

Review of: Robert Fox, *Science Without Frontiers: Cosmopolitanism and National Interests in the World of Learning, 1870-1940*. Corvallis: Oregon State University Press, 2016

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level did most of the teaching and (thus) often found it difficult to conduct research; that “academic freedom” was often enough undermined; that most Berlin students enrolled for reasons of professional training and that many disciplines were oriented toward practical purposes; that the increasing specialization of the disciplines meant that they were increasingly unrelated to one another; and so on.

Berlin, the Mother of All Research Universities, 1860–1918, should be read or consulted by all historians of science and by historians of higher education, in Germany and beyond.

David Cahan

David Cahan is Charles Bessey Professor of History at the University of Nebraska–Lincoln. He is the author, most recently, of Helmholtz: A Life in Science (Chicago, forthcoming).

Robert Fox. *Science without Frontiers: Cosmopolitanism and National Interests in the World of Learning, 1870–1940.* xvi + 160 pp., figs., index. Corvallis: Oregon State University Press, 2016. \$29.95 (paper).

This book is the offshoot of a series of lectures that Robert Fox gave as Horning Visiting Scholar at Oregon State University in 2013. It is also the product of an interest in scientific internationalism that he has developed over the last decade or so. He has not been alone in this. Since the start of the century an increasing number of historians of science have begun to study the international dynamics of science, focusing on issues such as language, standardization efforts, nomenclature, and the management of publications. In addition, various historians of international relations have turned to science, looking at, for example, the role of academic exchanges in cultural diplomacy and perceptions of science in internationalist ideologies. All of this work differs from an older tradition, begun by Brigitte Schroeder-Gudehus, that centered on the question of the extent to which scientists lived up to internationalist norms. The more recent scholarship takes the imperfect character of international science for granted and asks primarily how it was done. It also asks how international scientific practice was idealized as a model for international cooperation generally. Fox’s book is a first synthesis of this work, including his own research on scientific nationalism and internationalism in France.

Fox starts his story with early modern assertions of the universal nature of knowledge but quickly moves to the Belle Époque, when a whole series of new international practices developed. These included projects such as the *Carte du Ciel*, the photographic mapping of the starry sky by an international consortium of observatories. But the most general innovation was that of scientific conferences, often launched as one-off forums for standardizing units and so on but soon becoming recurring phenomena. Many of them took place as parts of world’s fairs, and in 1900 no fewer than four dozen were held within the confines of the Paris Universal Exposition alone.

These new forms of international cooperation, Fox shows, gave rise to idealizations and initiatives to further the internationalization of science and its alleged pacifying impact on society. Most prominent were the attempts to catalogue and open up all of the world’s knowledge by the Belgian bibliographers Paul Otlet and Henri Lafontaine and the German chemist Wilhelm Ostwald (the latter two receiving Nobel Prizes in peace and chemistry, respectively). *Isis* founder George Sarton launched the history of science in a similar attempt to reveal the universality of scientific knowledge and hence demonstrate the “unity of mankind.” The most spectacular expression of scientific internationalism was probably Hendrik Andersen’s 1913 design of an enormous world capital city with a “Scientific Center” right at its heart.

Fox is intrigued by these dreams but goes on to describe how they were shattered by World War I. Scientists’ widespread involvement in the development of weaponry and, perhaps even more, in mutual smear campaigns poisoned international relations for years—all-inclusive international cooperation did not recur until the 1950s. The interwar period, Fox contends, saw a further national turn, research becoming increas-

ingly enfolded with the nation-state (through national research funding, for example) and science being more and more celebrated as a national feat. This era saw such manifestations as the Volta Temple (for fascist Italy's hero), French patriotic Pasteur memorials (in the reconquered city of Strasbourg), and Philipp Lenard's infamous "Deutsche Physik." Still, scientific internationalism never died completely, and Fox sees it reemerging in H. G. Wells's "World Brain" campaigns, in UNESCO, and, recently, in the Otlet and Lafontaine-like project of Google Books (covered in the epilogue).

Most of what Fox tells us is not new. But the book's main contribution lies not in its originality but, rather, in its synthesis of what were previously largely unconnected case studies (covered in an equally useful bibliographic essay). The weaving together has also brought new features to light, however, chief among them the interwar resurgence of nationalism and the strong parallels between developments in the United States, Britain, Germany, and France, as well as Austria, Spain, Italy, and Japan—a major enrichment of the story. What emerges is the impression that "internationalism" was largely restricted to "the civilized world" and that the international order of science neatly mapped onto that of empire—German scientists in 1925 took it as an insult that they were addressed in the same way as their colleagues from Siam. Here, it seems to me, lie avenues for further investigation.

Perhaps one small shortcoming of Fox's synthesis is that it associates scientific internationalism exclusively with progressive (liberal or socialist) attitudes, while some of its advocacy was in fact quite conservative and maintaining peace often meant resisting change. Moreover, some fascist regimes advanced their own internationalisms—the Nazis even stole Otlet and Lafontaine's archives to establish a new system of scientific cooperation under the auspices of the Propaganda Ministry, as Madeleine Herren has recently shown. But this too is a developing story, which new research will further expand. It only underscores the importance of Fox's accomplishment: to show the significance of science for questions of national identity and international relations. For this alone *Science without Frontiers* deserves a wide readership that extends well beyond the history of science.

Geert Somsen

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Marc Raboy. *Marconi: The Man Who Networked the World.* viii + 863 pp., illus., bibl., index. New York: Oxford University Press, 2016. £25 (cloth).

Marc Raboy has written an exhaustive, and at times exhausting, account of the life of Guglielmo Marconi that should stand as the definitive biography for some time to come. Raboy has searched out a wide array of sources, many of them not used before, to provide a very full account of Marconi's personal, political, and business relationships, though at times the details can overwhelm the reader. Raboy also does a good job of filling in the larger historical context for his narrative of Marconi's life, especially on the intricate subject of international relations that influenced the development of radio. As he tells the reader at the outset, however, he is not writing a history of the science and technology of wireless. Instead, he uses Marconi's life to reflect upon what it tells us about the development of our globally connected, wireless world.

Raboy's portrait of Marconi is that of a perpetual outsider who "mastered the exercise of power by association" (p. 7). His mixed parentage—an Italian father and an Irish mother—made him an outsider with inside connections whether in Britain or Italy. While Marconi effectively deployed the mythology of the inventive genius overcoming great odds, he relied extensively on class privilege and personal connections for his success. Throughout his career Marconi aligned himself and his companies with political power. But