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When National Styles Were Stylish

ABSTRACT

This essay is part of a special issue entitled "Looking Backward, Looking Forward: *HSNS* at 50," edited by Erika Lorraine Milam.

Browsing through the last twenty years of *Historical Studies in the Natural Sciences*—to use the current moniker of the triply rechristened journal—or really any journal in the discipline of the history of science and technology, the discourse of "national styles" is most conspicuous in its absence. There are still, to be sure, plenty of pieces that concentrate on science in some specific place. This is how archives and the networks of our historical actors are principally organized, so it stands to reason that articles are typically *set* in a particular country. But they do not generally thematize that location as the object of inquiry: the question is not how "Dutch," "Norwegian," or "American" was the science done in Holland, Norway, or the United States.[1] Such a question would strike today's reader as bizarre as finding an article discussing whether a particular research program should be properly understood as Lakatosian or Feyerabendian.

In the historical scholarship of the 1970s, that latter philosophically inflected approach to understanding the history of science—principally the physical

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1. The Eurocentric and North-American bias of this selection is deliberate, and I will return to it.

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sciences—was not uncommon, but it was seldom found in *HSNS*. Far from it. The revolt of the contributors to the journal against the supremacy of philosophical structures grew with increasing assertiveness across the decade, as eclectic historians of science drew from other disciplines to find a macroscopic perch. Most commonly, they settled on sociology. This is a story often told of sociologists at Bath and Edinburgh surfing a Marxist wave of methodological relativism onto the pristine beaches of the Sociology of Scientific Knowledge (SSK).[2] In the wake of this British invasion, restless historians would dabble further in ethnography, Bruno Latour, and the wilds of anthropology. By the mid- to late 1980s, the historiography of science was emancipated from philosophy, for better or worse. This is all now commonplace, and like most commonplaces it tends to airbrush out other paths the discipline might have taken in the 1970s, and even those the discipline in fact *did* take in its emergence from under Thomas Kuhn's overcoat.

Turning the pages of *HSNS* in the 1970s, you will find a reaction to philosophy and an embrace of sociology, but you will not, as a rule, encounter SSK. The sociological framework that motivated this scholarship slipped between the constructivism of SSK and the (perceived) stodginess of Robert Merton's sociology of scientists, and yet it has essentially vanished from the reading lists of our discipline. I refer to Joseph Ben-David's *The Scientist's Role in Society*, published in 1971.[3] Ben-David was born in Hungary, emigrated in 1941 to Mandate Palestine, and made his career first at the Hebrew University of Jerusalem and then the University of Chicago. His magnum opus—figuratively speaking: it was under 200 pages—compared the structures of science in England, Germany, and France (among others) unfavorably with that of the United States. It served as an inspiration for a generation of historians of science to emphasize the nation-state as the unit of analysis.

The terminology of "national styles" may now sound old-fashioned, yet the content of many articles published in this vein still sparkles with freshness and subtlety of reasoning. To explore some of this richness from the back issues of this journal, I focus on Robert Fox's standout 1974 article, "The Rise and Fall

2. This narrative structures most surveys of the history of the discipline, such as Jan Golinski, *Making Natural Knowledge: Constructivism and the History of Science* (Chicago: University of Chicago Press, 1998).

3. Joseph Ben-David, *The Scientist's Role in Society: A Comparative Study* (Englewood Cliffs, NJ: Prentice-Hall, 1971). It was later reissued, with a new introduction and to even greater effect, in 1984 by University of Chicago Press.

of Laplacian Physics."[4] The piece examined the period from the 1790s to the 1820s—by any metric one of the most turbulent eras not only in French history, but of history *tout court*—and a specific continuity that characterized the French physical sciences.

The article can be read as a 48-page gloss on its epigraph, an 1823 quotation from Pierre-Simon Laplace's *Traité de mécanique celeste*, which mapped out the "chief goal of mathematical philosophy" (89): to analyze all physical phenomena (heat, light, mechanics, etc.) through the interaction of Newtonian-style attractive and repulsive forces over small distances. Fox was less interested in tracing the origins of Laplace's commitment to this research program—"although it is described here as Laplacian, it was in reality not entirely the creation of Laplace himself, or indeed of [Claude-Louis] Berthollet; it was Laplacian only to the extent that Laplace gave it a number of its characteristic features, stated it explicitly, and was its most brilliant exponent" (91)—than in understanding how that commitment endowed a particular character to French science. To do so, Fox concentrated, as Laplace and his colleagues had, on the institutions of science, especially the editorship of journals and the allocation of employment. This was not a story of ideological dominance snuffing out all opposition—certain figures such as Joseph Fourier and François Arago deployed non-Laplacian methods throughout this era—but rather of their institutional marginalization. Not once in the piece did Fox refer to Laplace's program as a "paradigm," even though it bears all the characteristics of Kuhn's notion. The elision was obviously deliberate.

In the second half of the article, Fox outlined how the Laplacian program began to lose its stranglehold on French science. First, there were intellectual criticisms of the Newtonian-force approach, such as its inability to handle the circular force lines of electrically induced magnetic fields in Hans Christian Ørsted's 1820 landmark experiment, or numerous challenges in optics. These, however, were not sufficient to displace Laplace's framework without turnover in journal editorships or new employment opportunities opening up for opponents. It took a demographic transformation within French science alongside intellectual shifts to break the Laplacian hegemony. Laplace, who died in 1827, lived to see the crumbling of the program he had erected with his collaborators.

4. Robert Fox, "The Rise and Fall of Laplacian Physics," *Historical Studies in the Physical Sciences* 4 (1974): 89–136. All quotations from this piece are referenced by parenthetical page numbers in the text.

What does this have to do with "national styles"? Fox did not deploy the vocabulary, but he fell within this approach. He was not interested only in a set of scientists; he was concerned with how they made their science characteristic of what it meant to do physics in France and, crucially, to do *French physics*. There was nothing intrinsically "French" about short-distance Newtonian forces—the very label dispenses with that notion—yet the ideas were made characteristic of a national scientific community because of how they were promoted within a set of patronage structures that centralized French researchers in Paris and endowed particular king-makers with enormous power to advance their supporters and stymie their critics (for example, through prize competitions). *Those* features were what defined their program as French. The nation-state was not a backdrop to the inquiry, but its very quarry.

The elegiac word "Fall" in Fox's title in turn signals his participation in what became a two-decade historiographical debate about the "decline" of French science over the nineteenth century. Fox made this gesture himself in the final pages, when he characterized the great mid-century French physicist Victor Regnault's work as "massive [and] dreary," shying away from the kind of ambition that had animated even the misguided notions of a Laplace (131). *HSNS* served as a prominent venue for this debate as it flared across the 1970s and 1980s. This was, of course, a late-twentieth-century retread of a late-nineteenth-century argument about the victory of Prussian forces over the French in 1870, and the displacement of venerable names such as Lavoisier, Lagrange, and (yes) Laplace by ones that included Helmholtz, Hertz, and Hoffmann. Besides questions of decline, a plethora of articles about French and British science within the national-styles framework proliferated in *HSNS* during these decades.[5] And then, much like the Laplacian program itself, they petered out.

What happened? Here we cannot point to the change of a journal editor, for *HSNS* was helmed by John Heilbron throughout. Nor was it due to any flaws in the explanatory apparatus itself; their analyses of the interaction of institutions and scientific research in various locales are still compelling. Rather, the very idea of "national styles" came under intellectual and methodological siege from two opposing sides: one thought that the nation was not local enough for satisfying history, and the other saw it as altogether too local.

5. Occasionally, the German states participated, as in R. Steven Turner, "Justus Liebig versus Prussian Chemistry: Reflections on Early Institute-Building in Germany," *Historical Studies in the Physical Sciences* 13, no. 1 (1982): 129–62; and David Cahan, "The Institutional Revolution in German Physics, 1865–1914," *Historical Studies in the Physical Sciences* 15, no. 2 (1985): 1–65.

As historians of science in the 1990s increasingly turned to unpublished archival documents or in-depth ethnographic interviews, the scale of the nation-state began to seem inappropriate. Andrew Warwick demonstrated very vividly that it made little sense to discuss the reception of relativity theory at the level of the British Isles when not only was the reception quite different among Oxford, Cambridge, Edinburgh, and Dublin (then still British), but one could easily find contrasting engagements with Albert Einstein's theories in different corners of Cambridge itself (or even just at Trinity). That article—not, alas, published in *HSNS*—where Warwick first levied his critique was, in fact, my introduction as an undergraduate to the notion of "national style."[6] At my first encounter, it was already passé.

The opposite end of the spectrum emphasized the transnational dimensions of science, an approach that has emerged quite prominently in *HSNS* in the new century. It no longer seemed fitting to historicize a national style of *American* science—as Sam Schweber attempted valiantly by connecting it to traditions of pragmatism in the United States in his classic 1986 *HSNS* article, "The Empiricist Temper Regnant"—when so many of the actors in the story spent crucial periods in Cambridge or Göttingen.[7] These transnational histories have provided a crucial forum for the important development of postcolonial historiography of science. How can you historicize Louis Pasteur without incorporating the tropical diseases of Indochina, or the telegraph without the Indian subcontinent and its production of gutta percha insulation? One of the benefits of transnational histories is that they puncture the discipline's Eurocentric blinders, which of course also largely obscured the pages of *HSNS* for decades (with the important exception of Japan). It is perhaps largely for this reason that national-styles argumentation seems so quaint these days.

Unless one is dealing with a situation as specific as Fox's Laplace—where Paris can substitute for France and none of the major figures gave a *sou* for anything produced elsewhere (except an occasional French translation of a British article)—the nation-state has defects as a fitting framework. There is

6. Andrew Warwick, "Cambridge Mathematics and Cavendish Physics: Cunningham, Campbell and Einstein's Relativity, 1905–1911, Part I: The Uses of Theory," *Studies in History and Philosophy of Science A* 23, no. 4 (1991): 625–56. He brought his point about Cambridge locality to its fullest expression in *Masters of Theory: Cambridge and the Rise of Mathematical Physics* (Chicago: University of Chicago Press, 2003).

7. S. S. Schweber, "The Empiricist Temper Regnant: Theoretical Physics in the United States, 1920–1950," *Historical Studies in the Physical and Biological Sciences* 17, no. 1 (1986): 55–98.

no question that the historiography has gained immensely from both the granular approach and crawling across global networks, but it surely stands to reason that something is lost in the unreflective discarding of attention to the level of the nation-state. For indeed sometimes, as Fox's work both in 1974 and since has shown, those political structures are essential for understanding certain aspects of the history of science. When paying attention to formalized and institutionalized pedagogy, for example, or the autarkic ambitions of particular regimes (Stalin's Soviet Union from 1945 to 1953 comes to mind), the literature on "national styles" reminds us not to focus so much on the *nation* as on the *state*. When it comes to the history of modern science, the state is not going out of style anytime soon.