Cultural Perestroika

Science and the Soviet Social Order. LOREN R. GRAHAM, Ed. Harvard University Press, Cambridge, MA, 1990. xii, 443 pp. $35.

The Soviet old regime is passing and with it the restrictive regimen that once separated Soviet scientists from foreign colleagues. The notion of science as an international project has gained acceptance in the Soviet Union, and international standards now come to bear not only on science but on ethical issues as well. The professions are gaining independence, and a new pluralistic public discourse reinforces an expanding civil society. Yet if Soviet life is changing and scientists can discard the double thinking of the old era, what new cultural contexts are emerging? Put less speculatively, what Russian or Soviet traditions are viable with respect to science? The decline of the empire in this regard may privilege the historian.

The interplay of science and society in Soviet history is the subject of this collection of essays. The contributors are some of the best scholars in the field, and their topics range widely from ecology, engineering, and biomedical ethics to communications and science fiction. Yet a single large issue predominates—the distorting effects of official interference. Graham, the editor of the volume, also adopts this paradigm in which science is opposed to policy, but turns it on its head. Science had a special place in Soviet life, he argues in his opening essay, because the practice of science conflicted with Russian particularism. "Science and technology," he writes, "have helped to make Soviet society more like the rest of the world, eroding the revolutionary and exceptional ethos in which the USSR was born" (p. 14).

Yet although Graham hedges a bit when it comes to projecting this conclusion into the future, his words merit attention. If the Soviet Union becomes more like the rest of the industrial world, he suggests, science could lose its unique role as a cosmopolitan and humanitarian influence. Contrarily, however, he argues that Russian history and culture weigh against such convergence with other industrialized societies. A cultural dynamic that draws on religious traditions or nationalism may thus overshadow science in Soviet public life.

Individual essayists disagree about the power of Soviet exceptionalism; some stress remaining differences and others convergence. Richard T. DeGeorge finds that the Soviets respond differently to issues of biomedical ethics simply because "the freedom that individuals enjoy in the West raises a number of issues that do not arise in the Soviet Union" (p. 224). Mark B. Adams identifies Lysenko's influence in the configuration of the Soviet nature-nurture debate, which pits conservative "nurturists" or environmentalists against liberal defenders of heredity and genetics instead of the reverse as in the West. Similarly, Seymour Goodman stresses a continuing distrust of personal computers and new information technologies that harks back to earlier years.

Other authors describe an engagement with worldwide processes of international development and intellectual discourse more in accord with a Westernizing cosmopolitan tradition. Douglas R. Weiner illuminates the effects of *glasnost'* in a fascinating essay about ecology and conservation in which he shows how recent changes have led Soviet ecologists to abandon longstanding preferences for pristine ecological communities in favor of a more balanced and rational approach to "the preservation of biotic and landscape diversity" (p. 72). Harley Balzer suggests that the Soviet engineering profession will be transformed by new demands for quality and professional standards.

S. Frederick Starr makes the strongest case for Soviet convergence with other societies in an essay on communication and the rise of civil society. He describes a historic shift from vertical to horizontal patterns of communication involving not only the printed word but also growing use of telephones, the mail, the electronic media, and computers. This decentralization of communication, which he describes as irreversible, goes to the heart of the problem of science and society, since the new communication technologies carry with them a more open approach to the practice of science.

The revolution in communications influenced the cultural representation of science as well. Soviet images of science changed, and their meaning did also. Science flourished in the state-managed media throughout the Soviet era, but it is naive to assume a direct linkage with "popular perceptions" (p. 180) or support for scientific projects, as does Paul R. Josephson in an essay about the representation of atomic energy and space programs from 1945 to 1975.

Katerina Clark writing on literature and Richard Stites on science fiction face a similar dilemma. Although novels have been published throughout Soviet history, the significance of a widely disseminated novel of the 1930s may not be same as that of one from the 1980s. A top-down pattern of communication predominates in one era, and a diverse literary market operates in the other. Links between texts and readers vary, and the representation of science means something different in each period.

The issue of a canon also arises. The current revolution in Soviet life has led to the recovery of lost texts not only from the domestic repertoire but also from the emigration. The flip side of the process is the consignment to oblivion of a large proportion of Soviet literary production of earlier periods. It would be interesting to know how science and technology fare in this literary selection. Stites raises the issue with respect to the recent publication for the first time in the Soviet Union of Evgenii Zamiatin's *We* and of *Brave New World* and *1984,* suggesting that "old books have a way of inspiring new ones, especially old forbidden books of explosive content that have been long suppressed" (p. 322).

Both Clark and Stites seek patterns in the representation of science, and both have a word about recent developments. Clark identifies "a reaction against the idealization of science in its most militantly dehumanizing forms" (p. 298). Stites describes science fiction as a popular and Western-oriented genre that may change in the face of a new vogue for literary fantasies. Clark affirms the force of Russian particularism; Stites underscores Soviet involvement in international cultural movements. Events of the past year bolster the case for convergence.

The volume as a whole advances our understanding, and it seems ungracious to charge the authors with casting their nets too cautiously. Yet many issues about the public culture of science and its institutional contexts remain unexplored. Current pressure on the Soviet state budget may lead to the decentralization or even privatization of scientific projects and research, but the authors say little about such prospects or potential constituencies for their support. The

media as an institution for the representation of science also get short shrift, with the exception of Mark Kuchment's stimulating essay on scientific prose. Essays on science in schools, universities, and television, as well as the place of science in museums and among the new private organizations that are springing up so rapidly, would have added much. Interesting also would be a comment on the fate of the old dichotomy between science and religion and of the museums of science and atheism that have long been a feature of Soviet life.

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The Chemicals Sector

The Chemical Industry in the USSR. An Economic Geography. MATTHEW J. SAGERS and THEODORE SHABAD. Westview, Boulder, CO, 1990 (also available from American Chemical Society, Washington, DC). xxvi, 590 pp., illus. $89.95. American Chemical Society Professional Reference Book.

This is a reference work, providing systematic information on a complex and underresearched sector of the Soviet economy. The subject is approached, in the authors' words, "from an economic geographical perspective, with emphasis on the geographic." The book contains seven chapters dealing with the main branches of the sector—fertilizers and agricultural chemicals, the chlor-alkali industry, petrochemicals, synthetic rubber, plastics and resins, chemical fibers, and dyes, paints, and lacquers. These chapters are supplemented with more synthetic treatments of the historical expansion of the industry, general locational factors important in its development, the machinery industries that provide the equipment for it, and the place of chemicals in Soviet foreign trade. We get for each branch some sense of its origin, its role in the economy, its technological characteristics, product mix, and growth, and the way these interact with resource base and markets to produce a locational pattern. The authors have done a commendably thorough job of combing sources and producing an overview of the industry such as exists nowhere else, and for which there is certainly no analogue in the Soviet literature itself. In keeping with the work's design as a reference work, it is equipped with a 100-page index, unusually complete and built around multiple perspectives—products, technologies, locations, companies and plants, processes, resources, and intra-industry relations.

As this description suggests, the book is not a work to be read as a narrative, nor is it much oriented to interesting issues of policy. But as one goes through it section by section a general characterization of the sector and of Soviet policy toward it begins to emerge. The chemical industry was for a long time neglected, characterized by slow growth and backward status in its technology and in the educational and R&D base needed to support its development, and incapable of supporting other important national needs, such as improving agricultural performance. It was rescued from stagnation in the Khrushchev era and has held a generally high priority ever since. This post-1958 emphasis has made it a major industry in terms of its drain on Soviet investment resources, in the Soviet industrial production structure, and in the context of the world economy (it is the world's largest producer of some chemical products such as fertilizer). In this postwar growth it has been heavily dependent, especially in its more modern branches, on imported equipment, and these imports have generally been financed through compensation deals that have made the U.S.S.R. a major exporter of chemicals.

What is missing from the book is much in the way of discussion of the economics of the industry, reflections as to what its future may be, or even the kind of evaluations of past policy and performance that would help us judge how it may fare in an era of economic reform. The chemical industry is a prime example of the investment-swallowing, energy-intensive, polluting kind of branch that is now under heavy attack as the Soviet reformers decide how they need to restructure their economy. It is also a prototypical example of the intermediate-product industries that have hypertrophied under the Soviet *zatratnyi mekhanizm* or "expenditure machine"—a planning system that focuses on growth of intermediate output, an inordinate amount of which gets chewed up as inputs to other industries without creating much final output. One wonders how the various branches of the industry will look in terms of comparative advantage as the economy becomes more subject to the test of openness to the world market and what kind of restructuring it is likely to undergo in an era of the profit test, privatization, investment, and competition from foreign producers. Insight into those issues will have to await a different kind of study, but such a sequel could not be written without the systematic descriptive work provided in this book.

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