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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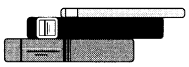


The Widener–Wichita Divide

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

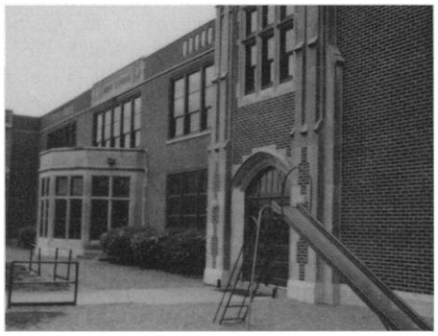
At least symbolically, the orbiting of Sputnik on 4 October 1957 marked a new era in rocket propulsion and space exploration. Oddly enough, the same Soviet achievement also came to symbolize the beginning of a new era in American education. Within a year of that event, Congress passed the National Defense 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-

vides combined with an identification of those key concepts and ideas within a discipline that Bruner liked to call structure. The supremely contextual nature of classroom practice was underappreciated if not ignored altogether. Finally, and probably most important, there was the belief that educational reform could be achieved by being developed at the outset in the rarified atmosphere of Cambridge and then simply disseminated to schools across the country, provided, of course, that the program was accompanied by appropriate teacher training and materials. One of the participants in the MACOS project characterized this problem as getting "from Widener to Wichita."



A school in Wichita. [Courtesy of Sheri Canfield]

Indeed, Dow uses that as the title of one of the chapters in his book, but that chapter is mainly an account of how the teacher training programs for MACOS were developed, how they were evaluated, and the difficulties the Educational Development Center, as it came to be called, encountered in attracting a commercial publisher for the materials that were developed. Though these elements of the story carry their own significance and are of some interest, Dow fails to provide a rigorous analysis of what has come to be called the "top-down" model of curriculum reform, and this is the book's principal weakness. Although Dow repeatedly makes a point of calling MACOS a cooperative endeavor between academic scholars and teachers, that cooperation consisted essentially of using carefully selected teachers to test certain ideas advanced by academic scholars in the crucible of specially designed classrooms.

Despite some initial success, MACOS, according to Dow's account, was sabotaged by a combination of right-wing citizens' groups and congressional suspicion that federal funds were being used to convey subversive ideas, or at least values contrary to those of mainstream America. These debates over values were a particular function of the anthropological character that MACOS assumed (including elements of cultural relativism) over the course of its development. Dow's account of this political infighting, which ultimately involved congressional inquiries into NSF's competence to manage educational programs, is genuinely intriguing in its own right, but it does not serve to explain why other curriculum reform projects of the post-Sputnik era declined almost as precipitously. Zacharias's notably successful and generously financed Physical Sciences Study Committee, for example, did not engender anything like the political controversy that MACOS did but faded just as completely.

The lessons that Dow derives from his MACOS experience revolve for the most part around his self-confessed political naïveté as well as that of his colleagues. In the context of the distorted and even vicious attacks that MACOS had to endure, however, political naïveté comes through as a virtue. It is more likely that the post-Sputnik curriculum reforms failed because of naïveté of another sort. It was a naïveté about the great cultural divide that exists between the heady but contrived atmosphere that pervaded the curriculum laboratories in Cambridge and other development sites on the one hand and the everyday realities of schooling in Wichita and the rest of the country on the other. There is no reason to believe that Dow is mistaken in identifying a politically conservative backlash as the immediate cause of MACOS's downfall, but MACOS is likely to have suffered such a fate anyway by virtue of the cultural dissonance that was almost inevitable given the "Zacharias model" of curriculum reform. By treating schools and teachers essentially as consumers of external initiatives instead of partners in a common enterprise, the curriculum reform programs of the post-Sputnik era were probably doomed from the start.

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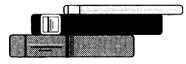

Absences from the White House

Cardinal Choices. Presidential Science Advising from the Atomic Bomb to SDI. GREGG HERKEN. Oxford University Press, New York, 1992. xiv, 317 pp. $24.95. A Twentieth Century Fund Book.

To what extent have American scientists been appropriately involved in advising the nation's leaders concerning what C. P. Snow called the "cardinal choices" of government, those "choices that in the broadest sense determine whether we live or die"? Gregg Herken, newly of the Smithsonian Institution and author of two previous books on related topics, here offers us impressive evidence that, when crucial technical issues have arisen during the last 50 years, the contribution of scientists to executive decision-making has often been inadequate. For reasons of institutional weakness and presidential ignorance or bias, representatives of the mainstream in American science have frequently been unable to reach the political leadership when that leadership needed them most.

Some presidents have done better than others. Dwight Eisenhower in particular should be given credit for having established the post of national science adviser and the President's Science Advisory Committee (PSAC) in 1957, thereby creating the first formal and systematic channel between scientists and the Oval Office. Yet in the decade following PSAC's creation, controversy over the Vietnam war and the struggle over the antiballistic missile led Lyndon Johnson and then Richard Nixon largely to turn their backs on PSAC and the presidents' scientists. Relations between the White House and the scientific community reached their low point in 1973 with Nixon's abolition of both PSAC and the office of science adviser. Since then, despite numerous proposals for reestablishing a PSAC-like entity for the chief executive, only partial and insubstantial actions have been taken to improve the way in which science advice reaches the president. Indeed, beginning with the creation of the Office of Technology Assessment by the Congress in the early 1970s, the process itself has become increasingly fragmented among competing branches of government.

Building from extensive interviewing of the scientists involved and from a careful combing of declassified records, Herken weaves his story of the science-government relationship from the Roosevelt era to the present, focusing primarily on presidential policy with regard to nuclear weapons but in later years on environmental and other issues as well. Despite the present-day fame of the initial Albert Einstein–Leo Szilard letter to FDR in 1939 about the possibility of constructing an atomic bomb, the lack of a dependable means of communication at that time made it surprisingly difficult for