

# **Remade in America**

Transplanting and Transforming  
Japanese Management Systems

Edited by

Jeffrey K. Liker

W. Mark Fruin

Paul S. Adler

New York    Oxford

Oxford University Press

1999

## Hybridization

### *Human Resource Management at Two Toyota Transplants*

---

Paul S. Adler

There is broad consensus that the superlative efficiency and quality performance of Japanese auto “transplants” in the United States is in large measure due to their combination of the “lean” production systems and distinctive human resource management (HRM) practices (Womack, Jones, and Roos, 1990). While the production system has been well documented, there is considerable uncertainty over the nature of these human resource management practices. Some researchers see them as essentially Japanese in origin (e.g., Johnson, 1988; Kenney and Florida, 1993). Others argue that Japanese overseas subsidiaries, like those of companies headquartered in other countries, typically hybridize the parent companies’ management approaches, adapting them at least in part to fit the host country conditions (e.g., Beechler and Yang, 1994; Elger and Smith, 1994; Milkman 1991; White and Trevor 1983; Yuen and Kee, 1993).

This chapter reports the results of a pair of case studies of two Toyota auto assembly transplants in the United States—Toyota Motor Manufacturing, Kentucky (TMMK), located in Georgetown, Kentucky, and New United Motor Manufacturing, Inc. (NUMMI), located in Fremont, California—with the aim of better understanding the causes and consequences of their HRM choices. Comparison of these two plants is instructive since they were very similar in all but a few, crucial respects. In both plants, organization and management were under Toyota control: TMMK was a wholly owned Toyota subsidiary, and, while NUMMI was a joint venture of GM and Toyota, its day-to-day operations were under Toyota control. They both produced relatively high-volume, standardized products (NUMMI produced Geo

Prizms, Toyota Corollas, and Toyota compact pickup trucks, while TMMK produced Camrys and Avalons). They were both thorough in their adoption of the Toyota production system (as described by Monden, 1983, and Schonberger, 1982). They were both sizable operations (in 1996, NUMMI employed some 4,300 people, and TMMK about 6,000). And they were both "world-class" operations in quality and efficiency. However, their HRM systems had been adapted to the American context, and adapted in significantly different ways. Most notably, NUMMI was unionized, while TMMK was not, and this difference had ramifications for several facets of their respective HRM policies.

The next section reviews relevant prior research and elicits from it a set of hypotheses concerning the degree of hybridization of these plants' HRM systems. I then outline a conceptual framework for characterizing the two plants' HRM approaches, identifying four broad HRM domains and eighteen components of these domains. The following two sections describe my research methods and provide brief overviews of the two plants. The core of the paper examines the eighteen HRM components in each of the plants. A discussion section synthesizes the results of this analysis and contrasts them with the hypotheses drawn from prior research. With a sample of only two, it would be inappropriate to seek to test these hypotheses, but the discrepancies between the hypotheses and the empirical findings highlight some issues in need of theoretical clarification. A conclusion summarizes and suggests some directions for future research.

### Hybridization: Theoretical Background

Early generations of research on multinationals assumed that overseas subsidiaries could adopt headquarters' HRM approaches or instead adopt approaches prevalent in the host country (Doz, Bartlett, and Prahalad, 1981; Perlmutter, 1969; Prahalad and Doz, 1987.) More recent research has recognized that subsidiaries can also "hybridize" parent approaches with host-country approaches (Abo, 1994).

Hybridization in the broad sense in which I am using it here refers to any of a number of forms of adaptation. First, approaches to specific facets of HRM can be said to be hybridized when they share some features with host-country approaches and other features with home-country approaches. Second, the overall configuration of HRM approaches of a given organization can be said to be hybridized if some or all of its components are hybridized or if some components are adopted from the home country while others are directly patterned on local approaches.

Characterizing HRM practices as more or less hybridized is a conceptually complex task, since we must distinguish the practice from its objective function and from its subjective meaning. We sometimes observe the same function being expressed in different, more locally appropriate practices. A U.S. practice might thus serve as the "functional alternative" or functional equiv-

alent of a Japanese practice (Cole, 1972). On the other hand, identical practices can serve different functions (Cole, 1972, labeled this possibility "structural modeling with environmental effects"). Moreover, independent of their objective "function," the same practices can also have different subjective meanings in different contexts. Brannen (1992) and Brannen, Liker, and Fruin (this volume) analyze this as "recontextualization." In the present study, I focus on the hybridization of practices themselves and comment on their function and meaning where appropriate.

Research on multinationals has shown that control is typically more decentralized and approaches are more likely to be hybridized in HRM than in production and marketing, while finance is the most centralized and least hybridized domain of all (see reviews by Martinez and Ricks, 1989, and Goehle, 1980). A considerable body of empirical research has described the adoption/hybridization patterns in HRM approaches found in Japanese firms' overseas subsidiaries (see Yang, 1992, for a selective review of pre-1992 research on Japanese subsidiaries in the U.S.; see also Kenney and Florida, 1993). Abo and his colleagues (1994) have described in some detail the patterns of hybridization found in Japanese transplants in the United States, but, like many of the empirical studies of hybridization, they offer no theoretical rationale for these patterns.

Alongside these empirical studies, a number of researchers have proposed a variety of theoretical perspectives for explaining the extent of hybridization. A "rational design" strand argues that, given their industry and technology, subsidiaries will tend to adopt whatever organizational forms and HRM policies optimize their business performance (Kujawa, 1986; Womack et al., 1990). The "culturalist" strand of international management research predicts that adaptation will be necessary when, as in the case of Japanese subsidiaries in the United States, the home and host cultures are very different (Hofstede, 1980; Ishida, 1986; Wilms, Hardcastle and Zell, 1994).

Several other theoretical strands are more sensitive to the specific issues posed by multinationals. A "strategy" strand points to the variability across firms in their international business strategies—ethnocentric, polycentric, or geocentric, to use Perlmutter's (1969) classification—and in their "administrative heritage" (Bartlett and Ghoshal, 1980), and to the implications of these differences for the way parent organizations design and control subsidiaries. An "institutionalist" strand argues that the structures and processes of foreign subsidiaries are pulled in different directions by competing isomorphic forces from the parent and from the local environment (Westney, 1993). A "resource dependency" strand has argued that the relative influence of parent and local environment is a function of the relative dependencies that characterize the parent/subsidiary/local-actor triangle (Beechler and Yang, 1994; Martinez and Ricks, 1989). Resource dependency theory has also been invoked in opposition to contingency, culturalist, and institutional theories to argue that subsidiaries may be able to resist adaptation pressure by actively changing their local environments, for example, by changing host-country supplier practices (Kenney and Florida, 1991).

These theories offer alternative explanations of why the HRM domain should be relatively more hybridized than other management domains such as production or finance. Institutional theory, for example, explains this relative propensity to hybridize HRM by invoking the difficulty of clearly defining this function's "technology" and its "outputs." Applying the typology of societal sectors proposed by Scott (1987) to distinguish functions within the firm, we would say that HRM is relatively strongly influenced by legitimacy pressures and relatively weakly influenced by efficiency pressures. A second, possibly complementary explanation comes from a resource-dependency perspective: while production practices typically have little salience to external parties, practices in the HRM domain govern the organization's relation with external actors—employees, unions, and regulators—who often wield considerable power. A third, strategic management perspective might remind us that headquarters is far more interested in the subsidiary's financial results than in the means used to achieve them (see, for example, Kujawa, 1971).

These theories have also been used to ground propositions concerning the relative degree of hybridization of subsidiaries in different contexts. Table 3.1 summarizes the propositions advanced in this research, clustering them according to the nature of the causal factors invoked: the differences between home and host country, the nature of the corporate parent, and the specific situation of the subsidiary. The first five studies (Yang, 1992; Beechler and Yang, 1994; Taylor, Beechler, and Napier, 1996; Beechler and Taylor, 1994; Martinez and Ricks, 1989) are based primarily on resource dependency theory. The sixth through the eighth studies (Rosenzweig and Singh, 1981; Rosenzweig and Nohria, 1994; and Hannon, Huang, and Jaw, 1995) are grounded primarily in institutional theory. The ninth study, by Schuler, Dowling, and De Cieri (1994), is theoretically eclectic. The final study, by Banks and Stieber (1977), is a summary of the results of research prior to that time. I have sequenced the propositions under each of the three main headings in logical order: (1) propositions common to at least some of the papers in the different theoretical perspectives, (2) propositions from the resource dependency perspective, and (3) propositions from institutional theory.

Table 3.1 reveals, first, that hybridization can be influenced by a rather broad range of determinants, some common to the different theories and some theory-specific. Second, it shows that the different perspectives lead to broadly compatible propositions. In only one case (A1) do the different theoretical starting points lead to opposing propositions: from a resource dependence viewpoint, cultural differences between home and host country make the adoption of home-country practices more difficult; from an institutional theory viewpoint, cultural differences make it more likely that the isomorphic attraction of the home-country model will pull the subsidiary's approach away from the prevailing host-country pattern. But even in this case, the two propositions will both be satisfied if subsidiary approaches are hybrids reflecting both home and host country influences.

The last column of Table 3.1 translates these propositions into hypotheses concerning the average and relative degree of hybridization of NUMMI and TMMK (sketches of the two plants that justify these interpretations are given later in this chapter). Seven hypotheses predict that both plants will adopt Japanese HRM approaches, while three predict that both will adopt local approaches. Two of these latter three, A2 and C13—the differences between Japanese and U.S. legal contexts and the degree of dependence on institutional legitimacy—seem difficult to refute and do indeed lead us to expect considerable adaptation. The third of these three (B6) is, however, based on a more dubious assumption, namely, that cost-focused organizations are too concerned about labor costs to implement a sophisticated HRM approach. While this may be true of some cost-focused companies, it does not ring true of Toyota, whose assembly plants see both low cost and high quality as high strategic priorities and see sophisticated HRM approaches as critical to achieving both priorities. All eleven propositions that discriminate between NUMMI and TMMK suggest that TMMK's HRM approach will be more Japanese than NUMMI's.

With a sample of only two subsidiaries, the present study can hardly aim to test these hypotheses. But when the cases are analyzed through the lens these hypotheses provide, inconsistencies can legitimately be used to prompt us to reconsider the underlying theoretical reasoning.

Far less research attempts to predict which specific components of HRM are more likely to reflect home versus host country patterns. In Table 3.2, I summarize what is available. Resource dependency and institutional theories both predict that facets governed by legal imperatives will be correspondingly adapted to local conditions. Resource dependency also attributes a role to the parent company's philosophy of control: those components of HRM that are seen by headquarters as more critical to the subsidiary's success presumably will be more closely controlled (*ceteris paribus*) by the parent. Institutional theory also argues that the balance of competing isomorphic pulls from parent and local actors will be influenced by the visibility of a given practice to the respective actors.

So far, research has not clearly articulated a theoretical foundation for discriminating among HRM components along such dimensions. I therefore refrain from formulating specific hypotheses. But these propositions can serve to sensitize us in interpreting the pattern of findings reported below.

## Framework and Methods

In order to compare HRM policies at NUMMI and TMMK with policies in Toyota's Japanese operations and with the patterns observed in U.S. industry, I have grouped HRM under four broad headings: work organization, individual and organizational learning, employment relations, and HRM administration (see Table 3.3). In the absence of any compelling theory, these intuitive groupings will suffice.<sup>1</sup> The rationale of the employment relations

Table 3.1 Propositions and Hypotheses Derived from Prior Research on the Extent of Subsidiary HRM Hybridization

	Source <sup>a</sup>										NUMMI /TMMK <sup>b</sup>
	1	2	3	4	5	6	7	8	9	10	
<b>Subsidiaries Will Adopt Japanese HRM Approaches to the Extent That . . .</b>											
<b>A Host- vs. home-country contexts</b>											
1		*	*	*		R	R		*		?
2			*						*		neither
<b>B Corporate context</b>											
1		*	*	*	*	*	*	*	*	*	both
2		*	*	*	*	*	*	*	*	*	both
3		*	*	*	*	*	*	*	*	*	TMMK
4		*	*	*	*						?
5		*		*	*						?
6				*	*						neither
7						*	*	*	*	*	TMMK
8					*						both
9					*		*	*	*	*	TMMK
<b>C Local subsidiary conditions</b>											
1		*	*	*	*	*	*	*	*	*	both
2			*			*	*	*	*	*	TMMK
3	*					*	*	*	*	*	TMMK
4	*	*				*	*	*	*	*	TMMK
5	*				*	*	*	*	*	*	TMMK
6	*					*			*		TMMK
7	*										both
8	*										?
9	*										both
10	*										TMMK
11	*										TMMK
12						*	*	*	*	*	TMMK
13						*	*	*	*	*	neither
14							*			*	both

a. Sources of these data are from the following: (1) Yang 1992; (2) Beechler and Yang 1994; (3) Taylor, Beechler, and Napier 1996; (4) Beechler and Taylor 1994; (5) Martinez and Ricks 1989; (6) Rosenzweig and Singh 1991; (7) Rosenzweig and Nohria 1994; (8) Hannon, Huang, and Jaw 1995; (9) Schuler, Dowling, and De Cieri 1993; (10) Banks and Stieber 1977.

b. Entries in this column indicate whether the proposition suggests that NUMMI and/or TMMK should adopt Japanese home-country practices.

\* signifies that the proposition was advanced in the study. R signifies that the reverse proposition was advanced.

Table 3.2 Propositions Derived from Prior Research on the Extent of Hybridization in Different HRM Domains

	In Any Given Subsidiary, Some HRM Domains Will Be More Localized Than Others to the Extent That They . . .	Source <sup>a</sup>					
		1	2	3	4	5	6
1	Are subject to more legal imperatives	*			*	*	*
2	Are seen by headquarters as less critical to organizational control			*			*
3	Are more visible and salient to locals					*	
4	Involve less interaction with the parent					*	*

a. Sources of these data are from the following: (1) Yang 1992; (2) Beechler and Yang 1994; (3) Taylor, Beechler, and Napier 1996; (4) Rosenzweig and Singh 1981; (5) Rosenzweig and Nohria 1994; (6) Banks and Stieber 1977.

Table 3.3 A Framework for Analysis

Domain	Component
Work organization	Job classification Production teams Job rotation Roles of supervisors
Individual and organizational learning	Education and training QC activities Suggestion system Information sharing
Employment relations	Symbols of unity Employment security Labor relations Grievances Discipline Personnel selection Promotion Wages and benefits Health and safety
HRM administration	Role of HR department

category is to group those components of HRM where conflict of interest between workers and employer is particularly salient. This chapter focuses on HRM as it affects blue-collar workers: I leave for another occasion the analysis of white-collar and managerial personnel.

My characterization of NUMMI and TMMK draws primarily on company documents and more than 120 interviews with NUMMI employees and managers, conducted between 1989 and 1994, more than thirty interviews at TMMK, conducted in 1992 and 1993, and twenty-four interviews at Toyota facilities in Japan, conducted in 1992. I interviewed individuals from all ranks of the two transplants, including production workers, skilled trades workers, Team Leaders, Group Leaders, Assistant Managers, Managers, and senior executives. At NUMMI, I also interviewed union officials of UAW Local 2244, included members of both the Administration and the People's Caucuses. In Japan, my interviewees included staff and plant managers, engineers, union officials, and production workers.

Particularly valuable secondary sources on similarities and differences between Toyota and Toyota's U.S. transplants include Grønning (1992) on NUMMI and Abo (1994, pp. 186–188 for NUMMI and 188–190 for TMMK). Sources on the specific features of Toyota's operations in Japan include Cole (1979), Grønning (1992), and Shimizu and GEMIC (1993), and Shimizu and Nomura (1993).

To characterize these plants' HRM systems, they need to be compared against not only Japanese but also U.S. HRM policies and practices. Here I rely on several recent surveys. Starting with the most general, Lawler, Mohrman and Ledford (1995) surveyed *Fortune* 1000 companies in 1987, 1990, and 1993. Osterman (1994) surveyed a U.S. national sample of manufacturing and nonmanufacturing establishments in 1992. MacDuffie (1996) summarizes extensive surveys of auto assembly plants in 1989 and 1993.

Since some of transplants' policies resemble those found in nonunion American firms (as noted by Milkman, 1991), I also compare the transplants with Foulkes's (1980) sample of twenty-six large nonunion companies. While Foulkes's study avoided what he called the "militantly antiunion" companies, the firms he sampled differed in their response to the possibility of unionization. Some companies pursued what could be called a strategy of "union indifference": they paid little attention to the union threat when they set wages or established their employment relations. Others pursued what Kochan (1980, pp. 183–191) and Holley and Jennings (1994: 108–109) call a "union substitution" strategy, a strategy characteristic of firms that Mills (1982) calls "better-standard nonunion employers." TMMK, as we will see, followed a systematic union substitution strategy, so Foulkes's sample will provide a useful reference point.

After presenting an overview of each plant, I discuss each of eighteen HRM components, comparing NUMMI and TMMK approaches to those found in comparable Toyota<sup>2</sup> and U.S. Big Three plants. The main goal is to assess whether the transplants' practices are closer to the practices prevailing in the home country or to those in the host country. The secondary goal is

to assess possible differences in these practices' functions and meanings; however, in the interests of brevity, I raise these issues only when they appear particularly salient.

### An Overview of NUMMI

New United Motor Manufacturing, Inc., opened in 1984. It was created as a joint venture between Toyota and GM. Its mission was to produce small cars for sale by both partners. Toyota invested \$100 million in cash, supplied the cars' designs, and managed the factory, while GM provided the building and marketed half the cars. Each partner was a half-owner of the new company.

The company took over the GM-Fremont plant that had been closed in 1982. Unexcused absenteeism at GM-Fremont had often run over 20 percent. Both quality levels and productivity had been far below the GM norm, which itself was falling ever further behind the world-class standard then being set in Japan. Labor relations were highly antagonistic.

It was politically impossible for the plant to reopen without UAW involvement. So, although Toyota was initially reluctant to work with the UAW, it agreed to recognize the union and to give priority to rehiring the laid-off workers. The employee selection process was done jointly by the union and management. Notwithstanding the three full days of interviews and tests, few workers who went through the selection process were rejected. The entire union hierarchy was rehired, and of the 2,200 workers hired by late 1985, more than 95 percent of the assembly workers and 75 percent of the skilled trades workers were former GM-Fremont employees.

The initial 1985 collective bargaining contract embodied a very different role for the union than it had in the Big Three plants. The introduction stated that the union and management "are committed to building and maintaining the most innovative and harmonious labor-management relation in America." Innovative features of the plant's human resource policies supported this commitment.

By 1986, with largely the same workforce and comparable equipment, NUMMI had achieved productivity levels almost twice those of GM-Fremont in its best years, 40 percent higher than those at the typical Big Three assembly plant, and very close to the levels at its Toyota sister plant in Takaoka. It was also producing the highest quality levels in the industry. In 1989 Toyota announced that it would invest another \$350 million to expand the plant and begin production of pickup trucks. This led to the hiring of an additional 700 workers—this time selected from an applicant pool of 9,000—bringing total employment up to 3,700. With the addition of an axle line and a plastics plant, by 1995, employment had risen to 4,200.

Through the early 1990s, the plant continued to excel in quality and productivity. In 1995, J. D. Power and Associates ranked the Prizm the best-built car in North America, the Corolla was number two in the small-car segment,

and the Toyota HiLux was the best compact pickup truck built in North America.

Worker satisfaction and commitment were also high. Researchers who asked NUMMI workers whether they would switch jobs if there were a Big Three plant across the street received responses that were uniformly negative (Adler, 1993; Holusha, 1989; Krafcik, 1989). According to a biannual Team Member survey at the plant, the number of workers who said they were "satisfied with [their] job and environment" increased progressively from 65 percent in 1985 to 90 percent in 1991, 1993, and 1995. Throughout the 1980s, the absence rate (excluding only scheduled vacations) hovered around 3 percent, compared with an average of nearly 9 percent at Big Three plants in that period. Turnover remained under 6 percent through 1996.

### An Overview of TMMK

In Toyota's strategy for building capacity in the United States, Toyota Motor Manufacturing, Kentucky, was a successor to NUMMI, leveraging some of the lessons Toyota managers felt they had learned there. Whereas NUMMI was a joint venture, Toyota managers now felt they knew enough about the U.S. environment to operate as a wholly owned subsidiary. And whereas GM had imposed the choice of NUMMI's location and in doing so had made union recognition a de facto requirement, Toyota now chose to locate TMMK in a rural area in the South and not to invite the union into the venture.

According to TMMK's senior vice president (an American), in designing its HRM policies, "We really began with a blank sheet of paper. [A Japanese expatriate] came to us from NUMMI as our first HR coordinator, but we really invented our own policies." This "blank sheet of paper" approach minimized the transfer of ideas from NUMMI. This approach reflected the fact that TMMK had a different "mother" plant (Tsutsumi) in a different division from NUMMI. In part, it also reflected Toyota's policy of giving challenging assignments to new people to enhance their development, rather than relying on experienced people who become specialists (White and Trevor, 1983).

Plant construction began in 1986, and volume production began in 1988. Plant expansions were made in 1988, 1989, and then again in 1993. By 1994, total investment had reached more than \$4 billion. The plant's productivity is reputed to be close to that of its world-class Japanese mother plant. It has won a string of J. D. Power and Associates award for overall quality: the gold award in 1990, the silver in 1991, the bronze in 1992, and the gold again in 1993.

Hiring began in 1987. Compared to NUMMI's initial round of hiring, TMMK's was highly selective. There were some 50,000 applicants for the initial 3,000 jobs. Applicants were screened through a total of eighteen hours of tests and interviews as well as through reference checks. By 1994, total

employment reached 6,000, and the total number of applicants since hiring began was more than 200,000. All the blue-collar and white-collar employees had at least a high-school diploma, and more than 50 percent had some college education. On the other hand, only 2 percent had any auto background.

The evidence suggests a rather high level of job satisfaction and commitment. The last employee opinion survey on which I have data was conducted in 1992. The response rate was 69 percent (compared to around 95 percent at NUMMI, where the surveys are conducted on work time during the model changeover periods). Some 95 percent of respondents describe TMMK as a good place to work. Turnover in 1992 was 2.7 percent, lower than at NUMMI because of a much younger workforce and correspondingly fewer retirements. Participation in the suggestion program that year was 93 percent with an average of 8.57 suggestions received per employee.

### HRM Policies Analyzed

Using the framework presented in Table 3.3 as a guide, this section reviews each HRM policy domain in turn. Under each heading, I characterize Toyota's approach in its Japanese plants, then compare the practices observed in the two transplants with both the Toyota approach and available U.S. models.

Interviews with senior managers at NUMMI and TMMK revealed that, at Toyota, the differentiation between adoption/adaptation choices was a matter of corporate strategy. Toyota distinguished between the Toyota Production System (TPS) and the other components of the management system that complement and buttress TPS. Local management was tasked by corporate headquarters with the faithful implementation of TPS, as embodied in an integrated set of policies: just-in-time production, production leveling, continuous improvement, visual control, errorproofing, the team concept, and standardized work. In contrast, the other management systems, and in particular human resource management policies, were deliberately tailored to the local conditions. The former president of TMMK, Fujio Cho, described the policy in these terms: "I told people here that the [Japanese] coordinators were teachers on production issues and TPS, but that they were the students in the office areas such as Legal, Human Resources, and Public Affairs." This strategy shaped the overall pattern observed: HR domains that overlap with TPS—work organization and learning—were very "Japanese," while others were hybridized.

HRM policies at NUMMI and TMMK were rather stable over time. In part, this reflected a frequently encountered imprinting effect (Stinchcombe, 1965), but it also reflected the fact that the policies initially selected fitted their tasks reasonably well. This paper therefore treats hybridization as an outcome state, and I leave for another occasion discussion of the processes that led these outcomes.<sup>3</sup>

### Job Classifications

Worker multifunctionality is a key element of TPS: it allows for greater flexibility in operations, and it broadens workers' understanding of the production process and thus strengthens their ability to contribute improvement ideas. As a result, Toyota had only one production worker classification and one skilled trades classification, and the line between them was very blurred as production workers progressively acquired selected trade skills. Moreover, among production workers, six skill grades with corresponding pay levels were distinguished. Production workers were responsible for some facets of quality control, simple maintenance, and line-side housekeeping. By contrast, in Big Three U.S. auto plants there were often more than eighty production worker classifications and more than eighteen skilled trades classifications; production workers' tasks were narrowly defined; and there were no skill grades within classifications.

Both NUMMI and TMMK were closer to Toyota's approach. Both had three Team Member classifications: production, tool-and-die, and general maintenance. Production workers' responsibilities were broadened with the goal of achieving a breadth similar to that found in Japan. TMMK had plans for the complete cross-training of all skilled trades personnel.

Two nuances are worth noting, however. First, neither transplant had skill grades with different pay levels. Second, the division of labor between production workers and skilled trades was much sharper than was found in Toyota's Japanese plants. While this division may well be optimal from an industrial relations point of view in the U.S. context, it is hard to believe that it did not have a negative effect on performance: unscheduled equipment downtime was reputedly significantly higher at the U.S. transplants.

While Foulkes (1980) made no mention of job classifications, the practice of broadening job descriptions seemed to be growing in the United States, particularly in nonunion facilities. Lawler et al. (1995) documented the spread of self-inspection practices and the use of statistical control methods by frontline employees. Moreover, the use of intraclassification skill grades and skill-based pay systems was spreading. However, relative to the auto industry norms, NUMMI and TMMK appear to have been relatively closer to the Toyota model.

### Production Teams

Toyota's team concept was the means by which worker multifunctionality yielded operational flexibility; it was also seen as an important social mechanism for maintaining commitment. Toyota workers were thus organized in production teams of five to seven workers under a Team Leader (*hancho*). Four or five teams composed a group under a Group Leader (*kumicho*). The Team Leader was usually responsible for some lower-level administrative responsibilities, for training, and for filling in for workers absent for health, training, or other reasons.

NUMMI and TMMK followed this Toyota practice rather closely, with all production and skilled trades workers organized into small teams. As in Toyota, these teams had little autonomy. Production work teams could not pace their work, since they were tied to the pace of the assembly line, nor did they play any role in hiring or firing. They were, however, the key structure for job rotation (see later discussion) and process improvement.

Team Leaders at NUMMI and TMMK were hourly workers, and at NUMMI they were UAW members. They were paid a modest wage premium. Unlike the practice of many U.S. organizations using "self-directed teams," Team Leaders at Toyota, NUMMI, and TMMK were not selected by the Team Members as "team representatives" but played an essentially technical role akin to a "lead hand." To quote the TMMK Team Member handbook, they were supposed to play a role more like that of a "basketball coach." At NUMMI, Team Leaders were initially chosen by management, but, after growing complaints of favoritism, a new procedure was negotiated with the union in which Team Leaders were chosen by a joint union/management selection committee. At TMMK, Team Leaders were selected by management, but peer evaluation is one of the selection criteria (see discussion of promotion and wages).

The use of teams in the transplants contrasted with the practice in the Big Three, but was consistent with broader trends in U.S. industry. MacDuffie (1996) found that the percentage of workers organized in teams among the U.S. auto manufacturers was very low and actually declined from 10 percent in 1989 to 6 percent in 1993. In U.S. industry as a whole, however, "self-managed work teams" were growing in popularity. Lawler et al. (1995) used a definition of self-managed teams that would probably exclude Toyota plants because teams in these plants had too narrow a range of decision-making autonomy. Lawler et al.'s (1995) survey nevertheless found that 68 percent of the *Fortune* 1000 sample used self-managed teams for at least some employees, although in most cases for less than a quarter of the workforce (p. 28-29). Osterman's survey (1994) found that 32 percent of manufacturing plants used some kind of teams for more than 50 percent of their core workforce (i.e., the largest group of nonmanagerial employees involved in producing the establishment's main products).

While data are lacking, anecdotal evidence suggests that teams at Toyota and the transplants were much smaller (five to six people) than teams in U.S. firms (often fifteen to twenty-five people) (Eads, 1987: 724). In part, that was because Toyota and the transplants were more attentive to the influence of the social dynamics of small groups on commitment and on such important outcomes as absences. It also reflected the primarily technical role attributed to the Team Leader under the Toyota production system. In many U.S. plants, the ambiguous authority of the Team Leader would be unstable; it would rapidly resolve into either a supervisory role or a team spokesperson role—more likely the former, given management's lack of interest in the latter and its considerable interest in ensuring cost-effective spans of supervisory con-

trol. (See Grønning, 1997, for a comparison of teams at TMMK and Ford's Kentucky Truck Plant.)

Overall, I conclude that both the transplants followed a policy close to Toyota's. We should note, however, that the subjective meaning of this teamwork was a little different. Authority relations in Japan appeared to be less problematic and conflictual than in the United States, and the social power of the group over the individual was typically stronger. As a result, teamwork in the United States brought with it the connotations of both team autonomy and consensus-based decision making that it did not have in Japan. This recontextualization created an undercurrent of tension around the team concept in the U.S. transplants.

### *Job Rotation*

In order to create multiskilled workers who could provide both flexibility and improvement ideas, Toyota trained workers in different jobs within their team and group and encouraged periodic rotation. By contrast, traditional American unionized plants rarely allowed rotation, if only because of the extensively differentiated job classifications. However, MacDuffie (1996) found that the mean frequency of rotation in Big Three had increased significantly in the early 1990s.

Both NUMMI and TMMK had even more rotation during the working day than Toyota plants. The aims of rotation in both plants were to encourage multiskilling for operational flexibility, to alleviate boredom, and to reduce ergonomic strain. Toyota paid little attention to the demotivating effects of boredom and used rotation to lighten the ergonomic load of only the most difficult jobs, fearing the quality and efficiency cost of rotation. Toyota had more systematic planning for longer-term rotations that could add to the worker's "deep knowledge" of the production process. (We should also note that in Japan, auto workers typically rotated shifts, whereas in the United States, shifts were fixed and workers transferred individually between them as a function of seniority.)

Foulkes noted that some nonunion companies used job rotation to broaden workers' skills and thus created greater flexibility. This flexibility was considered useful in dealing with business downturns, since personnel could be reassigned and could replace a buffer of part-time workers (1980, p. 109). Osterman (1994) found that 37 percent of manufacturing establishments used job rotation for at least 50 percent of their core workforce. Lawler et al. found that 13 percent of the *Fortune* 1000 sample had cross-trained more than 60 percent of their employees during the past three years, and 69 percent had cross-trained more than 20 percent of their workforce over the same period (1995, p. 14, 16). Anecdotal evidence suggests, however, some more subtle differences between U.S. practices and those found at NUMMI and TMMK. In many U.S. plants, particularly in the Big Three, rotation created only limited task variety, it was mainly done at the worker's request,

and it was rarely part of a systematic strategy of building flexibility and knowledge.

Overall, I rate the two transplants' practice as close to Toyota's. Their greater emphasis on intraday rotations reflected a recontextualization of rotation as a quality of worklife issue; Toyota's greater emphasis on longer-term mobility reflected a more strategic focus on skill building.

### *Role of Supervisors*

At Toyota as at other Japanese manufacturers, supervisors were responsible for tasks that in the United States typically remained staff industrial engineering responsibilities. Historically, this pattern derived from Toyota's commitment to the "Training Within Industry" (TWI) philosophy. In the immediate post-World War II years, Toyota found itself with the same dearth of engineers as U.S. industry had faced during the war. Toyota adopted the solution developed by TWI and formalized in the TWI "Job Methods" program: delegate methods engineering and line balancing tasks to the foreman, and encourage the foreman to collaborate with experienced workers in these tasks. The TWI program was embraced by numerous Japanese firms during the Occupation years and continued to hold sway in Japan (Robinson and Schroeder, 1993; Schroeder and Robinson, 1991). The Big Three—like most of the rest of U.S. industry—lost interest in the TWI program at the war's end; since then, the role of supervisors in the Big Three has become less technically oriented and more focused on labor management and discipline.

NUMMI and TMMK inherited the TWI practice from their parent company. Group Leaders in the transplants were responsible for job methods (which at Toyota is called standardized work and figures as a key element of TPS) and troubleshooting production problems. I rate the two transplants as close to the Toyota practice. Modest steps in a similar direction appear in U.S. industry, with a growing interest in work process redesign by shop-floor personnel (Lawler et al., 1995, p. 41).

### *Training*

In order to create multiskilled workers, Toyota trained workers for different jobs within their team and group and encouraged workers to broaden their skills by moving from one area of the plant to another over a period of years. By contrast, opportunities for job changes in U.S. unionized plants were typically determined on a seniority basis, and few unionized companies encouraged, let alone planned, such development (Brown and Reich, 1995).

NUMMI and TMMK followed Toyota's pattern of intensive investment in training. In this, Toyota and its subsidiaries resembled other Japanese plants and transplants: MacDuffie and Kochan (1995) found that newly hired auto assembly plant production workers received on average forty-two hours of training in their first six months in U.S. firms, 225 hours in Japanese transplants, and 364 hours in Japanese plants. Workers with more than one

year's experience received thirty-one hours in the U.S. companies, fifty-two in the transplants, and seventy-six in Japan.

As part of the Training Within Industry program, Toyota also adopted "Job Instruction," TWI's formalized technique for on-the-job training. JI had four steps, each of which had defined component activities: (1) prepare the worker to receive instruction, (2) present the operation, (3) try out performance, (4) followup. The rigor of the TWI approach contrasted with the more casual, "watch Joe" approach common both then and now in U.S. industry. Both TMMK and NUMMI trained workers and managers in Toyota's version of Job Instruction.

Unlike NUMMI and TMMK, Toyota skilled trades workers did not begin with a concentrated apprenticeship. Instead, they acquired a broad range of skills over a period of ten years and more, moving from assignment to assignment with short classroom courses interspersed with work experience and on-the-job training. NUMMI maintenance and skilled trades followed certified apprenticeships. At TMMK, the skilled trades program did not seek external certification but maintained a clear demarcation of job responsibilities and was even more aggressive than Toyota in its plans to develop fully multifunctional skilled trades workers.

Foulkes (1980) made no mention of training, except for a brief reference to retraining to avoid layoffs. Kochan mentioned as one characteristic of the union substitution model a "high rate of investment per worker in human support programs such as training and career development" (1980, p. 185). Overall, I rate the transplants' training practices close to Toyota's.

### *Suggestion System*

A key principle of the Toyota production system is continuous improvement (*kaizen*). Ongoing *kaizen* efforts occurred through both top-down (management-led) and bottom-up (employee-driven) processes. By contrast, in Big Three plants, the UAW contract usually specified that outside a 120-day period following a model changeover, there could be no unilateral change of methods, and, in practice, methods changed rarely outside this window. MacDuffie (1996) found that in 1993, whereas Japanese auto manufacturers received on average 51 suggestions per employee per year with an acceptance rate of 84 percent, the comparable figures for U.S. companies was 0.3 suggestions per year of which 41 percent were accepted. The average Japanese transplant had 3.6 suggestions per year, and 65 percent were accepted.

As a part of the bottom-up *kaizen* process, Toyota put great emphasis on individual and team suggestions. Toyota managers saw productive, educational, and attitudinal benefits to the suggestion program. Unlike U.S. managers, they were therefore less focused on a few high-value suggestions and more concerned to encourage universal participation, with many small suggestions (Yasuda, 1991). Group Leaders and Assistant Managers were evaluated in part on participation rates. Participation thus often had a "mandatory voluntary" character (Grønning, 1992).

The suggestion systems at NUMMI and TMMK were very similar to Toyota's. As at Toyota, the focus was on encouraging a large number of small-scale suggestions from a high proportion of the workforce. By 1994, over 90 percent of workers at both transplants were participating. As at Toyota, accepted suggestions were given considerable symbolic recognition but only modest financial rewards. At TMMK in 1992, for example, where 98 percent of submitted suggestions were implemented, the average suggestion yielded total estimated first-year savings of \$601, of which \$108 was in "hard" savings as distinct from cost avoidance, and the value of the average reward per suggestion was \$22.

Foulkes (1980) did not mention suggestion systems. Kochan noted that union substitution efforts often included "informal mechanisms for, or encouragement of, participation in decision making about the way work is to be performed" (1980, p. 185). Lawler et al. (1995) found that 85 percent of their *Fortune* 1000 sample had some kind of suggestion system; they did not, however, measure the activity level.

NUMMI and TMMK rated close to the Toyota model in this domain. We should note however, some interesting recontextualization effects. On the one hand, as mentioned earlier, suggestion activity was more truly voluntary in the transplants. On the other hand, according to several interviewees, Japanese supervisors' pressure on subordinates to submit suggestions did not appear to Japanese workers as so external a form of control as comparable pressure would be in the United States. In Japan, the broader culture encourages a more "devotional" attitude to work, and supervisors pressure could leverage this predisposition. In the United States, workers often saw their involvement as a sign and reflection of mutual respect between management and workers and of their joint commitment to quality. Suggestion activities thus had a somewhat different significance in the two countries.

### Quality Control Circles

Consistent with its *kaizen* philosophy, Toyota devoted substantial resources to supporting Quality Control circles. Each work team also met as a circle, typically twice a month on overtime. Like suggestions, QC circle activity at Toyota had a "mandatory voluntary" character (Grønning, 1992). Extensive engineering and administrative support ensured responsiveness to the circles' suggestions. Training courses for managing QC circle activity were long: nine days for Group Leaders and Team Leaders, and a further eight days for Assistant Managers. In contrast, American companies often seemed to underestimate the support required for an effective QC program, which is probably why the "mortality rate" of American QC programs was very high (Lawler and Mohrman, 1985). For the auto sector, MacDuffie (1996) found that in 1993, 90 percent of workers in Japanese plants participated in some kind of employee involvement group; the comparable figure for U.S. manu-

facturers was 26 percent, and for the Japanese transplants in the United States it was 25 percent.

NUMMI's QC circle program (called "problem-solving circles") was relatively new, having begun in 1991. Toyota managers thought of QC circles as an advanced practice, requiring deep production knowledge that took years to acquire; they thus waited several years before establishing PSCs at NUMMI. NUMMI's PSCs were more truly voluntary than those at Toyota, although participation was expected of workers hoping for promotion to Team Leader positions. PSCs were structured as standing committees based on work groups (not teams, as in Toyota). In an average month during 1994, 14 percent of NUMMI workers participated in the PSC program.

TMMK started its quality circle program in 1989, sooner after plant startup than NUMMI. According to a manager I interviewed, "Mr. Cho had planned to wait five years before launching QCs, since he was skeptical of their value before we understood our processes. But the Team Members forced the pace. They heard about plans for QCs in the future during their assimilation training and urged us to get going on it. So the program was launched in 1989." At TMMK as at NUMMI, participation in QCs was voluntary. QCs usually meet monthly on paid overtime. In an average month in 1993, about 40 percent of the eligible people participated in a QC.

Given Toyota's extensive expertise in QC circles, it interesting to note that, before TMMK launched its program, managers visited several American companies to learn how they managed their own programs. An interview with one of the American managers most closely involved with TMMK's QC program generated a list of Japanese and American features of this program and revealed a modest but not insignificant degree of hybridization.

The TMMK system takes some elements from the Japanese approach. We take a practical problem-solving approach—less theoretical than many U.S. programs. QCs here are not "another program"—they are part of TPS and rely on real buy-in from line management. So the program has to connect with management goals and TMMK/Toyota needs. First-line supervisors are actively involved in QC support—running interference, getting data, etc.—in contrast with the more common American approach where QCs are an "off line" activity. Management suggests a list of possible themes, rather than leaving it completely to the QC itself. Line managers [Assistant Managers] act as program administrators—in contrast with most American programs that have a dedicated program administrator for each ten to twenty QCs. We couldn't afford that, and we wouldn't want to, philosophically.

The TMMK system takes some other elements from the American approach. Managers suggest possible themes, but workers chose them—as opposed to management handing them down. Our facilitators really facilitate—versus the more directive Japanese style. Our tools are more American—we don't use Paretos much, for instance. The Japanese are more patient and sometimes seem to go in for overkill in their analysis. In the United States, we have a bias towards action. Now the QC

members themselves are asking for more advanced tools. And participation is voluntary—not mandatory or pseudovoluntary.

TMMK's approach differs from Toyota's in some other ways too. Unlike Toyota, TMMK has cross-team QCs. Unlike Toyota, we have QCs in office areas—about twenty-five of them. Toyota has actually asked us to take the world-wide lead in developing this activity. Toyota is starting some now. And compared to Toyota, we have far less formality in QC presentations. (interview with TMMK manager)

These modest differences in the transplants' QC circles practices—in particular, the roles of managers and workers in picking topics to work on—reflected an equally modest recontextualization by which U.S. workers saw circles as somewhat more like a “voice” opportunity, whereas Japanese workers saw them as more like a technical problem-solving mechanism.

Although the idea of QC circles originated in the United States, few American companies had them until the Japanese successes in quality forced American manager to rethink their approach to quality. Foulkes (1980) made no mention of anything resembling QC circles. In the years since Foulkes's survey, QC circles grew in popularity. In 1993, some 65 percent of Lawler et al.'s (1995) sample of 1,000 used them, and in more than half these cases, they covered more than 20 percent of the workforce. Many more organizations use other kinds of temporary employee participation groups. Osterman (1994) found that 29.7 percent of manufacturing plants he surveyed used QCs for more than 50 percent of their core workforce.

Overall, the transplants clearly were trying to emulate Toyota's practice in Japan, but the gap remained considerable.

### *Information Sharing*

Toyota, like other Japanese firms, provided workers with considerably more information about business performance and its various determinants than did comparable American firms. Both NUMMI and TMMK followed the Toyota approach. There was an extensive system of monthly group meetings, company newsletters, and information memos. TMMK also had its own internal TV system to broadcast information in locations such as the cafeteria. Workers in both transplants received an impressive amount of sales and quality information, sensitizing them to the strengths and weaknesses of the plants' performance.

Foulkes (1980) noted that one of his sampled American nonunion firms held an annual “jobholders' meeting.” In another case, “personnel meetings” were conducted every twelve to eighteen months, sometimes more frequently. Otherwise, his account had little to say on the subject of information sharing. Kochan (1980) noted that companies pursuing a union substitution strategy often deployed “advanced systems of organizational communications and information sharing.” Lawler et al. (1995) asked their respondents what kinds of information were disseminated to more than 60 percent of their employees;

84 percent said they communicated the company's overall results, 66 percent their unit's operating results, 31 percent information concerning new technologies that might affect them, 54 percent business plans and goals, and 25 percent competitors' relative performance. These proportions all increased over the period from 1987 to 1993.

NUMMI and TMMK both rated closer to Toyota than to the Big Three on this point.

### *Symbols of Unity*

MacDuffie (1996) found that U.S. auto companies were moving toward reducing status differentiation but on average still had far more than the Japanese companies, which in turn had more than their transplants. NUMMI and TMMK went further than Toyota and much further than the U.S. Big Three in their symbolic efforts to create a sense of unity. Unlike senior managers in the Big Three and in Toyota's Japanese operations, managers at these transplants had neither separate parking nor cafeterias and more often than not wore uniforms rather than suits.

Foulkes's (1980) sampled U.S. companies varied greatly in this dimension. Some had no executive perks: no separate dining rooms or parking spaces, free coffee and doughnuts for everyone, no closed offices. Some even shunned different benefits or bonuses for managers. And some were described as keeping executive salaries relatively low to maintain a sense of unity. Kochan noted that the union substitution strategy typically involved the “development of a psychological climate that fosters and rewards organizational loyalty and commitment.”

Overall, NUMMI and TMMK appeared to have gone beyond the Toyota model, by imitating the most egalitarian of the nonunion U.S. firms.

### *Employment Security*

Toyota, like other large Japanese manufacturers, offered its regular employees a degree of employment security that stood in stark contrast with its American peers' aggressive pursuit of numerical workforce flexibility. This security was the material counterpart of symbolic unity, and in this respect NUMMI and TMMK were similar to the parent company.

NUMMI's collective bargaining agreement made an explicit commitment to employment security. NUMMI lived up to this commitment in 1987–88, when capacity utilization fell to under 60 percent but no one was laid off. Workers were put into extra training programs and were put to work on *kaizen* projects and facilities maintenance jobs previously contracted out.

TMMK's commitment was more nuanced. Fearful of the legal consequences of an explicit commitment, and perhaps hoping to reserve for management a greater margin of flexibility in hard times, the TMMK Team Member handbook described “career employment” as a “goal” but emphasized

that it is "not a legal commitment nor a contract." In this approach, TMMK resembled Toyota, where the union contract does not specify the kind of guarantees formalized in the NUMMI contract and where, instead, the commitment was primarily a matter of trust.

Unlike Toyota, neither transplant used temporary employees. Transplant managers feared that the use of temporaries would undermine the sense of unity they strove to maintain. In Japan, Toyota had to deal with far larger and more frequent fluctuations in demand.

While employment security, at least for "core" employees, is frequently cited as a distinctive feature of Japanese employment practices, Foulkes (1980) found that almost all the U.S. companies in his sample went to considerable lengths to avoid layoffs. Like Toyota, nonunion American firms surveyed by Foulkes saw important benefits to this policy: better employee morale because of reduced insecurity, less employee resistance to change of methods or technology, lower unemployment insurance costs, savings in hiring and training costs, and an improved corporate image. Since Foulkes's study, however, a growing enthusiasm for downsizing suggests that many nonunion U.S. firms have shifted their philosophy on this issue.

NUMMI rated close to Toyota on this dimension, although its more formalized commitment and its lack of temporary workers suggest a significant degree of hybridization. TMMK's more nuanced position resembled that found both in Toyota and in the (older) union substitution model, but here, too, the absence of temporary workers suggests some degree of hybridization.

### *Labor Relations*

Toyota, like other Japanese auto companies, had an enterprise-based union. All blue-and white-collar employees, as well as managers up to the middle ranks, were union members. Since the major conflicts of the early 1950s, relations between union and management had been very cooperative, with a comprehensive structure of union/management consensus building, consultation, and informational forums at the corporate, plant, and workplace levels. Senior union leaders often moved into senior management roles. The contrast with the arm's-length and often adversarial relations between the Big Three and the UAW was striking. Supervisors were barred from union membership in the United States.

While UAW Local 2244 retained its affiliation with the International union, the local's leadership cooperated with NUMMI management through an extensive structure of joint committees. As in many Big Three plants, there were weekly meetings between management and the union bargaining committee, weekly safety committee meeting, weekly meetings between section managers and union committeepeople, and quarterly three-day off-site meetings between union and company leadership. Unlike those at many Big Three plants, these meetings often allowed the union to have real influence over policy decisions. Recent shifts in the leadership of the local from the Administration caucus to the People's caucus and back again did not significantly

reduce the high level of dialogue and cooperation. The combination of an industrial union with extensive involvement of the local in planning and joint forums suggests that NUMMI represented a hybrid of Toyota and American union traditions.

TMMK was nonunion and followed a conscious union substitution strategy. The analysis offered by a senior TMMK executive (an American) was very similar to that found by Foulkes (1980) in many of his sampled non-union companies:

Sure, I'd pay \$27 a month to have someone represent me—if I didn't trust management. But we try to create and maintain that trust. And a union would create many problems for us because the U.S. labor laws combined with the union structure would encourage an adversarial relationship. . . . We need our workers' trust, and the risk of unionization is just an index of how poorly we are managing. We should be offering all the safeguards of a union contract.

This substitution strategy imposed real constraints on the plant, since the UAW threat is real. In the words of one worker I interviewed:

I don't hear much talk about a union here. Mind you, the UAW in Georgetown do hand out leaflets occasionally. And I stop to read them. They usually show up when a Team Member calls them when the pressure gets too much, like when we're doing excessive overtime. Some people in the plant obviously want a union. You even see people wearing UAW T-shirts in the plant. I suppose I see some benefit if you're injured. But otherwise, what's the point? The union wouldn't change our pay or benefits.

Indeed, TMMK maintained wage levels very close to those of the Big Three and created numerous forums for employees to voice their grievances and concerns (discussed in next section).

Overall, I rate NUMMI as representing a hybrid of the Toyota and the UAW models. TMMK resembled more closely the union substitution model.

### *Grievances*

Toyota, like other Japanese firms, resolved most grievances through the supervisor and the next levels of management. The union was involved for more serious cases, but even then, their involvement was typically in an informal, joint problem-solving mode. By contrast, grievances in American unionized auto plants were resolved through a formal, quasi-judicial, multistep process that was separate from the day-to-day administration of the plant.

NUMMI's "problem resolution procedure" resembled Toyota's in its emphasis on joint problem solving in the first step, but subsequent steps brought it into closer conformance with the traditional UAW model, including third-party arbitration as the final step. It is, however, noteworthy that the collective bargaining agreement specified that there would be no strikes over health and safety issues. Instead, in case of unresolved disputes in these matters,

"Either party may call upon the UAW Regional Director and W. J. Usery for final resolution of the problem" (1994 Collective Bargaining Agreement, p. 163). (Bill Usery was a mediator instrumental in forging the initial agreement with the UAW.)

In the absence of a union but the presence of a strong union threat, TMMK put into place an extensive set of mechanisms to identify grievances. A "concern resolution process" paralleled NUMMI's problem resolution procedure, but without union involvement. TMMK also had a twenty-four-hour-a-day message system, called the Hotline, where workers could register complaints, anonymously if they desired. All complaints and responses were posted. There were also regular employee opinion surveys (as at NUMMI), roundtable meetings between Team Members and senior management, and managers' "lunchbox meetings." Consistent with its overall labor relations strategy, TMMK devised policies for grievances that fit the union substitution model. This included the traditional limitations of that model (McCabe, 1988): employees filing a concern had no dedicated expert assistance in making their case; there was no final arbitration step; there was no provision for peer review (unlike for discipline cases—see next section); and TMMK was explicit that all concerns had to be presented as individual ones (to avoid the protections afforded "concerted action" under sections 8(a)1 and 7 of the Wagner Act).

Here, as with labor relations, NUMMI represented an innovative hybrid of Toyota and UAW models, while TMMK closely resembled a well-established union-substitution model.

### *Discipline*

The formal process for discipline at NUMMI was similar to that found in UAW plants. It allowed the worker representation by a union committee-person and included a final arbitration step. I have found no evidence of any Toyota influence in the design of this process.

TMMK's discipline process, the "corrective action program," was described in the employee handbook as one based on "positive discipline." This approach, including the penultimate step of one day of "decision-making leave," was patterned after the policy found in several progressive nonunion U.S. companies (Campbell, Fleming, and Grote, 1985; Cameron, 1984). The final step (for all cases but those that involved serious misconduct) was a voluntary peer review panel made up of three Team Members and two managers. Membership on the panel was voluntary and rotating. Its judgment was only advisory, and there was no external arbitration available to the worker.

The most common discipline problems at both NUMMI and TMMK were due to absences. In Toyota plants, considerable supervisory and peer pressure was applied to keep the absence rate very low. American unionized auto plants were traditionally much more lenient in this domain. NUMMI's absence policies were very formalized and strict. For example, there was no official distinction between excused and unexcused absences outside annual

vacations and other officially sanctioned leaves of absence. TMMK had even fewer absences than NUMMI. The team member handbook defined no specific policy on absences. The Group Leaders' policies and procedures manual stated: "Under usual circumstances, we will have a Corrective Action conference if a Team Member accumulates more than five absences within 12 months."

Here again, NUMMI represented a hybrid of Toyota and UAW models, while TMMK resembled the union-substitution model. We should recall, however, that both of these plants also relied on peer pressure from team members to create an informal, lateral discipline regarding absences.

### *Personnel Selection*

It is often asserted that Japanese firms rely on a relatively "homogeneous" workforce in order to maintain a sense of unity, integration, and flexibility. This homogeneity was easier to ensure given the Japanese population characteristics. Moreover, the major auto companies offered highly prized jobs for production workers (at least, until the early 1990s), and Toyota screened applicants very carefully. In contrast, the Big Three plants' workforce was very ethnically diverse, and their traditional selection criteria were very loose.

With the exception of NUMMI's first round of hiring of GM-Fremont veterans, NUMMI and TMMK screened their recruits very carefully. As mentioned earlier, NUMMI interviewed 9,000 people to hire 700 for its truck-line expansion, and TMMK's workforce of 6,200 was selected from a total applicant pool of more than 200,000. Whereas the ethnic and gender diversity record of some Japanese transplants has been lamentable (Cole and Deskins, 1988), Toyota's North American transplants were better than average. NUMMI's workforce was 19 percent African American and 28 percent Hispanic, and, whereas minorities represented 7 percent of Kentucky's workforce, they represented 15 percent of TMMK's production Team Members and 15 percent of the section managers.

At both NUMMI and TMMK, "work ethic," teamwork ability, flexibility, and willingness to learn were the key factors in the selection of new hires. Some 73 percent of workers at TMMK had at least some college education. College education was far less common in NUMMI, perhaps reflecting differences in local labor market opportunities. Interestingly, while TMMK had hired a sizable number of managers from both U.S. auto companies and transplants, it had not sought actively to attract production workers or skilled trades people with prior auto industry experience. (In part, this was due to the incentive package given TMMK by Kentucky, which specified that Kentuckians had hiring priority.)

My interviewees' accounts of TMMK's choice of location in Kentucky were consistent with the arguments advanced by Kenney and Florida (1993) and others that the transplants favored rural labor forces because they were reputed to have lower absence rates. This location, combined with the extensive screening of job applicants, might also have served to reduce the likeli-

hood of hiring people with union sympathies. (For a broader discussion of screening for union sympathies by transplants, see Saltzman, 1995).

GM did not give Toyota any choice of plant location. Moreover, the UAW was a partner in the plant startup at NUMMI and threatened to take to arbitration any refusal to rehire GM-Fremont veterans. As a result, even though applicants went through three days of testing and interviews, only 300 out of 3,000 applicants were turned down. Later rounds of hiring associated with the start of the truck line were highly selective and based on criteria similar to those used at TMMK.

In their early years, both TMMK and NUMMI relied extensively on expatriate advisors from Toyota. NUMMI began operations with 400 Toyota trainers on site. Every American manager was paired with a Japanese counterpart. While NUMMI relied extensively on the Takaoka plant for this assistance, TMMK relied just as much on Tsutsumi. Over time, however, the number of these advisers was greatly reduced, and by 1995 NUMMI had only twenty-five Toyota "coordinators" and managers. Their primary responsibility was facilitating communication with headquarters and with the mother plants in Japan. In both organizations, the executives were mostly American, including the vice presidents for human resources. The presidents of both plants, however, were Japanese.

Foulkes (1980) made only one mention of screening at nonunion U.S. companies. One sampled company centralized all hiring at the corporate level because it thought of itself as hiring for a career, not for a specific job. This was indeed somewhat similar to the Toyota approach that prevails at NUMMI and TMMK. Lawler et al. (1990) noted that new high-involvement plants put considerable emphasis on screening and selection. Kochan pointed out that the union substitution strategy often involved the "location of new production facilities in rural or other weak union areas wherever possible, and in some cases, use of employee selection devices to avoid workers most likely to be pro-union" (1980, p. 185).

Overall, and with the exception of NUMMI's original hiring of GM-Fremont veterans, the two transplants seem close to the union substitution model.

### Promotion

There was a considerable difference between Japanese and Big Three policies concerning promotion, both within various worker categories (such as from grade to grade or from Team Member to Team Leader at Toyota or across classifications at the Big Three) and from worker to supervisor. At Toyota, almost all positions were filled from within, and promotions were based on seniority, confidential evaluations, and direct recommendations by superiors. There was neither job posting nor formal testing. In the Big Three, supervisors were often recruited from outside, and changes within worker categories were determined strictly by seniority, with a formal system of job posting.

At NUMMI and TMMK, promotions to Team Leader and Group Leader were almost all from within. Unlike Toyota, NUMMI had a system of job posting. People who wanted promotion undertook training on their own time (twenty hours for promotion to Team Leader), and selection was based on their performance in these classes and in their current jobs. After complaints in NUMMI's early years about favoritism in Team Leader selection, management negotiated a more formal process in which the evaluation and final selection were conducted by a joint union/management committee. Seniority was used only as a tiebreaker. TMMK's system was very similar. Seniority was used as a tiebreaker there, too. One notable difference was that TMMK but not NUMMI included peer evaluation in the selection criteria.

How novel were these practices? Foulkes (1980) summarized the results of his survey in these terms: "Promotion from within is an important cornerstone of the personnel policies and practices of all the companies studied. . . . The majority of companies . . . also have job posting for hourly employees. . . . [But] job posting does seem to tend to drive a company toward giving considerable weight to seniority in promotion decisions" (pp. 143-44). Kochan noted that U.S. companies pursuing a union substitution strategy typically were characterized by "rational wage and salary administration, performance appraisal, and promotion systems that reward merit, but also recognize the relevance of seniority" (1980, p. 185).

In this domain, NUMMI seems to have created a hybrid of Toyota and UAW models, and TMMK a hybrid of Toyota and U.S. union substitution models.

### Wages and Benefits

At Toyota, wages and bonuses were based on skill grades, seniority (*nenko*), group performance indices, and personal performance evaluations (*satei*) conducted by supervisors and closed to workers. Since the late 1980s, Toyota had given progressively less weight to group performance and more to individual skill and effort (Grønning, 1995; Shimizu and GEMIC, 1993; Shimizu, 1995). Overall wages and benefits had historically been seen as attractive relative to the available alternatives but still low enough to ensure that workers welcomed regular overtime. In contrast, in the Big Three, wages were determined by a rigid and detailed job classification system, bonuses were based on company-wide profit-or gain-sharing programs, and, overall, auto workers' income was high compared to alternative jobs, especially compared to similarly skilled nonunion jobs.

Neither NUMMI nor TMMK had individualized workers' pay. There was no seniority/age component, no personal assessment, and no group or team performance bonus. Neither plant had differentiated worker skill grades. Both transplants had gain-sharing type programs based on plant performance. At NUMMI, the program paid all workers identical amounts. At TMMK, there were two programs tied to different performance indicators,

one based on a percentage of the worker's pay and the other paying identical amounts to all workers.

NUMMI was tied to the Big Three/UAW wage rates. NUMMI workers were also paid for their lunch (thirty minutes), which was very unusual. At GM-Fremont, workers would often leave the plant at lunch and sometimes get a couple of drinks at one of the local bars. NUMMI management feared the quality consequences and created this incentive to keep workers in the plant.

TMMK, too, followed the Big Three/UAW pattern regarding wage levels, a practice Foulkes (1980) found to be common in the union substitution strategies of firms operating in unionized industries. Indeed, TMMK management regularly distributed comparisons of its Team Member wage rates with the Big Three rates. As of 1993, TMMK ranked second—after NUMMI—for both production and skilled trades workers.

Toyota's commitment to training and development led it to distinguish several skill grades and corresponding wage rates within each of the two main classifications. By contrast, neither TMMK and NUMMI distinguished skill grades within production worker, maintenance/skilled trades, or Team Leader ranks. The concern was often expressed at the transplants that such distinctions would be divisive, at least in the current state of the plants' development and culture. However, in a very limited way, "grow-in" periods at TMMK and NUMMI served as a functional equivalent to skill grades. Whereas at GM-Fremont, newly hired production workers started at 92.5 percent of full pay and progressed to the full rate after ninety days, at TMMK and under NUMMI's initial agreement they came in at 85 percent and grew in over eighteen months. In 1991, NUMMI changed this to 75 percent and twenty-four months, then, in 1994, to 70 percent and thirty-six months. Although these changes paralleled changes in the national GM-UAW contract, they raised tensions on the shop floor, where many workers were unhappy working alongside peers who were earning such different rates for the same jobs.

The reluctance to individualize workers' pay more extensively at TMMK appeared similar to the pattern at American nonunion firms. Foulkes (1980) noted, "While merit pay plans are common in the entirely nonunion companies studied, for a variety of reasons they are frequently not administered as the stated policies would have one believe. Instead, the principles of seniority, automatic progression, and equal treatment seem to be given much weight" (p. 185). Unlike many of the nonunion companies surveyed by Foulkes, neither TMMK nor NUMMI put production workers on salary.

Overall, it appears that, in the structure and process of wage determination, NUMMI followed the UAW model with very little Toyota influence, and TMMK followed the union substitution model—and as a result resembled closely the UAW model—with little Toyota influence. Benefits followed the same pattern: whereas Toyota benefits were very comprehensive and extended far into workers' nonwork lives (the company operated its own housing, associations, sports activities, and hospitals for its workers), benefits at

NUMMI and TMMK were more American in their scope and form and much less intrusive of workers' private lives.

The lack of individualized bonuses is in striking contrast not only to the practice at Toyota but also to the practice at a growing number of U.S. nonunion firms, notably ones that fall into the union indifference rather than the union substitution category. Insofar as individualized material incentives might be thought to be functional prerequisites for ensuring workers' ongoing willingness to contribute discretionary effort, rewards for suggestions and (over the longer term) increased opportunities for promotion to Team Leader and beyond might be interpreted as functional equivalents, albeit only weak ones.

### *Health and Safety*

An important set of HR policies in an auto plant is directed at health and safety. In U.S. industry as a whole, underreporting of occupational illnesses and injuries was frequent until the federal Occupational Safety and Health Administration (OSHA) stepped up pressure in the mid-1980s. As a result of this pressure, the OSHA-recordable incidence rate in the motor vehicle industry (SIC code 3711) climbed from 5.5 per 100 employee-years in 1985 to 32.3 in 1992. Underreporting in Japan was even more extreme. Middle managers in Japanese auto companies were under pressure to report as few occupational injuries and illnesses as possible, and workers often concealed their disorders for fear of embarrassing their work group or disrupting their group's or factory's perfect "no accident" ratings (Wokutch, 1992, pp. 104).

The assessment of a number of knowledgeable interviewees at NUMMI and TMMK was that ergonomic problems were relatively less frequent in Toyota plants than in the transplants (Adler, Goldoftas, and Levine, 1997; studying another company and its U.S. subsidiary, Wokutch, 1992, reached a parallel conclusion). One positive factor appeared to be the greater resources dedicated to health and safety. Each section within the Japanese plants had a dedicated safety person and a dedicated health person—a per-worker staffing ratio some five times greater than NUMMI's. Ergonomic problems appeared to be further reduced in Toyota's Japanese plants by an all-male, physically homogeneous, younger production workforce. (Older workers were rarely found on the assembly line, where the jobs were the most physically demanding—they were either promoted or moved into physically easier off-line jobs, or they quit.) The smaller variance in height, weight, and strength among Japanese workers made it easier to ensure optimal processes, tools, and layouts.

At NUMMI, several rounds of workstation evaluation focused on trouble spots, but, until 1994, ergonomics did not appear to be a high priority for the plant. In January 1993, California's Occupational and Safety and Health Administration (Cal-OSHA) issued three citations against NUMMI, of which two were rated "serious." NUMMI appealed, and, in January 1994, a settlement was reached that obligated NUMMI to higher levels of ergonomics

monitoring, evaluation, training, and staffing. A separate agreement with the UAW local created a union ergonomics representative position alongside the existing health and safety representative position. These changes brought NUMMI close to the ergonomics approach of the Big Three. In 1994 NUMMI management made ergonomics improvement a strategic priority, and in 1995 ergonomics results started to improve significantly.

At TMMK, a surge in repetitive strain problems a few months after plant start-up prompted management to give ergonomics a high priority. Several rounds of work station evaluation focused on trouble spots, and those problems that were uncovered were systematically addressed. TMMK's health-and-safety-staff-per-employee ratio was nearly twice as large as NUMMI's but still half that of comparable Toyota plants. Unlike Toyota or NUMMI, TMMK hired a qualified ergonomist and installed sophisticated ergonomic testing equipment. TMMK was also distinctive in designing ergonomically balanced rotation sequences. Under a "work-hardening" program, new hires were allowed a slow ramp-up in their work intensity over the first five weeks. They had to learn two jobs in the first four weeks to ensure that they could rotate. TMMK had a program that allowed a gradual, planned reintegration of returning injured workers. Their QC and suggestion programs had at various times made ergonomics a priority, but, unlike those at NUMMI, workers at TMMK had no independent voice on ergonomics issues. The net effect, according to a TMMK HR manager, was notable: "Our injury rate is now down to one-third its peak 1989 level, and about one-fifth the industry average rate."

In health and safety, NUMMI and TMMK both seem to have taken some elements from Toyota but hybridized them with UAW and union substitution practices, respectively.

### *HRM Administration*

Consistent with Toyota's corporate policy of giving its U.S. transplants substantial control in the HR arena, the key HR executives at both plants were U.S. nationals. NUMMI's vice president for human resources, Bill Childs, was recruited from the personnel department at General Dynamics. Alex Warren, senior vice president at TMMK until 1996 but originally responsible for its HR and administration areas, had a background in labor relations at U.S. Steel and at Rockwell and in HR at Leaseway Transportation. TMMK's vice president for human resources, Sam Heltman, came from the HR department at Ford's New Holland plant. In its reliance on local personnel in the HR function, Toyota followed the standard practice of U.S. and European multinationals abroad, and, in particular, the practice of the U.S. Big Three (see Kujawa, 1971).<sup>4</sup>

Notwithstanding the key roles played by these U.S. managers, NUMMI and TMMK gave their HR departments a breadth and influence similar to that enjoyed by HR departments in Toyota's home-country operations. The HR department in many large Japanese firms, like Toyota, was a political

"heavyweight," whereas the HR department in corresponding American firms was typically a minor player (Inohara, 1990; Pucik, 1984). One NUMMI manager who had formerly worked in a large unionized American company in a related industry described the differences in these terms:

At NUMMI, HR takes responsibility for the whole individual. We exercise what you might call "stewardship" over all aspects of the employees' involvement with the company. I can give you many examples of where HR at NUMMI takes responsibility where at an American company the responsibility belongs to another function. For example, HR is "budget responsible" for headcount and overtime. HR holds manufacturing managers to account for their budget expenditures. That's the Toyota approach. At an American firm, it's Finance that plays this role. Payroll here is in HR, not under Finance. Benefits and Pension Plan Accounting is in HR, rather than under Finance or Accounting. All travel approvals go through HR rather than Finance. We have a "team member involvement" group within HR that manages activities such as the suggestion program, ride sharing, and the company picnic. At an American company, these activities would have been dispersed in different departments. HR also has a significant say in things that elsewhere would be the sole province of the manufacturing people, like takt time [line speed] changes. On the other hand, there are some things that we share with line management here that in an American firm would be the sole province of HR, such as training. But, overall, I'd say that in power and influence ranking in the organization here at NUMMI, number one is Production Control, and HR is number two and not far behind. At an American company, it's all power to Finance!

TMMK followed Toyota even more closely in this dimension. The HR department followed Toyota practice and established "HR representatives" who had desks both in the plant and in the HR area. Each HR representative serviced between 250 and 450 employees.

American nonunion firms were, however, rather similar in this emphasis on HR. Mills (1982, p. 148) noted, for example, how "better-standards" nonunion firms often have HR representatives that function somewhat analogously to union representatives as channels for grievances. Foulkes (1980) made a more general argument:

Personnel departments of nonunion companies have and exercise great power. . . . Much of their clout comes through their close relationship to top management and their delegated audit-and-control role. . . . Line managers are not free to ignore their advice. . . . Perhaps it is accurate to say that the personnel departments in the great majority of companies studied are analogous to those found in Japanese companies. (pp. 95-96)

Notwithstanding this similarity in underlying philosophy and in some specific practices, overall, the role of the HR department in the transplants resembled most closely that found in Toyota's home-country operations. The

contrast with the Big Three was huge. Top management saw HRM as a critical ingredient of their success. While headquarters saw the need to hybridize HRM with local approaches, this was the result not of seeing HRM as unimportant, but, on the contrary, of the high priority accorded by top management to the task of forging an HRM system that both complemented the Toyota Production System and fit with the local context.<sup>5</sup>

## Discussion

The previous section reviewed the key HRM components at NUMMI and TMMK; this section attempts to synthesize. The key findings of the previous section are summarized in Table 3.4.

First, we can see some commonalities across the plants. Notably, the Toyota model predominated in the domains of work organization, learning, and HR administration, whereas hybridization and adoption of indigenous American models prevailed in the domain of employment relations.

These patterns are consistent with the propositions summarized in Table 3.2. Components of HRM that were closest to the Toyota Production System—work organization and learning—were hybridized the least. Toyota saw the implementation of TPS—a technology that Toyota saw as a source of competitive advantage—as critical to the subsidiaries' effectiveness and control. Consistent with proposition 1, those HRM components that were the most directly related to TPS were the most directly modeled on Toyota. Conversely, and consistent with propositions 1, 3, and 4, components of HRM that fell most directly under local law, custom, and scrutiny—components I have grouped under “employment relations”—were hybridized the most. Employment relations were particularly subject to hybridization pressure since this domain is most strongly influenced by the legal environment (Edelman, 1990): it encompasses those components where conflicts of interest between workers and managers are most likely, and labor and employer groups have mobilized considerable political resources over many decades to create a dense fabric of laws and regulations to govern this domain. The effect of these laws and regulations can be seen rather directly in Cal-OSHA's citation of NUMMI and, more indirectly, in the considerable investment in ergonomics made by TMMK.

Second, we can compare the two plants. Overall, NUMMI adopted many Toyota features and hybridized some with features of the UAW model and the American union substitution model; the total influence of the parent company seems to have been considerably larger than the combined effect of the two host-country models. TMMK showed somewhat less Toyota influence than NUMMI; it developed some interesting hybrids, but it seems to have relied more on the union-substitution model than NUMMI did on the UAW model.

These patterns are only partially consistent with the hypotheses presented in Table 3.1. Yes, on balance, both plants adopted numerous facets of the

Table 3.4 Summary: Primary Influences on HRM Practices

Domain	Component	NUMMI			TMMK	
Work organization	Job classifications	Toyota			Toyota	
	Production teams	Toyota			Toyota	
	Job rotation	Toyota			Toyota	
	Roles of supervisors	Toyota			Toyota	
Individual and organizational learning	Training	Toyota			Toyota	
	Suggestion program	Toyota			Toyota	
	QC circles	Toyota			Toyota	
	Information sharing	Toyota			Toyota	
Employment relations	Symbols of unity	USM			USM	
	Employment security	Toyota-UAW			Toyota-USM	
	Labor relations	Toyota-UAW			USM	
	Grievances	Toyota-UAW			USM	
	Discipline	Toyota-UAW			USM	
	Personnel selection <sup>c</sup>	UAW-USM			USM	
	Promotion	Toyota-UAW			Toyota-USM	
	Wages and benefits	UAW			USM	
Health and safety	Toyota-UAW			Toyota-USM		
Administration	Role of HR department	Toyota			Toyota	
Overall	Total scores <sup>b</sup>	Toyota	USM	UAW	Toyota	USM
		12.0	1.5	4.5	10.5	7.5

a. Coding: Toyota = close to Toyota's practices in its Japanese operations; USM = close to the practices characteristics of the American union substitution model; UAW = close to the progressive union model of the United Auto Workers; Toyota-UAW = a hybrid between Toyota and UAW models; Toyota-USM = a hybrid between Toyota and the American union substitution model.

b. Scoring: Each mention of a model as the sole influence is scored as 1 point, and each mention as a shared influence (hybrid) is scored as 0.5 points. The overall pattern of the results is not changed by the use of alternative plausible scoring schemes.

c. Personnel selection at NUMMI was originally conducted like a recall under strong UAW influence. In later rounds of hiring, the union played only a minor role.

Toyota model. But, TMMK showed less, not more, Japanese influence than NUMMI. Notwithstanding the fact that TMMK produced considerably more cars and profits than NUMMI (*pace* B3), that TMMK was established when Toyota had more international experience (*pace* B7), that NUMMI was a joint venture while TMMK was wholly owned (*pace* B9), that TMMK was a greenfield and NUMMI a brownfield site (*pace* C2), that TMMK disposed of more power vis-à-vis local government and workers (*pace* C3), that TMMK was not unionized (*pace* C4), that it had more expatriates than NUMMI (*pace* C5), that it was formed more recently (*pace* C6), that it was located in a more rural area (*pace* C10), that it had a more homogeneous workforce (*pace* C11), and that the local labor market offered fewer alternatives (*pace* C12)—notwithstanding all this, TMMK appears to be more, rather than less, localized than NUMMI.

Why should this be the case? We need to go back to the reasoning underlying this part of Table 3.1. The original studies assume that, in defining its HRM approaches, the subsidiary is pulled by competing forces from the parent and from the local environment. The underlying assumption is, therefore, that *ceteris paribus* the parent would prefer that the subsidiary adopt its policies and that it is the technical and institutional constraints of the local environment that stop that adoption. But what if the parent interprets its overseas expansion as an organizational learning process, where it discovers not only constraints but also resources in the subsidiaries' local environments? The history of both NUMMI and TMMK seems to support such a view: entering the United States, Toyota invented ways of working effectively with the UAW at NUMMI and sought out proven effective union substitution-style policies at TMMK. Such a "strategic" view of subsidiary organizational design is also supported by the apparently disconfirming pattern found in Japanese subsidiaries established in the United States in the prior period. Prior to the 1980s, Japanese transplants in the United States almost always adopted North American practices, but this was the result not of local constraints so much as of a decision by Japanese firms: "Japanese firms were not as confident in the 1970s as they are now regarding the merits of their work systems" (Cutcher-Gershenfeld et al., 1994, pp. 54–55).

Prior research has tended to exclude this active organizational learning hypothesis by its interpretation of theories of resource dependence, of institutional, and of culture. First, theories of resource dependency assume that all actors seek autonomy and therefore that subsidiaries fight for local control, while headquarters fights for central control (Pfeffer and Salancik, 1978). This appears to be too cynical a view, at least when applied to a company like Toyota that appears to have been rather effective at maintaining the salience of superordinate goals.

Second, much institutional theory implies that isomorphism is based on a process in which taken-for-granted values and schemas are absorbed into the new organization (e.g., Zucker, 1987). Our analysis of two plants has shown, however, that this view of the process of isomorphism is too passive. Institutionalization, as Scott (1991) has argued, should not be construed so as to

preclude all elements of strategic choice. Some multinationals might indeed set the goal of subsidiaries' human resource management as minimizing labor costs while avoiding labor relations and regulatory strife—as suggested by Kujawa's (1971) study of the Big Three in Europe; if so, and if labor unions and regulations were powerful, then we would hypothesize that HRM would be strongly conditioned by institutional legitimacy considerations and only weakly influenced by technical efficiency considerations. Toyota, in contrast, appears to have seen HRM as a more critical, strategic issue, just as important as its production system in ensuring competitive performance; under such circumstances, HRM would be subject to intense pressure of both legitimacy and efficiency kinds—which, indeed, seems to have been the case in the two transplants.

The view of hybridization afforded by these two cases also undercuts the credibility of simplistic conceptions of culture. Researchers in international management have argued that national cultures are important constraints on management practices (e.g., Erez and Early, 1993; Ishida, 1986). Japanese culture is said to differ from American by being relatively high on tolerance for uncertainty and on masculinity and relatively low on individualism (Hofstede, 1980). Some practices in Toyota's American subsidiaries appear consistent with this view—such as the absence of seniority-based pay—but others appear anomalous—such as the successful use of production teams and symbols of unity. It is difficult to see how generalized views of national culture could generate strong predictions concerning the more concrete and specific practices analyzed here (see also Jackson and Schuler, 1995). The subtly nuanced portrait of cultural hybridization at NUMMI drawn by Wilms, Hardcastle, and Zell (1994) shows something of the challenge that faces theorists of culture.

## Conclusion

This chapter has examined the HRM approaches of two Japanese transplants. The main empirical findings are these: (a) overall, these subsidiaries' HRM approaches were neither purely Japanese nor purely American but, rather, hybrids; (b) Japanese approaches were adopted in policies that addressed work organization, learning, and administrative process, whereas localization or hybridization was the norm in the various components of employment relations domain; (c) this hybridization drew not on one homogeneous host-country model but, rather, on diverse models available in the host country—both a progressive union model and a union substitution model; and (d) under rather different HRM approaches, Toyota's Japanese plants and its two U.S. subsidiaries all achieved world-class levels of productivity and quality.

These findings resemble those of White and Trevor (1983) in their study of Japanese subsidiaries in the United Kingdom. In both the U.S. and in the U.K., the different HRM components were designed in a spirit of "piecemeal

pragmatism," rather than wholesale adoption of Japanese approaches, but this pragmatism was quite the opposite of following local practice "in purely passive way"; it reflected the "serious interest taken by senior management" in HRM.

The main theoretical conclusion is that we must avoid seeing hybridization in terms that are too generic. Not only are different components of a subsidiary's HRM system subject to different pressures, but the pressures coming from the local environment are neither entirely homogeneous nor entirely deterministic. Foreign subsidiaries in the United States (or elsewhere) operate within a complex cultural, social, and institutional context that affords—indeed, demands—interpretation, choice, and learning.

Some caveats should be noted. In particular, these two plants' HRM approaches may yet change. Institutional theory suggests that once "imprinted" with a viable set of HRM policies, organizations will only change under the impact of major disruptions in the external environment; but such disruptions are hardly inconceivable. In 1987–88, when NUMMI's capacity utilization fell below 60 percent, it was politically unthinkable that Toyota allow its first transplant, a plant created in large measure to defuse trade pressures, to lay off workers; but what will happen when these subsidiaries mature and when, as is likely to happen one day, economic conditions deteriorate again? It is not inconceivable that such a change could happen under global business conditions that limit the support that Toyota could offer its transplants. In this scenario, the sense of unity between plant management and workers may either crumble or come to appear less salient than the conflict of interests between the global corporation and its local workers. HRM policies could change in ways difficult to predict.

This study suggests some directions for future research. First, we might usefully seek to explore through more systematic surveys the determinants of hybridization. Second, if, indeed, overseas subsidiaries engage in a process of organizational learning in defining and refining their operations, future research might also explore more closely the microprocesses by which this learning takes place. Third, these subsidiaries' HRM approaches appear to have been very stable over time; it would, therefore, be useful to analyze the ways in which multinationals shape the HRM choices of their subsidiaries in their initial planning phases. Finally, it is important to understand how firms that engage in a process of globalization—such as Toyota has done in recent years—learn over time how to make better organization design choices in the startup of new subsidiaries.

While research into the specific features of transplants' HRM and production systems and on the forces that shape them needs to be pursued and rendered more systematic, we should be careful not to lose sight of the forest for the trees. Some researchers (e.g., Kenney and Florida, 1993) see these Japanese approaches as the core of a profoundly new model of management. According to an old proverb, "When the master points at the moon, the fool looks at the finger." Given that there is some—perhaps extensive—hybridization when the Japanese approaches are exported overseas, future research

should keep in sight the bigger question: what is the resulting vector of change in the broader, overall pattern of management practices in U.S. industry?

#### Notes

1. Since the present study focuses on manufacturing workers, in developing this categorization I adopted the perspective of the operations function. It can be compared to Tichy et al.'s categorization (1982)—selection, appraisal, rewards, development—which adopts the HR function's point of view and ignores the work organization and administration domains and the industrial relations components. Beer et al. (1984) adopt a general management point of view, leading them to distinguish employee influence, human resource flows, reward system, and work system.

2. Unless otherwise specified, Toyota refers to Toyota's operations in Japan.

3. For an analysis of stability and change at NUMMI, see Adler, Goldoftas, and Levine 1998. In contrast with the two Toyota transplants, HRM policies at the Mazda Flat Rock plant were poorly adapted and have evolved considerably (see Babson, 1994).

4. Toyota's approach differed from the one Yoshino (1973) found in a sample of Japanese-owned companies in Thailand. There, more than half the personnel managers were Japanese nationals. Compared to subsidiaries of companies based in other countries, the Japanese subsidiaries in Thailand and in other Asian countries relied far more on expatriates. However, Toyota's approach to its U.S. affiliates was not unusual: in his study of nine Japanese transplants in the U.S. (including Honda motorcycles but none in the auto industry), Kujawa (1986) found that all of them had U.S. nationals heading their personnel functions.

5. I would hypothesize that, at NUMMI and TMMK, the ratio of HR department staff to total plant headcount was much higher than at comparable Big Three plants. However, there are no such comparable plants because Big Three plants relied on their corporate staff for much of their labor relations and some of the other HRM domains, whereas NUMMI and TMMK were more like stand-alone businesses in these regards.

#### References

- Abo, Tetsuo, ed. 1994. *Hybrid Factory: The Japanese Production System in the United States*. New York: Oxford University Press.
- Adler, Paul S. 1993. "The New 'Learning Bureaucracy': New United Motors Manufacturing, Inc." In Barry Staw and Larry Cummings, eds., *Research in Organizational Behavior*, pp. 111–194. Greenwich, Conn.: JAI Press.
- Adler, Paul S., Barbara Goldoftas, and David I. Levine. 1997. "Ergonomics, Employee Involvement, and the Toyota Production System: A Case Study of NUMMI's 1993 Model Introduction." *Industrial and Labor Relations Review* Apr.: 416–437.
- Adler, Paul S., Barbara Goldoftas, and David I. Levine. 1998. "Stability and Change at NUMMI." In Robert Boyer, Elsie Charron, Ulrich Jürgens, and Steven Tolliday, eds., *Between Imitation and Innovation: Transfer and Hybridization of Production Models in the International Automobile Industry*, pp. 128–160. New York: Oxford University Press.

- Babson, Steve. 1994. "Mazda and Ford at Flat Rock: Transfer and Hybridization of the Japanese Model." Paper prepared for the GERPISA conference, Berlin, Wayne State University, Oct.
- Banks, Robert F., and Jack Stieber. 1977. "Introduction." In Robert F. Banks, and Jack Stieber, eds., *Multinationals, Unions, and Labor Relations in Industrialized Countries*. Ithaca, N.Y.: New York State School of Industrial Relations.
- Barley, Stephen R., and Gideon Kunda. 1992. "Design and Devotion: Surges in Rational and Normative Ideologies of Control in Managerial Discourse." *Administrative Science Quarterly* 37: 363-399.
- Bartlett, Christopher, and Sumantra Ghoshal. 1989. *Managing across Borders: New Organizational Responses*. Boston: Harvard University Press.
- Beechler, Schon, and Sully Taylor. 1994. "The Transfer of Human Resource Management Systems Overseas: An Exploratory Study of Japanese and American Maquiladores." In Nigel Campbell and Fred Burton, eds., *Japanese Multinationals: Strategies and Management in the Global Kaisha*, pp. 157-185. New York: Routledge.
- Beechler, Schon, and J. Z. Yang. 1994. "The Transfer of Japanese-style Management to American Subsidiaries: Contingencies, Constraints, and Competencies." *Journal of International Business Studies* 3: 467-491.
- Bear, M., B. Spector, P. R. Lawrence, D. Q. Mills, and R. E. Walton. 1984. *Managing Human Assets*. New York: Free Press.
- Brannen, Mary Yoko. 1992. "'Bwana Mickey': Constructing Cultural Consumption at Tokyo Disneyland." In J. Tobin, ed., *Remade in Japan: Everyday Life and Consumer Taste in a Changing Society*. New Haven: Yale University Press.
- Brown, Clair, and Michael Reich. 1995. "Employee Voice in Training and Career Development." Paper presented at the IRRRA meetings, Washington D.C., Jan.
- Cameron, D. 1984. "The When, Why and How of Discipline." *Personal Journal* July: 37-39.
- Campbell, D. N., R. L. Fleming, and R. C. Grote. 1985. "Discipline without Punishment at Last." *Harvard Business Review* July-Aug: 162-178.
- Cole, Robert E. 1972. "Functional Alternatives and Economics Developments." *American Sociological Review* 38: 424-38.
- Cole, Robert E. 1979. *Work, Mobility, and Participation: A Comparative Study of American and Japanese Industry*. Berkeley: University of California Press.
- Cole, Robert E., and Donald Deskins. 1988. "Racial Factors in Site Location and Employment Patterns of Japanese Automobile Firms in America." *California Management Review* 31(1): 9-23.
- Cutcher-Gershenfeld, Joel, and Associates. 1994. "Japanese Team-Based Work Systems in North America: Explaining the Diversity." *California Management Review* 37(1): 42-64.
- Doz, Yves L., Christopher A. Bartlett, and C. K. Prahalad. 1981. "Global Competitive Pressures and Host Country Demands: Managing Tensions in MNCs." *California Management Review* 23: 63-73.
- Doz, Yves L., and C. K. Prahalad. 1984. "Patterns of Strategic Control within Multinational Corporations." *Journal of International Business Studies* 15(2): 55-72.
- Eads, G. C. 1987. "Comments and Discussion." *Brookings Papers on Economic Activity* 3: 720-725.
- Edelman, Lauren B. 1990. "Legal Environments and Organizational Governance: The Expansion of Due Process in the American Workplace." *American Journal of Sociology* 95(6): 1401-1440.
- Elger, Tony, and Chris Smith, ed. 1994. *Global Japanization: The Transnational Transformation of the Labour Process*. New York: Routledge.
- Erez, Miriam, and P. Christopher Early. 1993. *Culture, Self-Identity and Work*. New York: Oxford University Press.
- Foulkes, Fred. 1980. *Personnel Policies in Large Nonunion Companies*. Englewood Cliffs, N.J.: Prentice Hall.
- Goehle, D. G. 1980. *Decision Making in Multinational Corporations*. Ann Arbor: University of Michigan Research Press.
- Grønning, Terje. 1992. "Human Value and 'Competitiveness': On the Social Organization of Production at Toyota Motor Company and New United Motor Manufacturing, Inc." Ph.D. diss., Ritsumeikan University Graduate School of Sociology.
- Grønning, Terje. 1995. "Recent Developments at Toyota Motor Co." In Åke Sandberg, ed., *Enriching Production: Perspectives on Volvo's Uddevalla Plant as an Alternative to Lean Production*, pp. 405-426. Aldershot: Avery.
- Grønning, Terje. 1997. "Technical, Social and Political Dimensions of Labour Groupification: A Comparison of the Ford and Toyota Plants in Kentucky, USA." Paper presented at the 17th International Labour Process Conference, Edinburgh, Mar.
- Hannon, John M., Ing-Chung Huang, and Bih-Shiaw Jaw. 1995. "International Human Resource Strategy and Its Determinants: The Case of Subsidiaries in Taiwan." *Journal of International Business Studies* 3: 531-54.
- Hofstede, Geert. 1980. *Culture's Consequences: International Differences in Work-related Values*. Beverly Hills, Calif.: Sage.
- Holley, William H., and Kenneth M. Jennings. 1994. *The Labor Relations Process*. Chicago: Dryden Press.
- Holusha, John. 1989. "No Utopia, but to Workers It's a Job." *New York Times*, Jan. 29, Section 3: 1.
- Inohara, Hideo. 1990. *Human Resource Development in Japanese Companies*. Tokyo: Asian Productivity Organization.
- Ishida, Hideo. 1986. "Transferability of Japanese Human Resource Management Abroad." *Human Resource Management* 25(1): 103-120.
- Jackson, Susan E., and Randall S. Schuler. 1995. "Understanding Human Resource Management in the Context of Organizations and Their Environments." *Annual Review of Psychology* 46: 237-264.
- Johnson, Chalmers. 1988. "Japanese-style Management in America." *California Management Review* 30(4): 34-45.
- Kenney, Martin, and Richard Florida. 1991. "Transplanted Organizations: The Transfer of Japanese Industrial Relations to the U.S." *American Sociological Review* 56: 381-398.
- Kenney, Martin, and Richard Florida. 1993. *Beyond Mass Production: The Japanese System and Its Transfer to the U.S.* New York: Oxford University Press.
- Kochan, Thomas A. 1980. *Collective Bargaining and Industrial Relations*. Homewood, Ill.: Irwin.
- Koike, Kazuo. 1984. "Skill Formation Systems in the U.S. and Japan: A Comparative Study." In ed., Masahiko Aoki, *The Economic Analysis of the Japanese Firm*, pp. 47-75. New York: Elsevier/North Holland.
- Krafcik, John. 1989. "A New Diet for U.S. Manufacturing: The Auto Industry Enters the 1990s." *Technology Review* Jan. 28-35.
- Kujawa, Duane. 1971. *International Labor Relations in the Automotive Industry: A Comparative Study of Chrysler, Ford and General Motors*. New York: Praeger.

- Kujawa, Duane. 1986. *Japanese Multinationals in the United States: Case Studies*. New York: Praeger.
- Lawler, Edward E., III. 1990. "The New Plant Revolution Revisited." *Organization Dynamics* 19(2): 5-14.
- Lawler, Edward E., III, Susan A. Mohrman, and Gerald E. Ledford Jr. 1995. *Creating High-Performance Organizations*. San Francisco: Jossey-Bass.
- Lawler, Edward E., III and Susan A. Mohrman. 1985. "Quality Circles after the Fad." *Harvard Business Review*, 85(1): 64-71.
- MacDuffie, John Paul. 1996. "International Trends in Work Organization in the Auto Industry." In L. Turner and K. C. Wever, eds., *The Comparative Political Economy of Industrial Relations*, Madison, Wisc.: Industrial Relations Research Association, pp. 71-113.
- MacDuffie, John Paul, and Thomas A. Kochan. 1995. "Do U.S. Firms Invest Less in Human Resources? Training in the World Auto Industry." *Industrial Relations* 34(2): 147-168.
- Martinez, Zaida L., and David A. Ricks. 1989. "Multinational Parent Companies' Influence over Human Resource Decisions of Affiliates: U.S. Firms in Mexico." *Journal of International Business Studies*, 1: 465-487.
- McCabe, Douglas M. 1988. *Corporate Nonunion Complaint Procedures and Systems*. New York: Praeger.
- Milkman, Ruth. 1991. *Japan's California Factories: Labor Relations and Economic Globalization*. Los Angeles: Institute of Industrial Relations, UCLA.
- Mills, Daniel Quinn. 1982. *Labor-Management Relations*, 2nd ed. New York: McGraw-Hill.
- Monden, Y. 1983. *Toyota Production System*. Atlanta, Ga.: Institute of Industrial Engineers.
- Oliver, Christine. 1991. "Strategic Responses to Institutional Processes." *Academy of Management Review* 16(1): 145-179.
- Osterman, Paul. 1994. "How Common Is Workplace Transformation and How Can We Explain Who Adopts It?" *Industrial and Labor Relations Review* Jan.: 47: 175-188.
- Osterman, Paul. 1995. "Skill, Training, and Work Organization in American Establishment." *Industrial Relations* 34(2): 125-146.
- Perlmutter, Howard V. 1969. "The Tortuous Evolution of the Multinational Corporation." *Columbia Journal of World Business* 4: 9-18.
- Pfeffer, Jeffrey, and Gerald R. Salancik. 1978. *The External Control of Organizations*. New York: Harper and Row.
- Prahalad, C. K., and Yves L. Doz. 1987. *The Multinational Mission: Balancing Local Demands and Global Vision*. New York: Free Press.
- Pucik, Vladimir. 1984. "White-Collar Human Resource Management: A Comparison of U.S. and Japanese Automobile Industries." *Columbia Journal of World Business* Fall: 87-94.
- Robinson, Alan G., and Dean M. Schroeder. 1993. "Training, Continuous Improvement, and Human Relations: The U.S. TWI Programs and the Japanese Management Style." *California Management Review* Winter: 35-57.
- Rosenzweig, Philip M., and Nitin Nohria. 1994. "Influences on Human Resource Management practices in multinational corporations." *Journal of International Business Studies* 2: 229-251.
- Rosenzweig, Philip M., and Jitendra V. Singh. 1991. "Organizational Environments and the Multinational Enterprise." *Academy of Management Review* 16(2): 340-361.
- Saltzman, Gregory M. 1995. "Job Applicant Screening by a Japanese Transplant: A Union-Avoidance Tactic." *Industrial and Labor Relations Review* 49(1): 88-104.
- Schonberger, Richard J. 1982. *Japanese Manufacturing Techniques*. New York: Free Press.
- Schroeder, Dean M., and Alan G. Robinson. 1991. "America's Most Successful Export to Japan: Continuous Improvement Programs." *Sloan Management Review* Spring: 67-81.
- Scott, W. Richard. 1987. *Organization: Rational, Natural and Open Systems*, 2nd ed. Englewood Cliffs, N.J.: Prentice Hall.
- Scott, W. Richard. 1991. "Unpacking Institutional Arguments." In Walter W. Powell and Paul J. DiMaggio, eds., *The New Institutionalism in Organizational Analysis*, pp. 164-182. Chicago: University of Chicago Press.
- Schuler, Randall S., Peter J. Dowling, and Helen De Cieri. 1993. "An Integrated Framework for International Human Resource Management." *International Journal of Human Resource Management* 4, (4): 717-764.
- Shimizu, Koichi. 1995. "Humanization of the Production System and Work at Toyota Motor Co. and Toyota Motor Kyushu." In 'Ake Sandberg, ed., *Enriching Production: Perspectives on Volvo's Uddevalla Plant as an Alternative to Lean Production*, pp. 383-404. Aldershot: Avery.
- Shimizu, Koichi, and GEMIC. 1993. "Toyota." *Actes du GERPISA* 8: 69-198.
- Shimizu, Koichi, and Masami Nomura. 1993. "Trajectoire de Toyota: Rapport Salariale and Systeme de Production." *Actes du GERPISA* 8: 29-68.
- Stinchcombe, Arthur L. 1965. "Social Structure and Organization." In James G. March, ed., *Handbook of Organizations*, pp. 142-193. New York: Rand McNally.
- Taylor, Sully, Schon Beechler, and Nancy Napier. 1996. "Toward an Integrative Model of International Human Resource Management." *Academy of Management Review* 21(4): 959-985.
- Tichy, N., C. J. Fombrun, and M. A. Devanna. 1982. "Strategic Human Resource Management." *Sloan Management Review* 2: 47-61.
- Westney, D. Eleanor. 1993. "Institutionalization Theory and the Multinational Corporation." In Sumantra Ghoshal and D. Eleanor Westney, eds., *Organization Theory and the Multinational Corporation*, pp. 53-76. New York: St. Martin's Press.
- White, Michael, and Malcolm Trevor. 1983. *Under Japanese Management: The Experience of British Workers*. London: Heinemann.
- Wilms, Wellford W., Alan J. Hardcastle, and Deone M. Zell. 1994. "Cultural transformation at NUMMI." *Sloan Management Review* 36, (1): 99-113.
- Wokutch, Richard. E. 1992. *Worker Protection, Japanese Style: Occupational Health and Safety in the Auto Industry*, Ithaca, N.Y.: ILR Press/Cornell University Press.
- Womack, James, Daniel Jones, and Daniel Roos. 1990. *The Machine That Changed the World*. New York: Rawson Associates, Macmillan.
- Yang, John Zhuang. 1992. "Americanization or Japanization of Human Resource Management Policies: A Study of Japanese Manufacturing and Service Firms in the United States." *Advances in International Comparative Management* 7: 77-115.
- Yasuda, Yuzo. 1991. *Forty Years, Twenty Million Ideas: The Toyota Suggestion System*. Cambridge, Mass.: Productivity Press.

- Yoshino, Michael Y. 1976. *Japan's Multinational Enterprises*. Cambridge, Mass: Harvard University Press.
- Yuen, Edith C., and Hui Tak Kee. 1993. "Headquarters, Host-Culture and Organizational Influences on HRM Policies and Practices." *Management International Review* 33(4): 361-383.
- Zucker, Lynne G. 1987. "Institutional Theories of Organization." *20 Annual Review of Sociology* 13: 443-464.