Book Reviews

Traditions in the Perception of Science

The Sociology of Science in Europe. ROBERT K. MERTON and JERRY GASTON, Eds. Southern Illinois University Press, Carbondale, and Feffer and Simons, London, 1977. xiv, 384 pp. $19.85. Perspectives in Sociology.

The established academic discipline called the sociology of science is as peculiarly American a product as the Cadillac. Like the Cadillac, established sociology of science makes sense best in its American context, answering to a certain special set of American preoccupations. And like the Cadillac, "American-style" sociology of science is not entirely successful as an export item. It sometimes appears as incongruous in foreign intellectual environs as does the occasional servicemandriven Cadillac caught up in Cambridge market or the Rue des Ecoles. Why this is so is an interesting question, and one the chapters in the present volume ought to allow us to think about.

Consider the way in which American-style sociology of science is structured: what is it built to do? what problems does it attempt to cope with? upon what presuppositions does it rest? Classical exercises in modern American sociology of science consist in studies of questions like these: how do scientific specialties emerge? what are the social correlatives of cognitive change in science? what defines "the scientific community" and ensures its "autonomy"? how are power and prestige distributed, and what connections obtain between this distribution and "objective intellectual merit"? are there indicators (preferably quantitative) of "merit" in science? who talks to whom? who gives grants to whom, and why?

Many of these questions might be of intrinsic interest to sociologists of science anywhere. But they are of consuming interest to American sociologists, seeming to define the boundaries of the discipline and to constitute the range of sociological questions that it is possible and proper to ask about the nature of science. And, since American-style sociology of science is "bigger business" and evidently more "successful" than any European variant, there is the temptation to see its preoccupations as universals, in the same way science itself is often seen as a universal and context-transcendent activity. Yet the problem-set of American-style sociology of science is more fittingly seen as a local product. Its concerns are the academic outcroppings of underlying practical interests in the problems of "big science" in a liberal, pluralistic, and capitalistic social context, in which "pure science" has publicly to argue its case for support and approval against competing interest groups. And the questions typically addressed by American sociologists are framed in the cultural context of an intellectual community deeply committed (particularly since the experience of fascism and communism) to the values associated with empiricist, progressivist, and positivist images of science and to the "norms" of science publicly articulated by leading scientific spokesmen. (The historical development of this local product is beautifully chronicled in an "episodic memoir" by Robert Merton, the father and presiding genius of American-style sociology of science, which occupies some 140 pages of the book.)

For American scholars the potential value of a collection dealing primarily with differing European sociological approaches to science is evident. European perspectives have the capacity to erode any tendency toward American insularity, and, if taken to heart, can serve to enrich the American enterprise. Thus, the strengths and weaknesses of this book consist in the extent to which it accurately represents (and interprets to English-speaking readers) the variety of recent past and present European sociological apperceptions of science.

On this criterion several of the chapters are disappointing, particularly M. J. Mulkay's survey of British work. Mulkay builds his review on the foundation of British studies that most closely resemble American-style orientations: examinations of alleged "role conflict" experienced by academically trained scientists who move into industrial work; of the distribution of reward among academic scientists; and of patterns of communication and social differentiation in science. And, though Mulkay records growing dissatisfaction with aspects of the American program, his treatment is about five years out of date. British sociological studies of science have changed dramatically in recent years and show signs of totally rejecting the American implant. The most significant development has been the rise of a naturalistic, sociology-of-knowledge approach to the cognitive contents of science, with its roots in the work of Wittgenstein, Durkheim, ethnomethodologists, and several British social anthropologists. In addition, a vigorous and polemical group of Marxist idealist "radical scientists" has sprung up in England. Mulkay says nothing about these tendencies, even though several references to relevant work appear in his bibliography.

The inexplicably pseudonymous "American scholar" Paul Frank begins to give us the authentic flavor of an alien tradition when he discusses French scholars' obsession with the position of intellectuals in institutions, their reflexive meditations on "the sociology of sociology," and their interest in the consequences of control by "big men" in French intellectual affairs. All these foci of interest arguably arise out of the long-established cleavage in French intellectual life between complacent bureaucratized *savants* and the "angry brigades" outside, and they provide interesting comparisons with American preoccupations. But if European scholars were asked to name those distinctively French writers whose work bears most closely upon sociological studies of science they would certainly list Foucault, Bourdieu, Bachelard, Canguilhem, Althusser, and Lecourt. None of these is significantly discussed, and most are not even mentioned. Probably this is because all of them (however exotically) are concerned with the cognitive contents of science, and this is not a topic that greatly exercises American sociologists of science.

A modestly written chapter devoted to Scandinavia concludes that "there has not been a great deal of interest [there] in . . . 'American-style' sociology of science" and intriguingly suggests that this is because Scandinavian science is highly integrated into a generally approved and practically oriented welfare system. Rather than puzzling about how the "autonomy" of science is guaranteed, many scholars in Scandinavia seem not even to recognize that autonomy exists. Neither

is the position of the scientific community in the Soviet Union problematic, at least according to the official line, here clearly presented by Gennady Dobrov. In this account the sociology of science consists exclusively of science policy and the techniques of directing resources to science in accordance with the interests of the state. (A body of largely nonempirical writings on the historical sociology of science does exist in the U.S.S.R., but it is not mentioned in Dobrov's survey.)

For many English-speaking readers the most valuable parts of this collection will be found in the chapter on West Germany and Austria (jointly written by Klima and Viehoff) and that on Poland (by Krauze, Kowalewski, and Podgórecki). Both recover for us the richness of Central and Eastern European sociological traditions of the 1920's and 1930's, which were tragically aborted by the war and ensuing events in those countries. Klima and Viehoff point out that the social situation of science has been conceived as a sociological problem in Germany since the 19th century. They attribute this to several historical features of the way in which German scientific activity was organized and situated. Whereas British and American science was rooted in a broadly based middle-class scientistic culture, German science was institutionalized in the early 19th century "from the top." The original impulse for the reform of science in German universities during and after the Napoleonic Wars stemmed from Prussian state-bureaucratic interests in developing an ideological counter to French culture. Thus, in Humboldt's conception the ideal of the scholar as a morally superior individual merged with a vision of education as an agency of national moral improvement. All these lofty ideals formed as a kind of accretion on the professionalized scientific research activity which was the almost accidental consequence of idealistic university reform. Hence, to German minds, the rise of *Grosswissenschaft*, industrial science, and the authoritarian hierarchical structure of late 19th- and early 20th-century universities all appeared as unnatural growths and as social "problems"; they seemed not to accord with traditional ideologies of the life of the scientist and the social role of science. The vigorous German concern of the early 20th century with the social role of the scientist and the place of scientific knowledge in society arose, the authors persuasively argue, from this tension between ideals and actuality.

Thus, the authors perform the valuable function of situating the German sociology-of-science tradition in its concrete historical context, showing how it responded to the practical problems and conflicts surrounding the place of science in the national culture. They also show that certain celebrated contemporary German writings are continuous with the old tradition, and that this continuity is a response to conditions that have not materially changed over the years. In this way, the well-known work of Habermas is linked to the equally well-known writings of Max Weber and to the less celebrated studies of prewar sociologists and social historians such as Franz Borkenau, Henryk Grossman, Helmuth Plessner, and Max Scheler (although Karl Mannheim and Edgar Zilsel are curiously missing from the account). The most valuable of this work was characterized by intense concern with the connection between scientific culture and capitalist society and was groping toward the development of a large-scale sociology of scientific culture when the Nazis intervened. Similarly, in Poland the group around Znaniecki and Ossowski in the "science of science circle" during the 1920's and 1930's was attempting to develop a naturalistic, nonevaluative, and largely materialistic sociology of scientific knowledge. Excerpts from Znaniecki's untranslated 1925 essay "The subject matter and tasks of the science of knowledge" whet the appetite for a complete English version. And the net effect of many of these pre-World War II writings from Germany and Poland is to prompt the heretical suggestion that the future of the sociology of science is to be sought in its neglected past.

When we turn back to American-style sociology of science, we can appreciate it on the same terms as the various European traditions discussed (more or less well) in this book. They are all local products, and they are all shaped by local perceptions and evaluations of science. Books like this encourage speculation (and research) on the reasons why different national cultures perceive science differently and thus study it differently. One can only note that high evaluations of science tend to be associated with sociological enterprises that protect scientific knowledge from scrutiny and that a social environment that accepts the reality of class conflict within it and has a vigorous Marxist intellectual tradition tends to develop a "critical" approach to the social place of science. On these counts America and Europe are separated by more than an ocean, and it is natural that their respective sociologies of science should differ fundamentally. That never the twain shall meet would be a depressing conclusion. Yet trying to impose an intellectual style shaped by one set of conditions onto an alien context seems as doomed an enterprise as attempting to sell Cadillacs to Britons or, for that matter, Minis to Texans.

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Ecological Principles and Antecedents

An Introduction to Population Ecology. G. EVELYN HUTCHINSON. Yale University Press, New Haven, Conn., 1978. xii, 260 pp., illus. $17.50.

Evelyn Hutchinson, a Tyler laureate, is one of the fathers of modern ecology; he has made a unique contribution, both directly and indirectly through his students, to the blending of mathematical insights with those gained from natural history. In this volume he has called on his remarkable grasp of relevant studies; he is as familiar with John Graunt's (1662) work on the bills of mortality of the citizens of London as with McClure and Price's (1976) paper on competition among leafhoppers and equally knowledgeable on all that lies between. The references have been selected without bias regarding temporal or indeed spatial origins: European work, including that from Russia, figures alongside that from the New World.

The frontispiece is of a memorial in an English church dating from 1468, the dedication is in Latin, and the preface is dated "All Hallows Eve, 1976." These herald an approach that continues throughout the volume, the interweaving of the weft of man's historical heritage with the warp of the modern theory of population ecology.

There are six formal chapters. The first, entitled "M. Verhulst," gives an account of the development of the logistic up to and including Gilpin and Ayala's generalized equation. The second is concerned with mortality and the third with natality. Chapter 4, charmingly and realistically entitled "Living together in theory and practice," reviews competition theory and, happily correcting the bias toward animals in the studies