exist among the people," there appeared to be only "1 person interested in science to about 10,000 inhabitants." Of the scientific periodicals, the *American Journal of Science* had a circulation of less than 800, *Science* less than 6000. For this the scientist, a specialist now, intent on laboratory research and neglectful of the public welfare, was in great part responsible.

Thus spake the citizen to the scientist and historian, and thus was Goode lodged between the horns of the Smithson bequest, between "increase and diffusion of knowledge among men," between the early Joseph Henry and Spencer Baird; between, as some reductively saw it, aristocracy and democracy. The publications on fish and fisheries tapered off in the early '80s to give way to historical essays, especially essays on museums.

As historian of museums Goode pioneered again. But it was as a lesser historian this time, neglectful of Agassiz's advice and, with it, of scholarly research. Observing that "the first chapter in the history of American museums is short," he gave it the same short treatment Fairchild had given the first chapter in the history of American science. That what the present calls presentism had crept in should come as no surprise. Given his position as administrator of America's premier natural history museum, it is understandable that Goode should have seen the institution of the museum as a hallmark of civilization in every age. That he lived his life in the Gilded Age must have served to set the seal upon its value as an instrument of public enlightenment, moral as well as intellectual. (How many institutions in that heyday of museum and library building were built by the perceived decline in public virtue?) In consequence Goode strove unremittingly to professionalize museum-keeping, much as his predecessors had striven to professionalize science, and to establish it as policy that museums were to strike a balance between scientific research and public enlightenment. Seeking to democratize the museum without making it a stationary roadshow, to nourish professional science without starving the multitude, Goode maintained separate collections for the two purposes. Seventy-five years earlier, Charles Willson Peale, who sought to direct his museum to the same ends, had called the democratic policy one of "rational amusement," but then, operating under severe financial constraint, he had been able to afford only one collection for all. Did the specter of the five-legged, six-footed, two-tailed cow giving milk to a two-headed calf, which necessity obliged Peale to display, ever haunt Goode?

Accompanied by an informative introductory essay and a gratifying collection of photographic portraits, the present volume presents two of Goode's essays on the early history of American science and three on scientific and educational institutions as they were first published in 1901 in the annual *Report of the United States National Museum*. Happily, the editor has retained Goode's footnotes, one of which reads, "1. This is asserted in a book written to support the present government in France. I forget the title." The index helpfully attaches first names (which Goode surely did not forget but rather could reasonably expect his audiences to provide) to the many naked surnames that appear in his essays.

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Nobelists and Company

Nationalism and Internationalism in Science, 1880–1939. Four Studies of the Nobel Population. ELISABETH CRAWFORD. Cambridge University Press, New York, 1992. xii, 157 pp., illus. $44.95.

Ever since 1974 when restrictions governing documents related to Nobel Prize nominations and deliberations were relaxed, a small circle of Nobel devotees has debated what kinds of questions are worth asking of these coveted historical resources. To historical contextualists, statistical studies seemed too simplistic. To number crunchers and database compilers, generalizations uninformed by the "hard" data were inconclusive. Elisabeth Crawford has tried to navigate between these two extremes in her case studies of the Nobel population (which embraces not merely the laureates but all candidates and nominators). Working with data on the approximately 1000 physicists and chemists who constituted this population between 1901, when the prize was founded, and 1939, when the Second World War began, she explores a historical phenomenon shaped in part by the inauguration of the prize: nationalism and internationalism in science.

"Nationalism" and "internationalism" have not been easy terms to define in science studies; Crawford explains her usage of them in two introductory chapters on conceptual and historiographic issues. Viewing nationalism in terms of nation-state building in the final decades of the 19th century, she emphasizes science's role in strengthening the economic infrastructure and cultural character of several Western nations. Invoking Ernest Gellner's idiosyncratic description of nationalism as the imposition of high culture on society, she suggests several ways in which science was central to that cultural transformation, helping to create a national identity. Most of the secondary sources she draws upon to illustrate her points concern science in Germany. (Sources on science in Great Britain may not have worked as well because they would have posed a problem outside her analytical framework, that is, how science served imperialism and the empire in addition to the nation.) Internationalism in science embraces for Crawford such practices as international congresses, international scientific organizations, and efforts to establish international standards of measure. In addition to nationalism and internationalism in science, Crawford discusses some traditional concepts from the social history of science that she deploys throughout her book, such as disciplines, specialties, and research schools; elites; and Joseph Ben-David's notions of center and periphery in science.

For Crawford, the Nobel Prize is a locus for understanding tensions between nationalism and internationalism in science because prizewinners receive a significant number of nominations from scientists in nations other than their own. The implicit assumption of her argument is that the larger Nobel population of candidates and nominators can be used to understand tensions between nationalism and internationalism in science other than those that become manifest in the prize process itself. In her empirical chapters, she examines four problems: internationalism in science as a casualty of the First World War; the relation between Eastern Europe (the periphery) and Germany (the center); the Kaiser-Wilhelm Society and the Nobel institution; and Nobel laureates as an elite in American science. The first two cases in particular illustrate the interplay between statistical evidence and contextual reasoning in her argument.

It is Crawford's contention that, whereas the period from 1900 to 1914 was the "golden age of internationalism," there were thereafter disturbances in international scientific relations due to the First World War. Own-country nominations for the Nobel Prize increased during the war for Great Britain, the United States, and Germany; France had had high own-country nominations since 1901. During the war itself, Allied scientists rarely nominated Central Power scientists, and vice versa. Fewer than 2% of the nominations crossed enemy lines between 1916 and 1920. That, however, is the only really striking result of her bar-graph analysis of nominations from Central, Allied, and Neutral powers to Central Power physicists and chemists com-

bined. Otherwise between 1901 and 1933 Allied scientists supplied, fairly consistently on average, 10% of the nominations for Central Power scientists, who received between 50% and 80% of their nominations from their own Central Power colleagues. When the physicists and chemists in the population are separated, however, Crawford demonstrates that Allied support for Central Power chemists remained relatively diminished during the postwar period, whereas in physics it returned to its prewar level (or even higher) owing to the candidacy of Albert Einstein, whose pacifism appealed to British, French, and American nominators, as one might have expected.

A similar bar graph for Allied nominees during the same period shows that nominations from the Central Powers diminished between 1916 and 1920. The postwar decline in Central Power and Neutral nominations for Allied chemists after the war is more dramatic (as is the corresponding rise in Allied nominations for Allied chemists). What Crawford finds interesting, however, is not the decline but the fact that Central Power chemists voted at all for Allied chemists, which she interprets in part as a sign that the Nobel Prize was an "important support for the resumption of international scientific relations" (p. 76).

Crawford's discussions of Eastern European scientists (from Austria, Hungary, and Czechoslovakia) make more imaginative use of her population base. Here she is less interested in the internal dynamics of the prize process than in using this Eastern European subpopulation as a window on the interaction between Eastern Europe (the periphery) and Germany (the center). Contrary to Ben-David's contention that the center and the periphery coexist as polar opposites—one productive and competitive, the other imitative and relatively unproductive and uncompetitive—Crawford demonstrates a more complementary relationship between the two locations. Eastern Europe was peripheral, she argues, with regard to such matters as citation visibility. But Eastern European scientific innovations, such as the unification of branches of meteorology and geophysics into cosmic physics and the creation of the Institute for Radium Research in Vienna, although slight, she argues, were largely independent of developments at the center. Thus the center did not have a monopoly. This comparative analysis might well serve as a template for more contemporary studies of scientists in the nations that once stood behind the Iron Curtain.

Some may quibble about aspects of Crawford's book. Nationalism and internationalism, for instance, are not quite the poles she views them as; especially for the period under discussion, they overlap in other movements such as imperialism. The brevity of her argument leaves room for the deeper examination of some issues. But these are matters of elaboration, not disagreement. Crawford's book takes a step toward breaking through to the large-scale categories of historical analysis that are commonplace in the mainstream historical community but have been lacking among historians of science.

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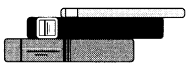

The Widener–Wichita Divide

Schoolhouse Politics. Lessons from the Sputnik Era. PETER B. DOW. Harvard University Press, Cambridge, MA, 1991. xiv, 299 pp., illus. $34.95.

At least symbolically, the orbiting of Sputnik on 4 October 1957 marked a new era in rocket propulsion and space exploration. Oddly enough, the same Soviet achievement also came to symbolize the beginning of a new era in American education. Within a year of that event, Congress passed the National Defense Education Act, which funneled millions of dollars into the reform of education, primarily in the natural sciences and mathematics but later extending to the social sciences and humanities. The clearinghouse for the federal government's unprecedented largess in the area of curriculum reform was the National Science Foundation, which had been involved in education programs on a limited scale since 1950. Although there are some interesting parallels between the post-Sputnik period and the present one in terms of public concern for education as well as political rhetoric, the curriculum reform projects of the earlier period have rarely been subjected to systematic scrutiny, and the question of whether any "lessons" can be gleaned from the failure of those reforms remains unresolved.

In that regard, Peter Dow's *Schoolhouse Politics* is a welcome inquiry into the dynamics and the complexities of school reform during a critical era. Rather than a full-blown examination of the policies that governed the allocation of federal funding and the uses to which it was put, Dow focuses on a single reform project in social studies—Man: A Course of Study. Dow himself was a major actor in the development and implementation of the project (which, in the acronym-laden lexicon of that period, became widely known as MACOS), but he subordinates his own role to that of the renowned academicians who participated in its conceptualization, particularly the psychologist Jerome Bruner. Dow's active participation in and strong commitment to the enterprise probably contributed both to the book's weaknesses and to its strengths.

Dow is at his best in conveying the intellectual excitement and optimism that permeated the development of MACOS. He begins that story with the Woods Hole conference held in September 1959 and chaired by Bruner. Prominent psychologists were present, as were certain leaders of science reform projects such as the late Jerrold Zacharias and the geneticist Bentley Glass, as well as distinguished historians, sociologists, and anthropologists. Although there was no general agreement as to how an elementary social studies program should be designed, and there even emerged some rather bitter infighting among representatives of different disciplines, certain themes began to emerge. One was the notion of a "marriage of the disciplines," that is, an effort to isolate those commonalities within the human sciences that could serve as the basis for an integrated course of study in elementary school. Rather than providing the distinctive perspective of a single discipline, the new social studies would introduce children to the study of human behavior as a unified endeavor. A second concept was "post-holing," the concentrated and intense study of a single topic rather than superficial coverage of many. In this way, something of the excitement of discovery that a research scientist experiences could be conveyed to young children.

These were powerful ideas in their time, as they remain today, but in practice the former lost some of its force as the reform project proceeded and the latter encountered difficulty once it reached the schoolhouse door. As the development of MACOS progressed, certain other themes began to emerge, some of which Dow notes in passing but leaves largely unexamined. First, there was an ill-concealed disdain for the "educational establishment," which had fallen into particular disrepute when some of its members openly advocated the disastrous policy of life-adjustment education in the late 1940s and early '50s. Second, there was the assumption that pedagogical success can be achieved by correctly applying the precepts that psychology pro-