Univ. Press, 2000).

conversation. What might a historian of evolutionary biology learn from a historian of particle physics or of physical chemistry? Why should a specialist in medieval Islamic science read the work of a historian of nineteenth-century British geology? There are several distinct problems embedded in these questions. As the history of science becomes more comfortably situated within the historical profession, historians of science are as likely, perhaps even more likely, to consider their work part of a conversation about a particular time and place, science *in* the nineteenth century rather than the nineteenth century's contribution *to* the history of science. This is a welcome development in terms of encouraging historians to read the history of science, but it puts a certain strain on the idea that science rather than history unifies our field.

As the history of science has increasingly emphasized the history of twentieth-century science, its technical demands have increased to meet the challenge of mastering the complex content of contemporary scientific disciplines while writing a historical narrative that is not as well established as that of the Scientific Revolution. To put it simply, there are reasons why the history of early modern science fits more comfortably into the general historical narrative than the history of contemporary science. It is relatively easy to have a common conversation about the nascent development of natural knowledge when it was visibly connected to many different aspects of human experience; it is far more difficult to continue this kind of discussion when we are still trying to understand the technical as well as the social and cultural implications of more recent scientific developments. The challenge for historians of earlier periods is to argue for the relevance of ideas that increasingly seem remote from our own; the challenge for historians of the recent past is to make it comprehensible as something larger than the history of specialized developments in knowledge.

As the history of science has looked beyond Western Europe and North America, its global aspirations have also strained, if not dissolved, earlier efforts to write a synthetic narrative of scientific development that holds true for all places. While the vast majority of scholarship in the history of science still deals with Western Europe and North America, there is a growing body of literature expanding the subject in Asia, Latin America, Africa, and the Middle East. Virtually none of the literature nowadays is inclined to ask such traditional questions as "why the Scientific Revolution didn't happen" in location X or Y.[17] To the extent that there is a unifying narrative emerging in some sector of this scholarship, it concerns the relationship between science and colonialism, a subject of much recent interest that crosses traditional geographic boundaries.[18]

The result is that we face certain challenges in continuing to see the history of science

[17] For an updated discussion of this kind of earlier approach to non-Western science see Nathan Sivin, "Why the Scientific Revolution Did Not Take Place in China—Or Didn't It?" in *Transformation and Tradition in the Sciences: Essays in Honor of I. Bernard Cohen,* ed. Everett Mendelsohn (Cambridge: Cambridge Univ. Press, 1984), pp. 531–554.

[18] E.g., see Patrick Petitjean, Catherine Jami, and Anne Marie Moulin, eds., *Science and Empires: Historical Studies about Scientific Development and European Expansion* (Dordrecht: Kluwer, 1992); James E. McClellan III, *Colonialism and Science: Saint Domingue in the Old Regime* (Baltimore: Johns Hopkins Univ. Press, 1992); Michael A. Osborne, *Nature, the Exotic, and the Science of French Colonialism* (Bloomington: Indiana Univ. Press, 1994); Joyce E. Chaplin, *Subject Matter: Technology, the Body, and Science on the Anglo-American Frontier, 1500–1676* (Cambridge, Mass.: Harvard Univ. Press, 2001); and Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, Mass.: Harvard Univ. Press, 2004). See also review essays such as Osborne, "Introduction: The Social History of Science, Technoscience, and Imperialism," *Science, Technology, and Society,* 1999, *4:*161–170; and Warwick Anderson, "Postcolonial Technoscience," *Social Studies of Science,* 2002, *32:*643–658.

as a unified field of inquiry. And yet I do not think the conclusion is a bleak one by any means; the center need not necessarily dissolve simply because it does not hold. When I discussed this problem with a graduate student recently, we began to consider the question of how, despite the hyperspecialization of contemporary scientific disciplines, there is nonetheless a cultural place for journals such as *Nature* and *Scientific American,* which presume that any educated reader can and should want to understand a lightly technical article on recent scientific developments.[19] Despite the fact that each field has its own specialized conversation to pursue, the practitioners all become "scientists" in the pages of such journals.

Journals such as *Isis* need to continue to play a similar role for historians of science. We are all historians interested in the evolution of scientific ideas, actors, practices, and institutions over time. If each of us remembers to frame our work in light of these common concerns, we will go a long way toward correcting the tendency to present our results in beautiful, hermetically sealed packages that no one but a handful of specialists can unwrap. Earlier practitioners of our discipline claimed the "big picture" as their domain; I hope that some of us will eventually rewrite it in synthetic form without the positivistic valence that this earlier enterprise all too often suggested.[20] In the meantime, our microhistorical studies need to adhere to the best aspects of this methodological approach. In its least attractive form, microhistory is the history of the trivial event, a story that could be told—but need not be because it is not especially illuminating (and, in its worst form, is not even a very good story *sui generis*). In its best version, microhistory takes a singular episode from the past and makes it stand for something much bigger than the sum of its parts, without straining the meaning to be teased from the evidence. To paraphrase Florike Egmond and Peter Mason's elegant formulation of the relationship between macro- and microanalysis, it creates a mammoth out of a mouse.[21]

There is reason to be hopeful about this middle ground as fertile soil for an archivally rich and methodologically sophisticated history of science that satisfies the rigorous demands of specialists while exciting the general reader. Let me conclude by mentioning two recent books that meet these criteria—neither, I should add, is in my own area of specialization, so I consider them a good test of the principle I am invoking. Both Ken Alder's *The Measure of All Things* (2002) and Peter Galison's *Einstein's Clocks, Poincaré's Maps* (2003) are deep works of scholarship based on numerous unpublished sources.[22] But they are also creative experiments in historical writing, histories of science written for nonspecialists that nonetheless do not sacrifice the sophistication of their narrative in the process of engaging readers in the pleasures of the stories they wish to tell. I am sure that readers of this essay will think of other books that also meet this standard. Rather than bemoaning our own version of the "two cultures"—a world in which we must either choose to write densely footnoted articles in flatfooted prose, bristling with new insights

[19] My thanks to John McCaskey for a very stimulating conversation on this subject in the course of writing this essay.

[20] Two interesting efforts in this direction are Toby Huff, *The Rise of Early Modern Science: Islam, China, and the West* (Cambridge: Cambridge Univ. Press, 1993), a work of historical sociology; and the more recent textbook by James E. MacClellan III and Harold Dorn, *Science and Technology in World History: An Introduction* (Baltimore: Johns Hopkins Univ. Press, 1999).

[21] Egmond and Mason, *Mammoth and the Mouse* (cit. n. 8).

[22] Ken Alder, *The Measure of All Things: The Seven-Year Odyssey and Hidden Error That Transformed the World* (New York: Free Press, 2002); and Peter Galison, *Einstein's Clocks, Poincaré's Maps: Empires of Time* (New York: Norton, 2003).

that will barely see the light of day, or create popular accounts of science that our colleagues will not respect as significant contributions to knowledge, however enjoyable they may be in other respects—we should instead agree to craft a third culture of scholarship that is a meaningful exercise in the construction of historical knowledge while also holding true to the adage that history is an art, and a pleasurable one at that, as well as a science. Each microhistory is a second on a clock. It means no more and no less than the seconds that precede or follow it. History is an exercise in stopping time in order to gaze at it. But eventually, a second becomes a minute, a minute stretches into an hour, a day becomes a year—on the way to something like a millennium.

It is far easier to write a closed narrative than an open one, to look only at the second rather than to consider the millennium. But the history of science is a richer field for its willingness to consider a single human activity, the interpretation of nature, across a vast sweep of time and space, not simply because it became so important in the last century but because science has a much longer genealogy. C. P. Snow observed in 1959 that scientists he knew in the early decades of the twentieth century "naturally . . . had the future in their bones."[23] We have the past in ours. Understanding the historical nature of science is not the goal of science but the work of history.[24] Writing an expansive genealogy of knowledge and practice in which there are multiple trajectories to be explored need not lead us into a kind of historical chaos as long as we agree that studying the nature of science as a special kind of knowledge, with unique epistemologies, technologies, and institutions, is a collective project.

When I first decided to focus on the history of science as an early modern historian, I did so precisely because it was the great narrative of science in this period that seduced me. I wanted to understand why knowledge of nature became such a highly contested subject in this period and what its long-term implications were for the role of science in our own society. I have been reluctant to declare the Scientific Revolution dead, not simply as a matter of pedagogical convenience but because I cannot imagine researching any specific episode in the history of science without paying some attention to its larger meaning. It is the mammoth behind the mouse.

[23] Snow, *Two Cultures* (cit. n. 1), p. 10.

[24] My comment is certainly not meant to imply that historical knowledge has no place in scientific inquiry. Quite the opposite, in light of the important role that historical knowledge plays, to differing degrees, in shaping aspects of the research in various scientific disciplines, especially in fields—such as geology and paleontology—that consider themselves historical sciences. But I think we would probably agree that the purpose of history is very different *within* a scientific discipline than when it serves as a means of understanding science as a kind of human activity.