

## O Economic Development, Technological Change, and Growth

*From Newspeak to Cyberspeak: A History of Soviet Cybernetics.* By Slava Gerovitch. Cambridge and London: MIT Press, 2002. Pp. xiv, 369. \$37.95. ISBN 0-262-07232-7.

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This book constitutes the first real history in English (outside of a few limited-distribution RAND reports) of the phenomenon of Soviet cybernetics. Although this might seem a topic of limited interest to only a few cognoscenti, in fact it raises a number of larger issues which should engage a much wider audience. The author deserves our gratitude for prompting economists and others to compare and contrast the trajectories of cybernetics in the USSR and the West, to contemplate further how the computer shaped the postwar natural and social sciences, and to revisit the question of whether and how the Soviets either encouraged or thwarted the development of the sciences in the Cold War era. While these Big Questions do get a workout in the course of this book, truth in advertising demands the following *caveats*: The range of evidence brought to bear is more limited than the title suggests, being primarily confined to the period of the late 1940s through the 1960s. The book mostly avoids mathematical and technical issues, which is a little disconcerting when the topic itself was formal; and insofar as the book brings any theoretical tradition to the organization of the evidence, it is the treatment of cybernetics as a “language” or a rhetoric, rather than as an intellectual and disciplinary formation in its own right. While it is certainly the case that “cybernetics” *per se* has subsequently fallen into disrepute in both countries, that is no excuse to approach it merely as a *fa on de parler*.

The story begins with postwar Soviets torn between an ambition to overtake and surpass Western science and a desire to criticize and reject it. Immediately after the war, the Stalinist reaction was to mount a campaign to delegitimize cybernetics because it purportedly clashed with dialectical materialism. This drive to banish it did not survive the Khrushchev thaw and the distress of the Soviet military at their obvious lagging capacities in computer development. Policy was reversed, resources flowed, and “cybernetics”

became the big tent under which an astoundingly wide range of scientific activity took place from 1955 onwards. This included the world-class research of Liapunov, Kolmogorov, and others about whom economists will have heard. Man-machine metaphors became at least as common in the Soviet Bloc as they were in Western science. Moreover, much of the economics and political theory produced in the USSR was retailed under the rubric of cybernetics up until the 1980s, with computers used to justify (but rarely actually compute) plans.

Many readers coming to this book will approach it as documenting yet another instance of how science was perverted under the Soviet system, but they will be surprised. One of the messages which comes through fairly clearly is that, making allowances for the fact that the Soviet computer industry lagged behind the American industry by a decade or more throughout (pp. 157–9), cybernetics as an intellectual proposition looked pretty much the same in the United States and the USSR. In both instances the military funded and decisively shaped the nascent disciplinary formation; if anything, it was initially stunted by the postwar Soviet hesitation in sheltering the research from outside cultural skepticism concerning modeling men as machines. Computer metaphors spread with great rapidity throughout psychology, politics and economics in both countries, promising a formal “theory of everything” united in the name of a Unified Science. Gerovitch reproduces a fascinating chart which accompanied programmatic talks by Liapunov (pp. 206–7). This chart arrayed fields from mathematics and computer science to economics, linguistics and genetics across the top, and across the fields defined isomorphic concepts such as information, control, networks and programming. Perhaps because Norbert Wiener (who coined the term “cybernetics”) adopted an anti-militarist stance during the Cold War, in the United States these trends tended to be promoted under the rubrics of first “operations research” and later “systems theory;” but the content bore a distinct family resemblance. This resemblance was not primarily due to the Soviets simply copying Western ideas: Gerovitch informs us that in a wide range of fields, it was Soviet researchers who would be treated as the far-sighted pioneers by later generations of Western scientists—that is, if they had access to translations of the relevant

texts. Among others, he mentions Bernshteyn as a precursor of later work in cognitive neurobiology, Kolmogorov as the father of algorithmic information theory and complexity theory, and Mikhail Tsetlin as a precursor in game theory. While the latter might not be a household name to modern economists, he was publishing papers on automata playing repeated games with implications for the attainability and feasibility of certain solution concepts in the 1960s, long before it became a hot topic in the West in the 1980s. There may have been many more of these cases, but with the destruction of the Soviet science base in the 1990s, and the loss of interest by Westerners in Soviet science, knowledge of the achievements of specific research traditions is rapidly being dissipated.

The resemblances also raise some troubling issues about the work of specific scientists in the Cold War. Gerovitch documents how some highly-placed Soviet scientists used their government and military ties as leverage to throttle rival scientists and starve rival research programs; the means and motives described herein do not strike this reader as so very different from similar activities in the American context—think of the repression of Rosenblatt's early neural nets, or the marginalization of alternatives to the von Neumann architecture for the computer. Yet there was also the phenomenon of some scientists having special access to Soviet developments through their military ties, but not fully acknowledging the nature and extent of their influence. One example pertinent to postwar economics was the extent to which linear programming and game theory grew up in compartmentalized spheres in each country, with only a very few figures possessing security clearance having substantial access to cutting-edge research in both. The 1975 Nobel Prize jointly awarded to Tjalling Koopmans and Leonid Kantorovich (pp. 268–9) was, among other things, an indirect avowal that something like cybernetics had been helping shape approaches to economics in both countries, but very few participants lacking military ties could appreciate the extent of work done within this larger context.

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*Financial Crises in Emerging Markets*. Edited by Reuven Glick, Ramon Moreno, and Mark M.

Speigel. Cambridge; New York and Melbourne: Cambridge University Press, 2001. Pp. xi, 467. \$80.00 ISBN 0-521-90020-X.

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This volume contains papers and discussants' comments presented at a conference on financial crises in emerging economies at the Federal Reserve Bank of San Francisco in September 1999. Coming only two years after the start of the East Asian financial crisis, the book's authors naturally focus on this event, although some attention is devoted to both earlier and later crises, particularly the Mexican crisis of the 1994–1995 and the LTCM/Russian crises of 1998.

The volume contains 12 papers and all but one are followed by a discussant's comments. The authors are from academic institutions, official international agencies, and the Federal Reserve. The papers are primarily empirical and consistently of high quality. Because of the literal flood of papers published on the heels of the East Asian crisis, the papers in this volume tend to get somewhat lost and appear to present little new. Nevertheless, they represent an important summary of the literature and our knowledge at the time. The book contents center on four issues, each of which constitutes a separate section of the volume:

- How prevalent have financial (both currency and banking) crises been in emerging economies and what have been their fundamental determinants?
- What has been the role of cross-border capital flows?
- What has been the importance of financial, legal, political and other institutional characteristics across countries, and
- How can public policies reduce both the occurrence and severity of financial crises?

The opening chapter by the editors is a nice summary of both the papers in the book and the literature in general. It can be read as a stand-alone article. Its major failing is the lack of lessons, preliminary and tentative as they may have been at the time, that could or could not be drawn from the collection of papers.

A major criticism of the collection is that, with the exception of the chapter by Michael Dooley and Inseok Shin, the analysis of banking problems is considerably weaker than that of currency