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Beyond Mass Production: The Japanese System and Its Transfer to the United States, by Martin Kenney and Richard Florida. New York: Oxford University Press, 1993, \$29.95, 410 pp., cloth.

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The authors of *Beyond Mass Production* argue that Japanese firms have developed a unique and powerful production system that soon will dominate industrial organization throughout much of the world. They refer to the system as "innovation-mediated production," which they contrast with assembly-line mass-production methods of the Taylor-Ford model of scientific management. The main components of innovation-mediated production include multiskilled workers, self-organizing work teams, and cross-functional task integration that is used to maximize continuous improvement on the shop floor. The production system also includes close integration of R&D and manufacturing functions, along with effective use of long-term vertical relationships with suppliers and distributors. The authors argue that the system is superior to mass production because innovation-mediated production uses the intellectual power of workers throughout a firm and the organizations with which the firm interacts to improve quality, lower costs, and reduce the length of commercialization cycles. Many other authors have examined Japanese domestic organizational practices and compared them to European and American organizations (e.g., from Abegglen in 1958 to Nishiguchi in 1994), but *Beyond Mass Production* is perhaps the most comprehensive examination of how Japanese industrial practices are being transferred to other locations (other recent studies include Gelsanliter, 1990, and Garrahan & Stewart, 1992). The book is part of a larger project describing the restructuring of production systems in advanced industrial nations (e.g., Florida & Kenney, 1990). The goals of this volume are to describe innovation-mediated

production, outline its superiority over mass production, demonstrate that Japanese firms are now transferring this system to the United States, and convince us that this system will be the dominant global form of productive organization.

The book achieves some of these goals. The characteristics of innovation-mediated production, the context in which it evolved, and the strengths of the system are described clearly. The authors provide extensive empirical documentation of the production systems used by Japanese-owned "transplant" firms in the North American auto, steel, and electronics sectors, while providing thoughtful studies that demonstrate the strength of the new organizations. They also argue convincingly that new types of organizations can be created in North America, using North American shop-floor employees and managers, demonstrating that national culture does not dominate the evolution of new production systems. The authors argue convincingly that superior organization contributes to the success of many Japanese firms.

The strongest part of *Beyond Mass Production* is the careful empirical description of transplant activity in the automobile assembly and supply, electronics, steel, and other sectors. The book documents the entry of Japanese firms to the United States, the transplants' development of employee-selection procedures, new shop-floor methods, delivery systems, supplier networks, and other facets of innovation-mediated production. Transplantation is supported through individual and team assignments, employee socialization, and wage and tenure practices modeled on Japanese practices. The authors argue that the transplants are contributing to the reindustrialization of America and to the vitality of the country's R&D base. The authors also describe some of the tensions that have arisen in the transplants, including injuries from rapid workpace, tension with traditional unions, and occasionally strained community relations. The description of the transplants is very successful and is a real contribution to our understanding of the diffusion of new production processes.

Beyond Mass Production is somewhat less successful in its arguments that innovation-mediated production is a single system that is being recreated throughout the world and that the system will dominate other productive systems. A tendency to overgeneralization influences three of the book's central themes. First, the authors believe that most Japanese firms use the same form of organization. Yet, just as "mass production" has always had substantial differences in implementation and philosophy in different North American firms, there are substantial organizational differences within Japanese firms. In the auto sector, for instance, Honda and Toyota tend to use their production systems to achieve somewhat different ends, with Honda's system being oriented to increasing speed and Toyota's to reducing cost. The authors argue that the organizations that Japanese firms are establishing in North America and Europe use the same production systems that the companies employ in Japan. Unquestionably, the domestic and foreign facilities are similar. For

instance, Toyota's production facility in Kentucky is modeled on the company's sister plant in Japan. However, it is not clear that organizations and networks of organizations can be precisely replicated in a new location. Instead, automobile assembly transplants are adjusting their supplier networks in North America, by extending links to new Japanese suppliers and to North American companies (Martin, Mitchell, & Swaminathan, *In press*). Moreover, as the book points out, Japanese-owned businesses must adapt to local educational levels, employment laws, and other social factors. In addition, close linkages between two stages of commercialization or between buyers and suppliers that were relatively easy to maintain domestically sometimes change drastically when a firm sets up international operations. Transfer of tacit information between design and manufacturing, for instance, becomes difficult when design is done in Nagoya and assembly is carried out in Kentucky. Similarly, just-in-time inventory systems must allow for much longer lead times when components are shipped across the ocean rather than across the road. The authors attribute cases of imperfect transfer of the production systems primarily to historical factors and to managerial and agency failures, but they do not explain convincingly why the failures are likely to be overcome in the future. The production systems used by many companies clearly share many similarities, but understanding the differences among firms in Japan and differences that occur as the production systems diffuse is equally important.

Second, the authors are pessimistic about the ability of North American and European firms to adapt to the challenge by innovation-mediated production. They predict that Chrysler, for instance, "seems destined to cease to exist as an independent automaker" (p. 312). In the year since the book has been published, however, Chrysler has rebounded dramatically, and both Ford and General Motors also have been profitable. In large part, the renewed profitability stems from each firm's organizational adaptation to the challenge posed by the Japanese competitors' production systems. Moreover, each of the three North American companies has responded by making different types of changes to their own production systems, with Chrysler focusing on outsourcing as many components as possible, Ford on cross-functional teams and faster development, and General Motors on new approaches to design and cost reduction. Many newer American companies in other industrial sectors also have created organizations that differ drastically from mass-production models, for example, the innovation-based production systems used by specialty steel companies such as Nucor and Chaparral (Leonard-Barton, 1992). Which established companies will be able to adapt and how many new companies adopt new forms of production systems merit close attention.

Finally, these authors argue that innovation-mediated production will dominate in the long run. We agree that older forms of mass production are unlikely to enjoy a resurgence in our lifetimes, but we are not as certain that the production systems now used by Japanese firms will

necessarily dominate without substantial changes. Like the older forms of production that innovation-mediated systems challenged, innovation-mediated systems also may be a function of the time and place in which they arose. The production system that the book describes is well suited to a well-educated workforce with a relatively homogenous culture and an economy in which firms have a growing domestic market and the opportunity to penetrate foreign markets. This was the environment that many Japanese firms faced until the late 1980s. Now, however, the firms must operate facilities in countries with widely varying cultures and labor skills. Moreover, the firms face a relatively flat domestic market and an international economy in which they are among the sales leaders rather than fast-growing followers, so that dealing with market fluctuations is more difficult. Nissan, for instance, recently laid off many permanent employees at assembly facilities in Japan. Whether the production systems that were well suited to growth will be as effective in defending leading positions in a more stable market is an open question, but we suspect that the firms will need to adapt substantially or fail. Some of the Japanese firms probably will make the needed adaptation, but the production systems that result are likely to look quite different than those now in place. For instance, there may well be a fundamental conflict between the need to lay off workers when firms face substantial market declines and the need for long-term employment and stable teams in innovation-mediated production systems. A useful extension of the book would be to identify circumstances in which different types of production systems are most likely to be effective and to identify circumstances in which the choice of production system is less important than other issues, such as links with national innovation systems or capital markets.

A great deal of thought, care, and empirical effort underlies this book, and we will find it a valuable reference for our research and teaching. At the same time, the book's conclusions need to be tempered carefully when being applied to corporate strategy and public policy.

A firm's strategy must account for the practices of the specific firms in its environment, rather than an average set of practices. A company that competes with or sells components to Toyota, for instance, would need to treat it differently than would Honda or Nissan. Similarly, a firm must adopt a production system that suits its environment. In the telecommunications sector, for instance, press accounts suggest that American companies are now better positioned than most Japanese companies to take advantage of a growing convergence of computing, communications, and entertainment (Schlesinger, Hamilton, & Forman, 1993). On the policy side of this argument, a state or national government that attempts to promote innovation-mediated production without accounting for local issues will often end up creating bad policy. Nonetheless, *Beyond Mass Production* makes a valuable contribution to researchers, strategists, and policymakers by describing new forms of organization that are relevant in

many national contexts and are providing a base from which to ask new questions concerning the evolution of new forms of organization and the adaptation of established firms.

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