

Inside the Robot Kingdom: Japan, Mechatronics, and the Coming Robotopia.



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dinary-people-we-are-and-how-very-lucky-to-be-ourselves-and-not-some-other-lesser-breed type). Richie gives us individuals, persons: some famous, others notorious, still others hitherto unknown.

There is something here for virtually every taste: those with an interest in Japanese literature will be intrigued by the brief sketches of Kawabata, quiet (not only because of language problems, one feels), courteous, and seemingly resigned at the specter of Asakusa in ruins, viewed from the old Asakusa Tower in the company of a young American serviceman, who is the author forty years ago; or of Mishima, determined to cast Richie and a certain pallid student of French literature as central characters in a real-life drama he has already taken the trouble to write for them.

There are of course numerous portraits of performing celebrities: Kuroyanagi Tetsuko, the sketch of whom will provide an interpretive link for readers puzzled by the (faintly ludicrous) persona that we see on television and the off-screen woman who is such a committed and effective philanthropist; Nakamura Utaemon, whose femininity, both off stage and on, is captured in a few revealing vignettes; Hara Setsuko, the fabled screen actress of the 1940s and '50s, the 'eternal virgin', who has retired, Garbo-like, into impenetrable privacy and whom, whether he may or may not have ever met her, Richie portrays with great empathy.

But just as significant in the context of this book are the unknowns: the sushi-shop boy who is constantly bullied until he conforms to the rules of his little world (which are, alas, in their specifics directly opposed to the rules of the greater world of Japanese society—he must have himself tattooed, like his seniors behind the counter), and who, having done so, is rewarded with acceptance and a kind of happiness. This sketch says volumes about the group-oriented nature of Japanese society, about the pressures, pains, and pleasures it provides. It is more revealing than many a thick sociological study on the same topic.

And so they move before us, this array of individual Japanese, 'different people', having in common their nationality (about which much is revealed, but without recourse to mind-dulling generalizations) and their links to the author: 'A chain is formed of people different from one another, who are united, incomprehensibly, because we have chosen them,' writes Marguerite Yourcenar in a passage from her book on Mishima that serves as epigraph to this collection. Taken together, they have much to teach those of us interested in Japan, whether as amateurs or professionals; and the teaching is done in the most pleasing manner imaginable—with small, well-measured Salesian spoonfuls of honey, rather than the more usual dollops of vinegar.

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Inside the Robot Kingdom: Japan, Mechatronics, and the Coming Robotopia.

By Frederik L. Schodt. Kodansha International, Tokyo & New York, 1988.
Illustrated; 256 pages. ¥3,200 or \$19.95.

WHEN we read the Japanese popular press these days, there would seem to be a new column in the Japanese syllabary, an 'auto-gyō' if you will, of BA-FA-HA-LA-OA-PA-RA-SA. That is, these are the automation acronyms ('banking', 'factory', 'home', 'labora-

tory', 'office', 'personal', 'restaurant', and 'store automation'), whose generic term, 'mechatronics', has given a new meaning to the ME decade in Japan.

As Frederik Schodt tells us in his engaging study, ME is a fusion of *mecha* ('mechanical') and electronics, and it is the high technology of a post-industrialism of human managers and laboring robots. General Motors is still the largest single consumer of robots, and several European countries, especially Sweden, have high per capita robotic rates. Japan, however, has become the world's unchallenged Robot Kingdom, and Schodt's effective combination of cultural history and business journalism is an investigation of the causes and forms of this fast-paced *robotto fiibaa*. No doubt the book will be well thumbed by those students of U.S. business and economy who peer nervously across the Pacific. Given the profound implications of robotics for Japanese workplaces and social relations, it is a book that is equally instructive and provocative for Japan specialists.

The first of the book's four parts briefly introduces the technical details of robots and the present policy significance of robots in Japan. Part Two then identifies historical antecedents and mass cultural forms that have fed the robot fever. One can be sure that anything in Japan with a bright future will also be found to have a long past; there seems to be a tradition for everything. For robots, it is the *karakuri*, a line of automata gadgetry such as the seventeenth-century Takeda doll, a kimono-clad boy servant bearing a cup of tea. To Schodt, the *karakuri* were indicative of an indigenous technical and artisanal background that predisposed later technological borrowings.

Also contributing to public acceptance—indeed, 'collective infatuation' (p. 23)—of robots has been a celebratory popular culture. The West tends to attribute original sin to robots as well as people—a Frankenstein theme of 'man makes robot, robot kills man.' Japanese representations are more benign. Schodt draws on his own previous research on Japanese comics to illustrate their predominant treatment of robots as friends and allies. This began with the first and greatest robot comic hero, Osamu Tezuka's Mighty Atom (Tetsuwan Atomu), whose appearance in 1951 presented the promising side of science to a nation then wary of Japanese spirit and desperate for Western technology. It continues to the present with cuddly robots such as Doraemon and Arare-chan and even the warrior-robots such as Mazinger Z and Mobile Suit Gundam, whom Schodt sees not as violent war machines but as 'a high-tech version of the Niō, the twin Deva Kings' (p. 90).

Robots have been equally profitable for toy manufacturers, although ironically, robot toy assembly is so intricate that it is done mostly by human labor (primarily, 'parttime' women working for small regional subcontractors, pp. 100-01). In an amusing sidebar (p. 101) that illustrates Schodt's eye for revealing detail, he notes that Japanese toy manufacturers had to make several design adjustments in their export models. Japanese toy robots are made with small heads to emphasize body bulk, but U.S. importers complained that American kids interpreted this to mean that the robots were stupid, so the Japanese companies obligingly altered the proportions. As with other product areas, this flexibility suggests why Japanese toy exports to the U.S. were \$140m in 1985, while American manufacturers sold only \$6m to Japan in that year.

The growth of the Japanese robotics industry is the subject of Part Three and offers a familiar story of technology transfer, consolidation, and innovation. The story includes MITI consortia and business mavericks such as Inaba Seiueemon, whose huge

company, Fanuc, is profiled in Chapter 7. It also includes an American, Joseph Engelberger, who was fated to be the Edwards Deming of industrial robotics—an engineer who was frustrated in his efforts to promote them to U.S. companies, but who was warmly received and immediately appreciated on his first visit to Japan in 1967. (There is now even an annual Engelberger Award.) Schodt is evenhanded and, in the end, non-judgmental in describing and balancing Japan's successful incorporation of robots into manufacturing (through negotiated Robot Agreements and 'robotics synergy') and the attendant sacrifices and often hidden costs of de-skilling, techno-stress, and job losses.

Schodt begins the final section of the book by considering and wisely rejecting the popular arguments alleging a Japanese spiritual affinity with robots (animism for automata). He prefers instead a conjunction of historical, social, and cultural factors, which he summarizes in Chapter 10. In the following chapter, which should interest any scholar of industrial policy, he outlines and assesses ART, the current national R & D program to develop mobile robots for disaster sites.

Much is now made of the 'softening' and the 'hollowing' of the Japanese economy. These metaphors have come to represent, respectively, the hopes and fears of a high-tech information society. For many state planners and corporate managers, this is a vision of the ultimate Robot Kingdom—fully automated factories driven by what is now touted to be 'process technology', in which design, manufacturing, and marketing are linked into a single information flow of 'perpetual innovation'. These may well be the delusions of latter-day Transylvanian dreamers, but Schodt's book makes clear that Japan has marshaled the corporate structure, media support, and societal enthusiasm to ride this Third Wave into the twenty-first century.

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