

## Chapter 16

### Reflections on Writing the Transnational History of Science and Technology

*Michael Barany and John Krige*

As scholars of the past, historians are informed by current events and debates but do not routinely have to confront the sense of being outrun by the present. We write now at what feels like a precipitous time for the transnational formations whose histories and implications are the focus of this volume. One of us (JK), has already written a good deal about the history of international and transnational science and technology, but felt the need to think reflexively and collectively about his practice. He began planning this volume and its associated workshop early in 2016 as the World Health Organization declared the then-current Zika epidemic as a Public Health Emergency of international concern, attributed to the widespread presence of *Aedes* mosquito vectors throughout the world, along with increased human travel that facilitated its geographic spread.<sup>1</sup> The other (MB), a recent Ph.D. in the field, learned of the project through an announcement at the quadrennial joint meeting of the British, American, and Canadian professional organizations for historians of science, in the summer of 2016 in Edmonton. He was dining at a Thai restaurant on the Canadian prairie with a cosmopolitan group of historians based in Scotland, Canada, and the U.S. as returns from the U.K.'s "Brexit" poll began rolling in and it gradually dawned on the group that we would wake the next morning in a rather different world—and for British colleagues in particular, with the pound plummeting overnight, a rather less open and more expensive one. The workshop where most of this volume's papers were first presented convened on the eve of the 2016 U.S. Presidential election in Atlanta, Georgia, many of whose citizens had already cast their votes in what would become, in that state and the nation alike, a narrow but decisive victory for Donald Trump. We revised and assembled our papers during a tumultuous political transition, amidst investigations, denunciations, refugee crises, travel bans, detentions, talk of border

walls, and other developments that bore directly on the questions treated historically herein and that demanded formal responses from our professional societies.

With nationality, nationalism, xenophobia, and division regularly in the news, it may seem quaint and misguided to make transnational science and technology our focus. Some scholars have, indeed, suggested that transnational history can never have the popular appeal or vital relevance of national history, a history that gives its readers a sense of place, of belonging, of identity.<sup>2</sup> Recent events and the scholarship in this volume alike suggest the opposite view, that states and localities and their concerns, prerogatives, tensions, and conditions come most clearly and potently into view from a transnational perspective, which requires intensifying rather than avoiding attention to local and national scales. The transnational historian must take quite literally the old exhortation to think globally and act locally, constantly embedding situated productions and their archival records in border-crossing patterns of movement and action. Global thinking gives purchase to otherwise unaccountable local phenomena by embedding them in longer and wider genealogies and drawing out the tensions they expose between (often global-seeming) ideals and (inevitably local) practices.

In particular, even participants who did not make the modern regulatory state their explicit focus marked how quickly such state apparatus springs into view when we take knowledge as the transnational object, especially in the 20<sup>th</sup> century. The longstanding importance of scientific and technological knowledge to the exercise of state power and to the expression of national prestige requires that we reckon with the state—its actions, effects, and limits—whenever we study the production and movement of knowledge across borders. This does not subvert the goal of transnational history to break the bounds of the national container, and to situate the state in a web of interconnections and interdependencies that are invisible if one takes a purely national approach. On the contrary, in many of the papers presented in this volume the state emerges as an actor *precisely because* its borders are being crossed. Seeing like a state involves being aware of where borders lie and how they operate, and policing those borders in the name of national sovereignty and other prerogatives.

Here, the state's most salient features are often its most seemingly anodyne: its systems and agents of administration and regulation. States exercise authority in granting

visas for travel, awarding export licenses, and restricting the sharing of nuclear information and technologies with a foreign government. From brokering arms control agreements to facilitating or blocking international travel, from transporting and implanting 'alien' technological systems (tractors, orange groves, rocket launching sites) and their associated social relations, to setting the terms of local employment and international commerce, states implicate individuals and societies in transnational relations that reach beyond what any one person or group may see or intend. Knowledge moves by way of an array of mundane bureaucratic practices, from filling out forms to writing letters, from making a phone call to standing in line at an office. The paper networks in the presently reported histories, many of which have been newly mobilized through digitization, indicate the form and scope of more recent digital communications that will present their own challenges and opportunities as historians bring their attentions and accounts forward in time.

National identities, like the state formations in which they are implicated, likewise gain new interpretations and significances in transnational relief. Transnational historians of subjects other than science and technology have produced trenchant work on immigration, diaspora, and the construction of hybrid identities by people who move, sometimes unwillingly, from one country to the next. Identities, such work has shown and this volume's contributions affirm, are contingent and constructed but cannot be defined at will. Transnational movements and international politics force to the fore what changes and what sticks in national identity under different circumstances. Science and technology offer many of the conditions and motivations for such movements, as well as their parameters of interpretation. A French orange-grower, a Mexican physicist, an Austrian truck driver, an Italian rocket engineer, an American anthropologist, an agricultural adviser from the American mid-west, all find their national identities at once implicated and refashioned in their extensive engagements abroad. Their multifarious relationships to their states of origin and work are correspondingly intricate, and show the persistent complexity, ambiguity and adaptability of their roles and statuses as 'non-state' actors.

Transnational history of the sort represented here is a recent and geopolitically specific phenomenon. It was born in the United States in the 1990s in the wake of the Cold War, in deliberate methodological and ideological opposition to American exceptionalism, a

sense of American distinctiveness, and the associated tendency to conceptualize the U.S. as “in many ways the clearest embodiment of the idea of the self-sufficient sovereign state”, as Iriye puts it.<sup>3</sup> The papers in this volume do not propound or celebrate American exceptionalism or self-sufficiency, but neither could they avoid the thoroughgoing and place of the United States as a crucial geopolitical node in transnational knowledge flows. The outsized presence of American actors and institutions in these histories derives in large measure, by direct and indirect means, from the predominant role that the U.S. has played in the 20<sup>th</sup> century as a global power, and its mobilization of knowledge as an instrument of legibility and of rule. Indeed, the critique of American exceptionalism can be an uncomfortable one for historians of contemporary science and technology precisely to the extent that the U.S. research system does, as matter of fact, seem to be exceptional, in qualitative and quantitative terms, and to differ from other national systems in key respects — not only as regards the extent of federal and corporate investment in Research and Development (\$344b out of the world total R&D expenditure of \$962b in 2007, for instance) but also as regards aspiration.<sup>4</sup> The pursuit of American scientific and technological pre-eminence has provided an overarching rationale for an American national research system which has, of necessity, been built along transnational dimensions. This has dovetailed with the American pursuit of global political and military leadership, with technoscientific, political, and military might and leadership reinforcing and reconfiguring each other. As Marilyn Young reminds us, America may not be exceptional, but it is exceptionally powerful:

Decentering America in one’s head is a good thing. But it does not of itself create a world free of its overwhelming military and economic power, and it is crucial to remember the difference or the effort to de-center American history will run the danger of obscuring what it means to illuminate.<sup>5</sup>

If the nation and state assert themselves with particular force and salience in transnational history, the American nation and state do so all the more in the transnational histories of science and technology assembled here, for reasons our histories help to explain. Michael McGerr is surely right to suggest, with a touch of irony, that “Transnationalism may well be

a form of imperialism; the transnational world may well emerge from such unlovely phenomena as American power and American exceptionalism.”<sup>6</sup>

An inescapable dimension of this imperialism is the standardized language imposed on those who seek to participate at the cutting edge of research. “Today,” as Michael Gordin writes, “English is not only the dominant form of international scientific publication and oral communication at conferences — it is almost always the *only* language of such communication.”<sup>7</sup> As Gordin and others have shown, Cold War rivalry and vast investments of state resources produced such monoglot dominance by simultaneously building up American institutions of scientific research and channeling research from other tongues (especially Russian-language scientific and technological literature from Soviet institutions) through systematic translation into English.<sup>8</sup> The prestige associated with publishing in journals alongside well-resourced “linguistically handicapped” (Burnham) American researchers was often irresistible.<sup>9</sup> These historical patterns extended as well to our workshop and volume, organized in English in the United States.

The historical pattern of English linguistic hegemony means that anglophone sources permit current transnational historians to reach over large swaths of the technoscientific past. Indeed, specific resources with their own anglophone priorities and biases, such as Google Books and other massively searchable online repositories, make an already preponderantly anglophone corpus appear even more so, threatening to efface non-anglophone sources. It is all too easy to ignore non-anglophone sources altogether, or to assume (usually erroneously) that they are representative of the multilingual body of potentially available documentation as a whole. Transnational historians are limited not just by what is in “the archives” but by which of those archives and which of their respective contents are geographically, financially, and linguistically accessible. By exploiting economies of representation that have historically concentrated anglophone sources in central nodes of exchange, we risk uncritically reinforcing those nodes as naturalized fixtures in transnational networks.

Contributors to this volume confronted these tensions in a variety of ways, writing and presenting in English while drawing on both anglophone sources and those in local languages from non-U.S. archives at sites of interest in their analyses. Our own border crossings open up both archival sources and experiential sensitivities to the

transformations, selective accommodations, and contestations that arise when the transnational meets the local, when new knowledge and the social relations in which it is embedded traverse networks at various scales. Like the subjects we study, we interacted predominantly in English but admitted numerous interstices filled with Spanish, Portuguese, and other languages, especially over coffee or beer as we digested and reframed our findings. The workshop and volume's subsidiary focus on North-South interactions in the Western Hemisphere created countervailing coherences in idioms and reference points that weighed, in some ways, against American anglophone domination. Language, in its coherences and pluralities, operated through the workshop as a means of authentication, projection, consensus, and exchange. We wore our many nations of origin and travel, and the cosmopolitan foundations and aspirations of our research, in our accents, our gestures, and our circumlocutions.

Beyond the importance of working in archives in several countries, and in several languages, historians of science and technology need to get used to working with quite different sources and to drawing on quite different bodies of literature to make a transnational argument—a metaphorical disciplinary border crossing to match the geopolitical borders just discussed. Relationships between people who circulate across borders often engage very different actors and institutions to those who operate on the national scale, and are studied in academic fields that are quite different to those that are used for writing a national history (international relations, diplomatic history, law, cultural and identity studies, for example). The situation is all the more challenging because there is already a rather weak coupling between historians of science and technology and historians writing social and cultural history (though certain fields like environmental history or the history of capitalism are creating inroads into these academic divisions). A transnational history of science and technology must draw on insights from other disciplines to analyze the individuals and institutions responsible for promoting and negotiating border-crossing, perforce imposing a heavy intellectual burden on its practitioners.

The U.S.-centric dimension of this project was one of its strengths. Intellectually, it provided a common intellectual backdrop for very diverse contributions, from scholars with substantially varied methodological approaches and subject expertise. Pragmatically,

it facilitated the project's cohesion as a collection of articles, offering multiple points of direct historical contact that suggested further thematic connections. But such cohesion is necessarily partial and limited. At best we can hope that, as Josep Simon writes, this collection can "provide models or exemplars that other scholars could apply to other cases built from a geopolitical centre different to the US or even to case studies displaying a more clear multipolarity with regard to knowledge exchange."<sup>10</sup> Such work does exist — think of Erik Van Der Vleuten's and Arne Kaijser's collection of articles on the role of transnational infrastructures in building a networked Europe, and of Martin Kohlrausch and Helmuth Trischler's study the role of experts as innovators, organizers and network builders in the region.<sup>11</sup> That region has its own 'center' and 'periphery' too, as Kostas Gavroglu and his colleagues in the outer ring of European countries remind us.<sup>12</sup> The time has come to put these various local worlds into conversation with each other.

Nor would we deny that our inevitably parochial project derives from and, we believe, advances distinctively cosmopolitan political convictions. While transnational scholarship need not critically confront chauvinism and its associated geopolitical barriers, such scholarship offers powerful resources to understand and subvert nationalistic discourses that other and exclude. The desire to engage with the world, to gain from and nurture fruitful interactions across borders, can be a powerful motivation for the kind of research and collaboration required of transnational history. Such research and collaboration can challenge facile exceptionalisms and underscore hidden dependencies, while situating both with respect to the operation of state power. If history is to be a virtuous resource for present politics, it may ultimately have to be transnational history. If present politics is, conversely, to undermine or inspire historical scholarship, the engagement will be at the transnational level as well.

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<sup>1</sup> Pascal James Imperato, "The Convergence of a Virus, Mosquitos and Human Travel in Globalizing the Zika Epidemic," *J. of Community Health*, 41 (2016), 674-9.

<sup>2</sup> E.g. Michael McGerr, "The Price of the 'New Transnational History'," *The American Historical Review*, 96:4 (1991), 1056-1067, at 1066; Ann Curthoys and Marilyn Lake, eds., *Connected Worlds. History in Transnational Perspective* (Canberra: Australian National University Press, 2005), 14.

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<sup>3</sup>Iriye, "Internationalizing International History," at 51.

<sup>4</sup> <http://www.aaas.org/sites/default/files/migrate/uploads/Chart.-Shares-of-Total-World-RD-2007.pdf>

<sup>5</sup> Marilyn B. Young, "The Age of Global Power," in Bender, *Rethinking*, 274-294, at 291.

<sup>6</sup> McGerr, "The Price of the 'New Transnational History,'" 1064.

<sup>7</sup> Michael D. Gordin, *Scientific Babel. How Science was Done Before and After Global English* (Chicago: University of Chicago Press, 2016), 233-4.

<sup>8</sup> Janet Martin-Nielsen estimates that the U.S. military injected over \$20million into machine translation between the end of WWII and 1965, one of the first major uses of computers for non-numerical tasks: Janet Martin-Nielsen, "'This War for Men's Minds': Birth of a Human Science in Cold War America," *History of the Human Sciences*, 23:5 (2010), 131-155.

<sup>9</sup> John C. Burnham, "Transnational History of Medicine after 1950: Framing and Interrogation from Psychiatric Journals," *Medical History*, 55 (2011), 3-26.

<sup>10</sup> Private communication with John Krige, March 25, 2017

<sup>11</sup> Martin Kohlrausch and Helmut Trischler, *Building Europe on Expertise: Innovators, Organizers, Networkers* (New York: Palgrave Macmillan, 2104); Erik van der Vleuten and Arne Kaijser, eds., *Networking Europe: Transnational Infrastructures and the Shaping of Europe, 1850—2000*, (Sagamore Beach, MA: Watson Publishing International, 2006).

<sup>12</sup> Kostas Gavroglu and colleagues, "Science and Technology in the European Periphery: Some Historiographical Reflections," *History of Science*, XLVI (2008), 153-175.