

The Global and Beyond

Adventures in the Local Historiographies of Science

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ABSTRACT

As we strive for a more polyvocal history of science, historians have placed increasing emphasis on local case studies as a way to globalize the field. This tension between the local and the global extends to the practice as well as the content of the history of science, as the field has begun to pay more attention not just to local case studies, but also to local cultures of historiography. Many historians of science want multiple historiographical voices that take seriously the concerns and literatures in different linguistic and national contexts. As more journals urge translation into what are perceived as the dominant languages in “global” humanities discourses and scholars are encouraged to facilitate the Englishing of their historical research, many questions remain: In what ways does it make sense to nationalize or culturally locate individual cultures of the history of science? Is translation a democratic and positive force in the discipline, and/or does it kill local difference? Will it continue to be meaningful to talk about *the* history of science? A collective dialogue within the field depends on finding a way to take local diversity in historiography and epistemology seriously while translating that local difference into a meaningful common conversation. This essay considers the challenges of embracing multiple ways of knowing that might fall under the purview of the history of science, while wondering what that means for the coherence of the field as we move forward into the next century of work in *Isis*.

CHOOSE YOUR OWN ADVENTURE: HISTORIOGRAPHIES OF SCIENCE

You are a historian of science working in a field that is hybrid, pulsing, and alive. As you are reading this, the field is changing, its identity open and unclear. What does “history” look like? What ought to be included under the rubric of “science”? Is the history of science a coherent discipline? Does it matter? Individually, these are not new questions, either for the profession or in these pages.¹ When taken together, however, they

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¹ For one recent and insightful consideration of the history of science as a field see Peter Dear, “What Is the History of Science the History *Of*? Early Modern Roots of the Ideology of Modern Science,” *Isis*, 2005, 96:390–406.

invite us to acknowledge the diversity of the field as we look ahead to its future. We are at a crossroads, and because of this you must choose: what do you want out of this field, and of your part in it, as we move forward?²

The field is striving toward a history of science that is rooted in a more expansive world or global history.³ Recent work has cautiously lauded the international nature of the History of Science Society: it has been “becoming more international every year,” as measured by the percentage of non-U.S. members, the composition of the Executive Committee, and the non-U.S. residence of many of the Advisory Editors of *Isis*. This is meant to suggest the “cosmopolitan spirit” of the Society as a whole.⁴ This essay will suggest a somewhat different way of thinking about this issue, proposing that the history of science is on the cusp of a transformation that is about to leave us with a growing number of local historiographies of science. Persistent concerns in the subject matter of the history of science (the circulation of knowledge, the tension between the global and the local) can also inform a discussion of the practices of the field itself. History looks different as practiced in different localities, be they localities of institution, geography, or medium. Understanding this has important ramifications as we move forward into the next century of *Isis*.

Historians have placed increasing emphasis on local case studies as a path toward a more polyvocal and encompassing narrative of science in global history. The logic of this seems to be that an agglomeration of these individual points should give us a more comprehensive history that respects local difference while weaving together individual stories into a common, global plot. There is a tension inherent in this translation between the local and the universal, and that tension extends to the practice as well as the content of the field, as our increasingly polyvocal discipline learns to negotiate multiple historiographical voices with widely varying interests and concerns, working from literatures in different linguistic and national contexts, supporting what can be very different visions of what the history of science can and should look like. As more journals urge translation into what are perceived as the dominant languages in “global” humanities discourses and scholars are encouraged to facilitate the Englishing of their historical research, many questions remain: In what ways does it make sense to nationalize or culturally locate individual cultures of the history of science (e.g., East Asian STS)?⁵ Is translation a democratic and positive force in the discipline, and/or does it kill local difference? Will it continue to be meaningful to talk about *the* history of science?

A collective dialogue within the field depends on finding a way to take local diversity in historiography and epistemology seriously while translating that local difference into a meaningful common conversation. Scholars are simultaneously embracing the idea that there are multiple ways of knowing what might fall under the purview of the history of science and wondering what that means for the coherence of the field now and in the

² If you choose to consider this question, move on to the next paragraph. If you choose not to, go to the next essay in this Focus section.

³ On “global” histories of science see “Focus: Global Histories of Science,” *Isis*, 2010, 101:95–158. On the language of “world” vs. “global” historiography see Bruce Mazlish, “Comparing Global History to World History,” *Journal of Interdisciplinary History*, 1998, 28:385–395; and “Global Times and Spaces: On Historicizing the Global [Feature],” *History Workshop Journal*, 2007, 64:321–346.

⁴ Ronald L. Numbers, “The American History of Science Society or the International History of Science Society?” *Isis*, 2009, 100:103–107, on p. 107.

⁵ If you choose to move directly to a discussion of these issues as they pertain to “Asian” or “East Asian” STS, see Carla Nappi, “Disengaging from ‘Asia,’” *East Asian Science, Technology, and Society*, 2012, 6(2):1–4. If you choose to continue with a more general discussion, return to the main text of this essay.

future. In introducing these issues and addressing their import for the future of the history of science, this essay will consider the problem of local historiographies of science as a means of opening up discussion about the possible futures of this field. Being self-reflexive about our craft as historians of science, and acknowledging the importance of active choice and open-mindedness in negotiating the challenges of translating among local historiographies, is crucial to ensure that we take advantage of the opportunities ahead, rather than patting ourselves and each other on the back for our cosmopolitan spirit and global reach while the discipline hardens and cracks into fragments that are impossible to fit back together.

We can choose to draw clear disciplinary boundaries around what counts as the history of science, using our systems of evaluation, training, and review to confirm and perpetuate the characteristics of a discipline that is based in a dominant language, rhetoric, and evidentiary mode with a clear center. Or, we can choose to help actively decenter the field and its institutional foundation as manifest in the History of Science Society and its publications and activities. The practice of history has always been an aggregate object built of a plurality of narratives and voices, and encouraging and gently guiding that plurality is part of what gives the field life . . . as long as those voices don't descend from conversation into cacophony and the lack of a clear center doesn't translate into a lack of a germinal basis for productive dialogue. Either choice involves asking difficult questions and brings us to a different outcome.⁶

THE PROBLEM OF THE “GLOBAL”

There can be no single, global history of science. This is a utopian ideal and has widely been acknowledged as such. Still, we can write a historical narrative that is increasingly rich and surprising for being decentered and polyvocal. The language and pursuit (however utopian) of the “global” help weave this story by establishing relationships among disparate objects of study in space and in time and by showing the power of those relationships in shaping the fabric of the history of science, as crumpled, folded, and knotted as that fabric may be.⁷ This folded fabric of the global extends in space: scholars of the history of science have productively focused on the importance of linkages, flows, and connections among localities in weaving together (local) stories into something more comprehensive. The global is also a way of situating ourselves and our objects in time, opening the possibility that globalization is a way to periodize the historical moment in which we are living and writing.⁸ Whatever you think the globalizing of the history of science can or should mean, it tends to be understood to be a positive move, opening up possibilities for new sources and methodologies, decentering Europe, and reexamining categories of analysis in productive ways.

Despite these opportunities, many challenges also assert themselves for the historian who aspires to tell a more global story through careful examination of local contexts and

⁶ To explore some of these questions, continue to the next section, “The Problem of the ‘Global.’” To move directly to some concrete examples, continue instead to “Translation and Evaluation.”

⁷ On treating time as a crumpled fabric see Jonathan Gil Harris, *Untimely Matter in the Time of Shakespeare* (Philadelphia: Univ. Pennsylvania Press, 2011). Harris's ideas on the crumpling of time are inspired by the work of Michel Serres.

⁸ My thoughts about globalization as a way of periodizing world history are inspired by two days of stimulating conversations at “The Medieval Globe,” a workshop held at the University of Illinois, Urbana-Champaign, 12–14 Apr. 2012. Thanks especially to Kathleen Davis.

their connections in producing scientific knowledge. Among the most difficult problems is that of identifying and characterizing local knowledge, epistemologies, styles of reasoning, or even local bodies. In doing this, we run the risk of essentializing our objects of study in broad generalizations about peoples, cultures, or languages that ignore differences and sometimes wide variation within the frame of a local epistemology. An additional problem arises when we consider how to transform local histories of science into a larger story. “If case studies are the paving stones,” asks Peter Galison in a recent essay, “where does the path lead?”⁹ Even within the relatively narrow frame of reference of natural history in the sixteenth century, for example, it is not clear how we ought to relate to one another poems about lily bulbs in Ming China, the surgery of a traveling “professor of secrets,” and illustrations in an Ottoman epic poem—and yet these are all important objects of recent historiography of sixteenth-century science.¹⁰ Some authors have related disparate localities by studying the circulation of ideas, people, or objects and constructing larger histories by looking at the spaces that those circulations describe.¹¹ This problem of circulation, especially as it is so dominated by the notion of “immutable mobiles” (or, more specifically, “immutable and combinable mobiles”), deserves more critical attention than it has received: what, precisely, is doing the circulating?¹² Ideas, individuals, and material objects transform in the course of translation among localities. For all of their benefits, stories of the circulation or exchange of knowledge in the history of science, much like their cousins in comparative historiography of science, can also reify a civilizational model of history. This model tends to hold each half of dichotomous units like China/West, Asia/Europe, North/South stable in unhelpful ways and can give a misleading impression of the stability or coherence of the objects or individuals doing the circulating. Ought we to persist in treating the metaphors of circulation and exchange as dominant in discussions of the movement and genesis of science in global history, and what might an alternative look like? Ought we to choose to replace the circulatory model with one based on turbulent fluids, folded surfaces, or patterns of emergence? In looking for a metaphor to describe relations among people that center on objects of some sort, might we replace the exchange model with one based on reflection, translation, or gaming?¹³

⁹ Peter Galison, “Ten Problems in History and Philosophy of Science,” *Isis*, 2008, 99:111–124, on p. 119.

¹⁰ See Carla Nappi, *The Monkey and the Inkpot: Natural History and Its Transformations in Early Modern China* (Cambridge, Mass.: Harvard Univ. Press, 2009); William Eamon, *The Professor of Secrets: Mystery, Medicine, and Alchemy in Renaissance Italy* (Washington, D.C.: National Geographic Society, 2010); and Avner Ben Zaken, *Cross-Cultural Scientific Exchanges in the Eastern Mediterranean, 1560–1660* (Baltimore: Johns Hopkins Univ. Press, 2010).

¹¹ For examples of this see Ben Zaken, *Cross-Cultural Scientific Exchanges*; Neil Safier, “Global Knowledge on the Move: Itineraries, Amerindian Narratives, and Deep Histories of Science,” *Isis*, 2010, 101:133–145; and Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe* (New York: Palgrave Macmillan, 2007). Sujit Sivasundaram also raises questions about the notion of circulation in studies of global science in “Sciences and the Global: On Methods, Questions, and Theory,” *Isis*, 2010, 101:146–158.

¹² For the quotation see Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, Mass.: Harvard Univ. Press, 1987), p. 227.

¹³ If you choose to explore noncirculatory topological metaphors for movement of objects in time or space, see Michel Serres and Bruno Latour, *Conversations on Science, Culture, and Time* (Ann Arbor: Univ. Michigan Press, 1995). If you’d like instead to experiment with new models for framing exchange of people and objects in the history of science, reread some of the classic work on metaphor and the sciences (you might try Emily Martin, *Flexible Bodies: Tracking Immunity in American Culture from the Days of Polio to the Age of AIDS* [Boston: Beacon, 1994]; or Evelyn Fox Keller, *Making Sense of Life: Explaining Biological Development with Models, Metaphors, and Machines* [Cambridge, Mass.: Harvard Univ. Press, 2003]) and then spend some time Googling recent literature in theories of relationship-based interactions like gaming, translation, or the family.

Finally, the very language of the “global” in the history of science itself is also potentially problematic: the “global” is itself a historical object, a contextually rooted concept that should be more critically engaged than it tends to be. This is true of the “global” as a descriptor of time as well as space: many of us worry about the challenges of periodizing global history, as any mode of cutting time comes with its own national or political interests and assumptions.¹⁴

These are not new problems for historians, and a good deal of thoughtful consideration of both issues is available to help us navigate these waters. However, a related but distinct set of issues have not been as widely considered and bear serious attention as we look to the future of the field. How do the problems inherent in writing a more global history of science manifest or transform when we turn from the objects to the practices of the discipline? If we move to considering the problem of the global as it applies to the historiography of science, at least two of the problems noted above raise complex questions, both about the circulation or exchange of knowledge among localities and about how to weave together local stories into a coherent whole.

“Localities” can be construed in a number of ways for the purpose of considering this issue, both institutionally (as journals, universities, large-scale collaborative projects, or “Centers of Excellence”) and as based on categories of national, linguistic, or geographic identity.¹⁵ Especially in the case of local historiographies that are defined (often self-defined by practitioners who claim membership in these groups) in terms of geographic, national, or linguistic identity, the danger of blurring out local difference in the face of an essentializing discourse that conflates categories of identity can emerge. Unreflectively or uncritically using the language of the “global” or “cosmopolitan” to describe large-scale (“global”) phenomena, or processes that involve communication of ideas and peoples across time and space, can also cause problems for this increasingly multisited field: to be meaningful, “global” or “cosmopolitan” should point to something more than simple diversity in language, method, or approach. Neither of these issues taken at the level of historiographical practice, however, is specific to the historian of science.

The other two (related) questions about the emerging globality of historical practice do speak directly to the history of science as a craft: specifically, how to weave together local narratives of the history of science, and how to understand and manage the circulation and exchange of ideas, objects, and individuals. Two pertinent themes emerge from these problems: translation and evaluation.

TRANSLATION AND EVALUATION

Like many of my peers, I interpreted my academic training to mean that excellent work in the history of science, medicine, and technology looked a certain way and shared a limited number of qualities. (This is the graduate school version of the truism we serve up to our undergraduates: there are countless variations of a B paper but very few ways to achieve an A.) Top-quality work—so I thought—cited the right theorists (Foucault, Latour) in the right ways; it had ambitions significantly to alter our collective understand-

¹⁴ On the challenges of periodizing globalization in history see Adam McKeown, “Periodizing Globalization,” *Hist. Workshop J.*, 2007, 63:218–230. On the politics of periodization see Kathleen Davis, *Periodization and Sovereignty* (Philadelphia: Univ. Pennsylvania Press, 2008). Though Davis is not concerned with “globalization” *per se* in this book, many of her larger arguments can inform a discussion of the politics of globalization as a means of cutting up historical time and its objects.

¹⁵ Of course, the two definitions are not mutually exclusive.

ing of historiography; it ideally came out of a handful of elite institutional contexts. It emphasized the social and cultural contexts of science and the contingency of historical developments. It was absolutely not “internalist” (a term of critique equivalent to a four-letter word in the circles I ran in); it didn’t speak of “progress”; and it refrained at all costs from attributing major historical developments in science to the genius of individuals.

It wasn’t until several years after I had gotten my degree and some experience outside of the institutions in which I’d been trained that I realized how limited my perspective was. The historiography of science is large. We contain multitudes. This is a particularly trenchant issue for scholars working on the history of non-Anglophone science (still more so for those of us working on the so-called non-West). Take, for example, the case of a scholar working on the history of natural history in sixteenth-century China. She is faced with the task of identifying relevant materials in many languages: in addition to English, French, and German, she must familiarize herself with scholarship in modern Chinese and Japanese and be able to work comfortably with primary sources in classical or literary Chinese. (This is the minimum required: she might find important materials on her topic in Italian, in Portuguese, and in other languages as well.) She must navigate not merely through several linguistic contexts, but many historiographical contexts as well: even if she restricts herself to a survey of the past decade of work by scholars at major academic institutions, scholarship on early modern plants¹⁶ from mainland China can look exceptionally different from work on the same texts from Taiwan or Tokyo or California or Vancouver. This kind of challenge is not, of course, specific to work on a particular local context. Indeed, one need not range beyond English-language materials to appreciate the diversity of modes of the historiography of science as they manifest across disciplines. Self-identified historians of science are not the only ones writing about the history of science.

In its turn toward a global reach, the history of science has become both a discipline of localities and an aggregation of locally defined disciplines. How do we, and how ought we, identify local historiographies of science? In some cases, an exemplar being the field of Asian or East Asian science, technology, and society, local histories of science have been defined by geography or national identity.¹⁷ Some are defined by common language, some merely as a result of members choosing to self-identify as a group under a common rubric (with self-identification taken as its own justification for the formalization and, occasionally, institutional recognition of a group identity).¹⁸ This isn’t itself a problem, but it presents a particular set of challenges as we look ahead, especially in the context of a field that is self-conscious about the turn to a more globally oriented engagement. How much can, and how much should, these local historiographies inform one another? Assuming that it is desirable, in what ways is it possible to translate these local historiographies into one another and into a common and mutually epistemologically comprehensible history of science?

History gives us a way of expanding the range of possibilities we can think with, of helping us imagine alternative ways of conceiving and experiencing the world, under-

¹⁶ I am leaving the issue of a comparative early modernity to the side for the purpose of this essay.

¹⁷ See Nappi, “Disengaging from ‘Asia’” (cit. n. 5).

¹⁸ An example of this is the proliferation of Special Interest Groups in the History of Science Society, some defined by geography—such as the Forum for the History of Science in Asia and the Forum for the History of Science in America—and others by field—such as the Forum for the History of Human Sciences or the Forum for the History of Chemistry.

standing and stepping into others' stories, bodies, and words. It thus provides a basis for the kind of dialogue and conversation that may be the basis for a more global or cosmopolitan ethics.¹⁹ For the history of science in particular, the dialogue made possible by a multisited and polyvocal field is one enabled by translation: not merely among languages but also among different contexts of knowledge production, evaluation, and dissemination.

Though it is in principle an international and multilingual organization, the History of Science Society largely operates as a North American entity: its annual meetings are invariably held in North America, and its administration is accomplished from the United States and Canada. It also functions as a predominantly Anglophone entity: most of the book reviews and all of the research articles in its banner publications (*Isis* and *Osiris*) are published in English, and the assumed language of discourse for the Society's annual meeting is English. In a lot of ways, this makes sense: if we need to assume a common language within a diverse community of scholars for an organization effectively based in Anglophone North America, why not English? That said, conducting business in English can pose a challenge for Society members and meeting participants who are not comfortable inhabiting the language as a medium of scholarly exchange or can be distasteful to colleagues who bristle against the (imperial?) domination of English as a scholarly medium, an assumption that can persist even in ostensibly multilingual institutions based in non-Anglophone countries.

The translation here is not just linguistic: it can also be epistemic. Knowledge, even within the same field or about the same text, does not look the same everywhere. I mean this beyond the sense in which it is trivially true: many scholars working across different local historiographical traditions are familiar with the sensation that they are translating not just across languages but across systems of proof, evidence, and value. We might illustrate this by rejoining the historian studying sixteenth-century natural history in China, following her as she reads across three pieces about the same work of *materia medica*: one essay from a Chinese-language journal of the history of medicine that consists largely of long quotations from the text peppered with statements about the intelligence and diligence of its author; a Japanese-language essay that focuses exclusively on tracking down and collating the editions of the text; and an English-language essay devoted to explicating modern uses of the drugs mentioned in the text to confirm whether they really work. This process is of course true to some extent in any research process: we survey a wide range of literature in the course of any historical research precisely because different works make different contributions to the field. That isn't my point here. Instead, consider a case in which the three essays described above were emblematic of local styles (not necessarily defined geographically, linguistically, or nationally) of the history of science, each operating according to different regimes of value with varying ways of referencing and acknowledging primary and secondary literature, articulating an argument, prioritizing originality (and potentially with very different ways of considering what an original contribution to the literature looks like)—even deciding which topics are legitimate for inclusion under the rubric of “science” and its history. Now consider a case in which all three essays were submitted to a major international journal (perhaps one that is widely considered to be a journal of record in the history of science), given that field's

¹⁹ On dialogue, ethics, and the study of the sciences see Philip Kitcher, *Science in a Democratic Society* (Amherst, N.Y.: Prometheus, 2011), Ch. 2. On dialogue and a cosmopolitan ethics see Kwame Anthony Appiah, *Cosmopolitanism: Ethics in a World of Strangers* (New York: Norton, 2006).

self-consciousness about moving toward incorporating a more global and cosmopolitan set of voices. How would peer review work? In this more polyvocal history of science, who are the peers, and on what basis do we come up with a consistent mode for evaluating the contributions coming from very different local modes of historiography? Do we prioritize the goal of incorporating underrepresented voices into the disciplinary narrative? Do we take into account the very different levels of access to scholarly resources available in different local settings (and to members of the same historiographical locality with different levels of institutional support)? Do we decide to value the contributions and voices from one local context of the historiography of science over others? How ought we to arrive at global standards for assessing work in the field?

These are questions that emerge for any of us reading applications from prospective students and colleagues trained at institutions that are outside our own disciplinary localities; they arise for any of us who teach history of science methodology and disciplinary writing at a moment when professional historians are increasingly aware that there are multiple local cultures of knowledge making, evidentiary standards, and styles of narrative about science and its histories, both within North America and beyond. Even holding a broad definition of historical practice as carefully structured argument based on evidence from close reading of documents, there are many ways of construing what counts as evidence or proof for a historical claim or what a document can or should look like and how to go about “reading” it. Since what it looks like to do history varies dramatically across temporal and geographic contexts (and within individual contexts), what links them together is a self-consciousness about engaging in a conversation about history in its many forms.

We are left with a deceptively simple (and deceptively simple to dismiss) question: Does it make sense to consider the history of science, construed in this increasingly decentered and polyvocal way, a coherent field? Is there a discipline of the history of science, and will there continue to be one as we move forward?

LOOKING AHEAD: THE DISCIPLINE AS ASSEMBLAGE

Self-reflexivity is a crucial part of what links participants in a common practice or discipline we can call history of science. This was an important insight when Peter Dear raised it in the context of understanding early modern science, and it remains so now.²⁰ Reflexivity about categories, choices, and one’s own power in helping to shape the narrative of a field: bringing attention to this is the point of the essay in front of you. The purpose was not to hand you a packet of answers, but to raise what I take to be important questions in order to stimulate you (through a kind of sympathetic narrative magic) to ask similar questions of your own practice as a historian of science, of our collective strategies of evaluation and translation, of our pervasive discourse of the “global,” and of what we might do with all of these as we move forward into the next hundred years of *ISIS*.

The issue is not ultimately about defining categories that will continually resist definition, or critiquing a field that may not be a field, or creating a dominant master narrative that incorporates others within itself: it is about choice. Writing and sustaining a global historiography involves weaving narratives from a series of disparate stories, systems of value, languages, and interests. We will choose our own adventure: down one path is a

²⁰ To go directly to Dear’s piece, see Dear, “What Is the History of Science the History Of?” (cit. n. 1). To continue reading about the importance of reflexivity to this set of problems, return to the main text.

spirit of inclusivity, allowing our criteria to remake themselves to accommodate new sets of voices in the field, growing and transforming as a result; down the other path is the kind of boundary-policing that may well lead to the history of science ossifying and crumbling as a discipline.

If you choose to follow the more inclusive path, put this essay down and open your web browser and explore the terrain of recent historiography of science that might change the way you think about the basic categories of your field. It's a dangerous place. I'll see you there.