
We Were Burning: Japanese Entrepreneurs and the Forging of the Electronic Age.

By Bob Johnstone. New York: Basic Books, 1998. Pp. xxiii+422; illustrations, notes/references, index. \$27.50.

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For far too long, western observers have tended to view Japanese economic success either as a result of government subsidies and planning or of super-efficient industrial production and docile labor, or perhaps of both. Books like Chalmers Johnson's very influential *MITI and the Japanese Miracle* have helped to shape this view, arguing that Japan's postwar economy is a function of farsighted, generous, and effective industrial policy that has targeted key industries, sponsored research and development, and even tilted the terms of international trade. There is a huge literature that attributes Japan's economic miracle to a deferential, consensus-seeking society characterized by an acquiescent labor movement and weak, enterprise-based unions. And there is the more contemporary view associated with important works like the MIT study, *The Machine that Changed the World*, that attribute Japanese industrial development to new and more effective ways of organizing the factory floor.

Despite their differences, these perspectives share a common model of Japanese industrial development as a process in which Japanese firms and industries latch on to ways of producing goods developed elsewhere, imitate them, and then increase their cost-effectiveness. This view not only neglects a role for innovation and entrepreneurship in the economic development of postwar Japan, it virtually disallows one.

We Were Burning provides a welcome and much-needed corrective. Bob Johnstone focuses on the entrepreneurs, the fledgling and dynamic enterprises, and the dramatic new innovations that have powered Japanese success in the age of consumer electronics. For Johnstone, the key to understanding Japanese industrial development lies in the ability of engineers, scientists, managers, and their enterprises both to generate and to refine new scientific and technical innovations (of which there are plenty, he argues) and in the incredible entrepreneurial impetus to find new uses for such innovations in successful consumer products that open up huge new markets. He substantiates this with compelling chapters on innovations such as the electronic calculator, digital watches, video camcorders, compact disk players, music synthesizers, laser printers, and flat-panel displays. As these chapters amply document, the success of Japanese enterprises such as Sony, Canon, Seiko, and Yamaha stems not just from cost-effective production, but from a willingness to take risks, pursue complex technological problems (which others had long since abandoned), invest in innovation, and vigorously pursue radical new products that define whole new markets.

nurturing a new field of knowledge and practice" (p. 255). Citing the unexpected explosion of personal e-mail even in the early years, Hughes adds that ARPANET is also a prime example of the unanticipated consequences of specific technological advances.

Hughes is frank in his admiration of the abilities of the people and the teams he describes. In contrast to the rigidities of prewar Taylorism and Fordism, he writes, projects such as SAGE and Atlas "demonstrate the capability of systems engineers to masterfully coordinate heterogeneous technologies and autonomous contractors into a loosely coupled system in order to obtain a clearly defined goal" (p. 302). Along the way, Hughes gives us neat capsule histories of the evolution of operations research, systems engineering, and systems analysis. He provides deft biographical sketches of some key players, notably Jay Forrester, Schriever, and Salvucci.

A reader inclined to faultfinding might ask for a more thorough analysis of the ways in which the various teams worked—how they functioned day to day, how they held together under so much stress, and precisely what the members' incentives were in addition to (by their own account) having had a lot of fun. One might also have wished for a fuller development of the ARPANET story, and, here and there, for a less drenching rain of acronyms. Yet for a historian to have covered so much ground and to have said so many wise things about such recent history is an impressive achievement indeed. This book required an imaginative research design, persistent interviews of the major players, and an uncommonly clear sense of what the author wanted to communicate to both the specialist and nonspecialist reader.

Each of these four stories deserves a book of its own, and will likely have one in due course. But few books will be nearly as successful in integrating a series of case studies that on first blush might seem to have little in common. Together Hughes's stories, told with his characteristic analytical flair, vividly illuminate the deep-seated "polarities" of modern versus postmodern techniques of the engineering and management of complex technological systems.

THOMAS K. McCRAW

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This is a useful book for students of technological innovation, high-tech industries, industrial development, and the Japanese economy. It is effectively argued, well written and lively, and marshals a wealth of facts to support its argument. It is not, however, a scholarly work in the conventional sense. Johnstone is a journalist who has covered Japanese science, technology, and industry for more than fifteen years. Rather than making use of archival sources, his book relies on more than one hundred interviews with key figures in the postwar electronics industry, including scientists, engineers, and executives both in Japan and the United States. The interviews provide useful new information and data on various aspects of technological innovation and industrial development in the Japanese consumer electronics industry.

We Were Burning helps to advance and substantiate an important new perspective on the role of innovation and entrepreneurship in postwar Japanese industrial development. One can only hope that it will help to encourage historians and social scientists to probe these issues and questions in even greater detail.

RICHARD FLORIDA

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The Social Shaping of Information Superhighways: European and American Roads to the Information Society.

Edited by Herbert Kubicek, William H. Dutton, and Robin Williams. Frankfurt and New York: Campus and St. Martin's Press, 1997. Pp. 372; figures, tables, notes, index. \$49.95

Although the chapters of this book are all based on papers delivered at a conference held in October 1995 in Bremen and sponsored by COST/A4, they include important revisions to reflect subsequent events, such as the Telecommunications Act of 1996 in the United States. A lengthy introductory chapter by Herbert Kubicek and William H. Dutton provides a useful overview of the conference as well as a framework for the following eighteen chapters. These are organized into five parts. The first addresses the nature of and differences between American and European perspectives on the information superhighway, a theme that flows strongly through the entire book. The second reviews earlier projects to provide historical perspective. The third examines the social bases of policy responses, in particular how input derives from the public and from business. The fourth and largest addresses access to the information superhighway, with special attention to issues of universal service. The fifth provides two excellent