Bookshelf

Inside the Robot Kingdom

By Frederik L. Schodt
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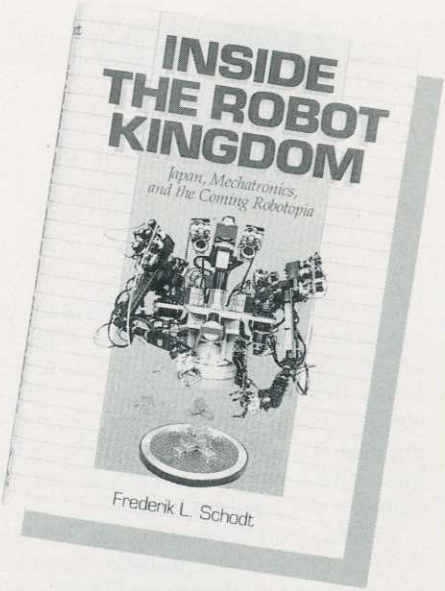
1988, Tokyo and New York
256 pages; ¥3,200/$19.95



This work takes a broad-based and multifarious look at the various aspects of Japan, recognized as being the world leader in the use of industrial robots. It includes interviews with robotics researchers and users, extensive research into the Japanese literature on robotics, and a host of other techniques utilized to paint a vivid picture of "the robot kingdom" of Japan.

The book itself is divided into four parts, the two chapters of part one being devoted to defining robots and robotics as they have developed over the years. The three chapters of part two are a historical review exploring the roots of robotics in Japan, with an academic discussion of the way robots have figured in Japanese *manga* (comic books) and a discussion of the toymaker's art in creating robot-like *karakuri* dolls in the 17th century.

The third part, the heart of the book, has four chapters on robot technology. This part discusses how industrial robot technology has developed and is used in Japan, gives a case study of how Fanuc has moved from numerically controlled manufacturing to robot workers, and discusses both the human and the economic impact of using robots.

Finally, part four's two chapters focus on the relation between robotics and religion and recent developments in Japanese robotics technology.

As can be seen from this brief outline, Schodt has tried to trace the cultural, religious and technological traditions that have fueled Japanese advances in industrial robotics, for he sees these aspects as the fertile soil common to all Japanese technological progress. While focusing overtly on robotics, this book is actually an effort to discover the secret of how Japanese technology has managed to come so far so fast—an effort in which he has succeeded rather well. Part two is an especially noteworthy effort to discover the secret of Japanese technology, and this orientation is eloquently demonstrated by the author's focus (in the first chapter in part four) on the religious differences between Japan and the Euro-American West and how these differences facilitated the introduction of this new robotics technology in Japan.

Schodt argues that the Japanese success (and conversely the American and European difficulties) in introducing industrial robots can be explained by looking at the reaction robots evoke in the different societies: Tetsuwan Atomu (also known as Astro Boy) in Japan and Frankenstein in the West. Part of this difference is attributable to religious factors, and part to the fact that Japan has a long tradition of robot-like *karakuri* dolls. The very term "robot" conjures up images of a machine patterned after man in both cultures, but Japanese generally assume that these machines are well-meaning.

Part two's discussion of industrial robot production is very interesting for its overview of Japanese technology and how Japan has taken an American concept and turned it into a reality. The efficient use of industrial robots became possible only when balance was achieved among the robot's capabilities: the tasks that it was programmed to perform, and the peripheral equipment. In essence, the linkage—the way robots are integrated into the production system—is the key. This assertion that the use of industrial robotics is essentially a systems engineering question is consistent with what I have found in my own studies of companies that use industrial robots.

Although some observers have argued that industrial robots are impossible without outstanding software, the author found that the Japanese experts he interviewed emphasized the importance of hardware. The conclusion seems to be that the development of industrial robotics demands balanced development of both hardware and software.

As indicated by the author's discussion of robots in Japanese *manga*, robots can be of two types: those that act independently and those that are human-controlled. Yet in actual practice, it turns out that the emphasis is more on improving reliability and economies than on moving into ever more high-precision tasks. Examples here are the SCARA (selective compliance assembly robot arm) and the Fanuc robots. While robots have found wide application in Japan, as indicated by the *sushi*-man robot, they have, as Schodt notes, been used mainly to replace seasonal workers, part-time employees and other peripheral employees in light work.

Stating that the country that uses robots to best advantage has the potential for dominating the global economy, the author paints an interesting picture of Japan's technological and industrial capabilities as reflected in its use of robotics. This is a very well-done book that should be of interest to a wide readership.

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Trade Associations in Business History

Edited by Hiroaki Yamazaki and Matao Miyamoto
Published by University of Tokyo Press
1988, Tokyo
326 pages; ¥6,000

This dry-sounding book will interest anyone who wants to know more about the business and trade organizations that grew up in post-Tokugawa Japan.

The Meiji government set about early on to abolish the guilds that had been dominant in the economic life of Tokugawa Japan, on the grounds that they were feudalistic. But no system nor organizations were instituted to replace them, with the result that chaos reigned in the business world. (According to Profes-