

## Inside the Robot Kingdom

By Frederik L. Schodt

Published by Kodansha International Ltd.  
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 demonstrat-

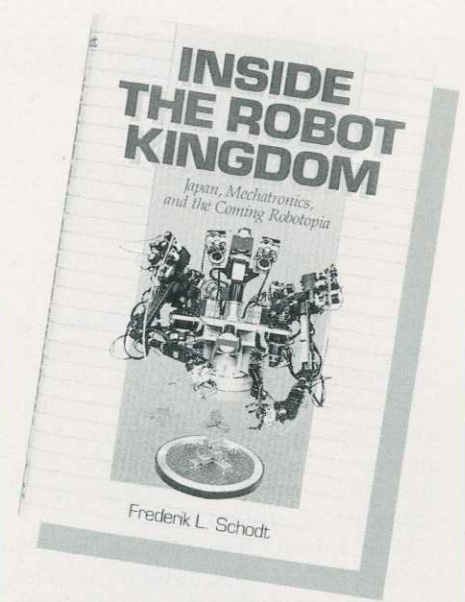
ed by the author's focus (in the first chapter in part four) on the religious differences between Japan and the Euro-American West and how these differences facilitated the introduction of this new robotics technology in Japan.

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. Ex-



amples 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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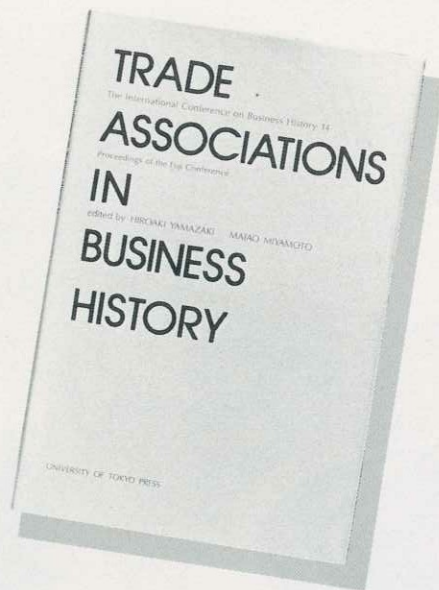
## Trade Associations in Business History

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-



sor Miyamoto of Osaka University, it was this chaos that caused Osaka to decline as an economic power.)

Local chambers of commerce were eventually formed, as a means of filling the gap. But these were voluntary organizations; their membership was small and they could not function as a substitute for a commercial code. Finally, in 1893, a commercial code came into being.

The influence of these early chambers of commerce peaked around the turn of the century, and declined with the changes in Japan's industrial structure prior to World War I. In 1917, an organization called the Industry Club of Japan (Nihon Kogyo Kurabu) was established. Its membership came largely from the manufacturing sector, and reflected the growth of heavy industries in Japan. The ICJ was led by powerful figures from Mitsui, Mitsubishi and others, and, to quote the author's understatement: "There is no doubt that *zaibatsu* expected much from the ICJ."

One of the first problems the newly created ICJ was faced with concerned labor. The Russian Revolution had influenced workers in Japan, whose numbers were increasing rapidly as heavy industry expanded. Faced with large numbers of workers who were demanding the right to exercise collective bargaining, the ICJ—and the government—had to deal with the situation. A brief discussion of Japan's labor movement can be found in this book; for a more detailed presentation, see *The State and Labor in Modern Japan* by Sheldon Garon (University of California Press, 1987).

The next major business organization to be formed was the Japan Economic Federation (Nihon Keizai Renmei) in 1922. This was set up with the backing and the blessing of ICJ, because, in 1921—on a business mission to the U.S. and Britain—the leaders of the ICJ realized that Japan needed an organization more broadly based than the ICJ or than the National League of Chambers of Commerce, to deal with business organizations overseas. The NLCC membership came mostly from medium- or small-scale enterprises.

In fact, the JEF, like the organization that spawned it, was identified with big business; the major area in which its membership was expanded over that of the ICJ was that it included bankers as well as industrialists. The JEF had its office in the ICJ building. Among the activities promoted by the JEF were those aimed at reducing trade friction between Japan and other countries. The exchange of business missions was a top priority, and a Japan-U.S. Trade Council was created in 1934. When an American business mission visited Japan and China that year, "the council exerted great efforts to appeal to the mission to understand Japan's situation and to avoid friction between the two nations."

In the introduction to this book, Professor Yamazaki of the University of Tokyo says that some Japanese trade associations—such as Keidanren (the Federation of Economic Organizations)—are cited by foreigners as examples of the "Japan, Inc." phenomenon. Thus, this reader assumes that one of the purposes of the book—and of the conference whose proceedings resulted in the book—was to disprove this notion. The reaction of this reader is that it does not do so very convincingly.

Three chapters of this book deal with Japanese trade associations, and six chapters deal with trade associations in the U.S., Britain, France and Germany. Each chapter emanates from a paper presented at the 14th Fuji International Conference on Business History, held in 1987, on the theme of "Trade Associations in Business History."

The conference organizers sacrificed depth for breadth. Because the theme is so broad, we have papers (chapters) on such diverse topics as the use of public

relations by the National Association of Manufacturers in the 1930s and 40s in the U.S., and the trade associations participated in by a major French glass and chemical company (Saint-Gobain) from 1830 to 1939.

The three Japanese chapters give an overview of 1) the major business organizations in prewar Japan, 2) cartels and 3) local trade associations. Each of these overviews is informative, if you are a non-specialist who wants a general introduction to the subject. But if you are looking for systematic, in-depth coverage, you will have to look elsewhere.

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## Outside Tokyo

### Fukui: A Slice Of Old Japan

Situated on the Japan Sea a pleasant one hour 40 minutes by train from Kyoto or Nagoya, Fukui is a prefecture that many Japanese seem to know little about. Yet Fukui, forgotten and unchanged by the Japanese of the modern cities, is well worth a visit. The short journey to the port of Tsuruga and on through the mountains to the plains of Fukui has the feeling of a journey back in time. The 21st century of bullet trains and intense industrialization gives way to the lifestyle of traditional Japan.

Fukui is famous overseas as the home of Soto Zen's head temple—Eiheiji—in the mountains near the city, and perhaps infamous for having the largest concentration of nuclear power plants in the world. There are already 12 power plants in a span of less than 70 kilometers along the Japan Sea between Tsuruga and Takahama, and three more are under con-