3. Cooperative employment relations and Japanese economic growth

William Lazonick

I INTRODUCTION

There is widespread agreement that cooperative employment relations have played an important role in the phenomenal success of the Japanese economy over the past four decades. Japanese workers have been, and remain, willing to work long hours at a steady pace. In return they have seen their incomes rise dramatically. But these rising incomes have not been a burden on Japanese economic performance. Japanese workers have limited their wage demands to levels that reflect the current ability of their companies to pay without jeopardizing long-term corporate goals. Employers, in turn, have been willing to share the benefits of corporate prosperity with workers, thus ensuring that workers would continue to identify with the goals of the corporation.

The characteristic features of the Japanese employment environment might lead a 'Western' economist to expect to find low levels of productivity and high levels of labour–management conflict in Japanese industry rather than the high productivity and cooperative relations that in fact prevail. Many, if not most, Western economists (whether neoclassical, neo-Keynesian, or neo-Marxian) expect that when the threat of job loss is low workers will supply less effort and produce less output. Yet three major features of the employment environment in Japan all serve to reduce the threat of job loss facing Japanese workers.

First, a substantial proportion of male blue-collar workers have access to 'permanent employment' – the assurance of a continuous relation with a particular organization over the course of their working lives. Especially in the highly productive dominant enterprises (Toyota, Hitachi, Sony, Fujitsu, Matsushita, Canon, NEC, Nissan, etc.) that have been the driving forces in Japan's economic growth over the past four decades, male blue-collar workers have virtually no fear of dismissal. Second, the Japanese labour force lacks large numbers of ethnic minorities who can serve as a labour supply for low-paid, insecure jobs or who can compete with Japanese-born workers for better paid, blue-collar jobs. Third, the occupational structure and sustained growth of the

Japanese economy have generated full employment, and, at times, acute labour shortages. Even in companies where the institution of permanent employment is not entrenched, replacement workers are hard to find.

By lessening the competition for jobs, and hence the threat of job loss, therefore, the Japanese employment environment should give workers the power to reduce their work effort and raise their wage demands, thus contributing to the inflationary tendencies and labour–management conflicts that have occurred in the advanced capitalist economies of the West. According to a 'Western' perspective, that is, employment security, ethnic homogeneity and full employment should have impeded Japan's economic performance. By all accounts, they have not. Indeed, it can be argued that, by promoting cooperative employment relations, these features of the Japanese employment environment have helped to generate the nation's sustained economic growth. The purpose of this essay is to explain how and why the Japanese employment environment has benefited the Japanese economy, and in the process to consider whether and to what extent the Japanese model of employment relations can be (or already has been) diffused to the advanced capitalist economies of the West. Throughout this essay I shall compare Japanese employment relations primarily with those that have prevailed in the United States, and to a lesser extent with those that have prevailed in the United Kingdom (for an elaboration of this three-nation comparison, see Lazonick, 1990). In the conclusion, I shall explore briefly the implications of my analysis of employment relations and economic growth in Japan for the future of employment relations in the world economy more generally.

II THE JAPANESE EMPLOYMENT ENVIRONMENT

Hours, Earnings, and Income Distribution

Japan entered the 1960s as a low-wage economy, especially compared with the United States. But by 1970 Japan's hourly wage rate in manufacturing had surpassed that of France and by 1975 that of the UK. Depending on the prevailing exchange rate, during the 1980s hourly wages in Japan were at times higher than those in Germany and the United States (Shirai, 1983, p. 131; Abegglen and Stalk, 1985, p. 194; *Year Book of Labour Statistics [YBLS]*, 1987, p. 317). By advanced capitalist country (ACC) standards, in the 1950s Japanese manufacturing workers laboured long hours for low pay; in the 1980s they laboured long hours for high pay.

In Japanese manufacturing, the average working hours per employed person peaked at 207 per month in 1960. From 1984 until 1988 working hours averaged about 180 hours per month (about 184 for men and about 168 for women). Despite a reduction in hours worked per year of about 13 per cent between 1960 and the mid-1980s, average Japanese working hours remained substantially above those in the other ACCs. For example, the work year of the average Japanese employee exceeded that of the average US employee by 517 hours. About 47 per cent of the differential was because of more hours worked per day and about 53 per cent because of more days worked per year (Maddison, 1987, p. 687). Compared with Germany (where the hours of work per year were just slightly more than in the United States), in Japan virtually all of the extra hours worked were because of more working days. Compared with all the ACCs, the most important difference in days worked derives from the retention of the six-day work week in Japan (see Maddison, 1987, p. 687; Koshiro, 1983, p. 243; Japan Economic Institute, 1990).

In 1987 the average monthly remuneration for Japanese male manufacturing workers was ¥381,000, about $26,000 per year at the prevailing exchange rate (*YBLS*, 1987, p. 105). For women in manufacturing, the average annual pay was just over $11,000 – about 42 per cent of the average for men. Indeed, Japan has one of the most unequal gender-based distributions of income in the world. In 1980 the female–male hourly wage ratio in Japan was 0.54, compared with 0.66 in the United States, 0.72 in Germany, and 0.79 in the UK (Mincer, 1985, p. 56). At the same time, Japan's household distribution of income is one of the most equal in the world, with lower-income Japanese households being particularly favoured. In part, Japan's relatively equal distribution of income derives from hierarchical pay differentials within enterprises that are much more compressed than in most, if not all, of the other ACCs. But in large part, the relative equality derives from government policies to maintain the economic viability of small-scale enterprise in agriculture, retailing and manufacturing. Particularly in agriculture, these policies are integral to Japan's social welfare system, and the success of these policies explains why Japan has not relied as heavily as the ACCs of the West on government transfer payments to ensure social welfare (see Vogel, 1980, ch. 8; Koike, 1988, pp. 47–53).

In 1980 12 per cent of the Japanese labour force were still engaged in agriculture, as compared with 6 per cent in the ACCs in general. Most Japanese agricultural workers grow rice on small family farms. Aided by advanced growing techniques (acquired with government assistance), Japan's rice yields per acre are among the highest in the world (Reich et al., 1986, p. 162; Vogel, 1980, pp. 80–81; see also Sawada, 1970; Tsuchiya, 1970). So too are the prices that farmers receive; during the 1960s and 1970s the government purchase price of rice was as much as four times the world price. These agricultural policies have kept the incomes of full-time farm households close to the level of urban wage-earning households.

These agricultural policies carry both costs and benefits to blue-collar workers. On the cost side, they have to spend a higher proportion of their incomes on food than do workers in other ACCs. In 1979 food represented 35 per cent of the expenditures of Japanese consumers, well over twice the proportion in the United States and perhaps as much as one-third higher than in the ACCs in general (Reich et al., 1986, p. 163). On the benefit side, however, is the availability of farming as an extra, or even an alternative, source of income for wage-earners who do not have 'regular employee' status (see below) or for full-time wage-earners who have had regular employee status but have reached the mandatory corporate 'retirement' age (usually between 55 and 60). In 1984 farm households with primarily non-agricultural earnings represented 71 per cent of all farm households, up from 65 per cent in 1980, and 51 per cent in 1970 (Reich et al., 1986, p. 163). According to an authoritative survey of Japanese agricultural policy written in the mid-1980s:

> Since 1981, the number of people abandoning other occupations to enter agriculture as the main job has actually exceeded the number leaving agriculture for other occupations. In 1983, moreover, 96 per cent of males going into farming as the main job were over fifty, and most of them had worked previously as part-time farmers. Innovative mechanization that facilitated small-scale part-time farming makes this trend possible, and may thereby serve as an obstacle to the consolidation of farmland and the formation of cooperative units. (Reich et al., 1986, p. 197)

Given the social welfare functions of the agricultural sector, however, the net social and economic impacts of the consolidation of Japanese farmland would not necessarily be positive. By permitting older workers to remain productive and independent after their retirement from corporate employment, the organization of Japanese agriculture functions as an effective and humane old-age security system. By facilitating the early retirement of older corporate employees, the system of small family farms increases the demand for younger workers – the potentially most productive members of the labour force – to fill the positions that the older workers have vacated. In short, Japan's agricultural policies have been the key to keeping the labour force fully employed, the household distribution of income relatively equal, and state welfare expenditures low.

The Japanese government has also helped to sustain small-scale enterprise in manufacturing and retailing. In manufacturing, dominant firms make extensive use of small-sized and medium-sized enterprises as subcontractors (see Odaka et al., 1988). Especially during the 1950s and 1960s, the government has aided the start-up and survival of smaller scale firms by making inexpensive finance available to them. This support has also helped the small supplier to strengthen its hand in dealing with the dominant enterprise, thus increasing the pressure toward more equality in the distribution of income (Friedman, 1988, pp. 167–8).

In retailing, the role of the state has been more far-reaching. During the 1970s, the Japanese government passed laws to limit the growth of retail chains by making it difficult to secure the right to open stores of any substantial size. By a 1973 law, government permission was required to open a store with more than 1500 square metres of floor space. In 1978 these strictures were also applied to stores with more than 500 square metres of floor space. Government approval for larger stores was rarely forthcoming, and over time applications for new stores over 500 square metres simply declined (McCraw and O'Brien, 1986).

Employment Opportunities

The policies to support small enterprise have helped not only to equalize the distribution of household income but also to create independent employment opportunities for those among the Japanese labour force who because of individual preference will not, or because of lack of educational credentials cannot, gain access to positions of regular employment with a corporation. In 1987 25 per cent of the entire Japanese labour force and 19 per cent of the non-agricultural labour force were classified as self-employed or as persons employed by family members. Among the male labour force, these figures were 20 per cent and 16 per cent respectively.

While the number of self-employed and family workers in agriculture has declined over the past few decades, in non-agricultural industries the number of self-employed persons increased by 31 per cent between 1960 and 1987 and the number of family workers by 12 per cent. The increase in self-employed was particularly rapid in manufacturing, where the number of self-employed grew by 62 per cent, slightly faster than the growth of the manufacturing labour force as a whole. In 1987 in non-agricultural industries, 65 per cent of the self-employed but only 18 per cent of the family workers were men. In manufacturing these figures were 60 per cent and 16 per cent respectively (*YBLS*, 1987, p. 8).

The persistent viability of small enterprise has occurred in Japan alongside, and indeed because of, the growth of the dominant enterprises that have been central to Japan's rise to international industrial leadership. The largest corporate employers in Japan are not large by US standards. In 1989 the ten largest industrial companies in Japan had an average of 114,000 employees; the average for the ten largest US industrials was 301,000 (*Fortune*, 1989, p. 291; *Dun's*, 1990, p. 345). Many large Japanese employers keep the number of their employees down through the practice of subcontracting work to smaller firms. For example, in 1989 Toyota's sales were 75 per cent greater than Nissan's, and its assets were 11 per cent greater. Yet Toyota employed 21 per cent fewer people because of its more extensive use of subcontracting.

In some cases, the core company subcontracts with firms that simply supply labourers to work at the core company's facilities. More often the core company purchases inputs from satellite firms with which it has developed long-term relations, and hence from which it can expect the timely delivery of the quality and quantity of specialized inputs that it needs (see Watanabe, 1971; Sheard, 1983; Shimokawa, 1985; Asanuma, 1989; Dore, 1986, Part III; Odaka et al., 1988; Chalmers, 1989; Helper, 1990; Smitka, 1990). Historically, the widespread use of subcontractors in Japan appears to have stemmed from the slow growth and weak financial condition of firms that ultimately emerged as dominant (Helper, 1990). It also appears that in the 1950s, as enterprise unionism diffused across dominant firms, these major employers chose to subcontract rather than produce in-house to avoid taking on more permanent employees.

Nevertheless, once begun, many subcontracting arrangements tend to be long-lived because of the importance of organization-specific investments to ensure prompt delivery of inputs of the requisite quality. The core companies typically fund a portion of these investments, and the subcontractor is not easily replaceable. In terms of both pay and employment security, the employees of such 'first-tier' contractors benefit from the growth of the core company. It is the secure product-market positions of the dominant enterprises in Japanese manufacturing that gives stability to the subcontracting arrangements with suppliers and distributors, which in turn enables these small-sized and medium-sized firms to provide stable and remunerative employment to their own workers.

Labour–Management Relations

Those blue-collar workers with the most employment stability and the best long-run prospects for pay increases are, however, men who work as 'regular' employees for the core companies. Within these enterprises, shop-floor workers have been able to lay claim to a share of the rapid productivity growth on which the Japanese 'miracle' has been based. In part, the bargaining power of shop-floor workers derives from the generally high levels of employment and conditions of labour shortage that have resulted from the combination of rapid economic growth and government employment policies. But these workers have rarely used this power to disrupt production; prolonged work stoppages have played only a minor role in enabling Japanese workers to secure higher incomes.

Of the main ACCs, only Germany and Sweden have experienced greater industrial peace than Japan since the 1960s (Shirai, 1983, p. 137; *YBLS*, 1987, pp. 318–9). Even then, in both 1978 and 1984 work stoppages in Germany escalated enormously, while the Japanese experience since 1974 has been a general decline in labour strife. For the periods 1980–83 and 1984–87 respectively, on an average per annum basis, the number of labour disputes lasting more than half a day were 897 compared with 440; the number of workers involved in disputes was 312,000 compared with 124,000; and the number of days of work lost in disputes was 650,000 compared with 282,000 (*YBLS*, 1987, p. 319). The low levels of work stoppage in the mid-1980s are particularly revealing of the stability of cooperation in Japanese employment relations because these were years of persistent labour shortage. A more truculent and adversarial labour force might have sought to take advantage of the labour shortage to shift more income their way and secure more leisure.

Key to labour peace has been not only the ability of Japanese corporations to meet workers' demands but also the ability of Japanese unions to assess the corporations' ability to pay. Enterprise unions enforce workers' claims on enterprise earnings, taking into account the financial needs of the firm in the light of changing product-market conditions and desirable investment strategies. Through industry and national coordinating committees, the bargaining of enterprise unions, characterized by strategic strikes of 12 to 49 hours in duration, becomes part of a public debate over the general ability of the Japanese economy to pay wage increases. For the workers, their contribution to this debate culminates in the Spring Offensive -- the labour movement's concerted effort to influence the setting of the levels of wage increases that occurs in enterprises throughout the country simultaneously on 1 April of every year.

Enterprise-level bargaining means that percentage pay increases vary across companies, even within the same industry. But through the public debate over the economy's ability to pay and the coordinated efforts of the enterprise unions to influence the share that goes to workers' incomes, the increases in any particular firm become part of a national pattern. Hence, although enterprise unions bargain at the company level, they support a broader social movement that creates considerable coherence in levels of remuneration across the Japanese economy as a whole (see Shimada, 1970; Koshiro, 1983; Dore, 1987, pp. 70–73).

Standards of Living

On the basis of long-term employment relations and collective bargaining, the long and hard work of Japanese blue-collar men has been rewarded with higher pay. For many Japanese workers who live in the crowded Tokyo–Osaka industrial district, nominal income gains were severely eroded in the 1980s by the rapid rise in the cost of housing. With food prices also high by international comparison, it might be difficult to argue that Japanese blue-collar workers have a higher standard of living than their fully employed counterparts in the West. What they do have, however, is long-term employment stability and (save for another round of land and housing speculation) the prospects of sharing in the growing wealth of the nation.

What Japanese workers also have are longer lives and safer work conditions (notwithstanding reports of employees, typically managers, who have literally worked themselves to death – Sanger, 1990; for another account that portrays 'salarymen', as distinct from blue-collar workers, as bearing the brunt of the

Japanese commitment to work, see Woronoff, 1983). The post-Second World War growth of Japanese wealth does not appear to have been at the expense of shop-floor workers' health. In 1955, on the eve of the Japanese 'miracle', the average life expectancy at birth was 64 years for a Japanese man and 68 years for a Japanese woman. In 1975 these figures were 72 years for men and 77 years for women, and by 1987 76 years for men and 81 years for women – the highest average life expectancies in the world (*Japanese Statistical Yearbook [JSY]*, 1989, p. 55). As for safety in the workplace, data on the frequency and severity of industrial injuries show continuous and dramatic declines from the 1960s into the late 1980s (*JSY*, 1989, p. 745; see also Koshiro, 1983, p. 73). Notwithstanding the high costs of food and housing, when all the relevant factors are taken into consideration, the standard of living of Japanese workers has risen immensely over the past four decades.

Segmentation of the Labour Force

Beginning with the rise of the cotton textile industry a century ago, the cheap labour of young women has been central to Japanese industrialization (on the early textile mills, see Saxonhouse, 1976; Kidd, 1978; Tsurumi, 1984; Hunter, 1984). But the use of women to occupy low-wage jobs that offer limited employment security and upward mobility is by no means unique to Japan. What is unique about the Japanese labour force is the relative absence of ethnic minorities, alongside women in general, as a supply of low-paid labour. Registered aliens make up well under 1 per cent of the Japanese population. The vast majority (over 90 per cent between 1960 and 1980) of registered aliens are Koreans and Chinese. During the 1980s the proportion of registered aliens began moving up perceptibly, largely because of a greater number of Chinese and Filipinos (who represented 48 per cent and 17 per cent of the net increase in registered aliens between 1980 and 1988 – *JSY*, 1989, p. 45). In the face of acute labour shortages, there has also been a significant increase in illegal unskilled male labour into Japan, mainly from China, the Philippines and Bangladesh. In 1989 official sources estimated that there were 100,000 illegal immigrants in the country, but others have put the number as high as 400,000 (*New York Times*, 29 October 1989, p. E3).

The increased reliance of the Japanese economy on foreign labour is, however, very recent and still relatively small. In the absence of a large reserve army of underprivileged ethnic minorities, the Japanese have relied on tradition to locate within the Japanese population itself a 'secondary' labour force of low-paid workers. Besides women, who constitute the vast majority of the secondary labour force, there is a small group of Japanese men and women who, although ethnically indistinguishable from other Japanese, have been branded since the Tokugawa period as outcasts by birth because of the odious jobs (such as leather tanning and grave digging) that their ancestors had. They are the Burakumin – their numbers estimated at between 1 and 3 per cent of the Japanese population – and to this day they have no choice but to fill the lowest paying, least desirable jobs in Japanese society (Cornell, 1967; Wagatsuma and de Vos, 1967). A 1965 government report showed the Burakumin to have inferior living conditions, limited educational attainment, and lack of access to the secure jobs for which the Japanese economy is so well known (Upham, 1987, pp. 79, 85). Commercially published books that list the place names of Buraku ghettos are purchased by companies to help to ensure that they do not mistakenly hire Burakumin as permanent employees. Despite governmental concern with the social welfare of the Burakumin, there is, according to Frank Upham (1987, p. 123), 'little evidence to suggest that the government's agenda will ever include aggressive measures to ensure Burakumin access to permanent employment in large firms, which leaves them, whatever their individual educational attainment or employment qualifications, as a pool of low-wage temporary workers.'

The relatively small numbers of workers from poorer Asian nations and of Buraku descent aside, historically the Japanese economy has relied on girls and women to provide it with supplies of cheap labour. During the post-Second World War decades women have consistently accounted for 40 per cent of the total labour force, and, as a proportion of the manufacturing labour force, have increased from about one-third in the 1950s to 40 per cent in the 1980s (*JSY*, 1989, p. 71). During the 1980s in establishments employing 30 or more workers, among 'regular' workers the average monthly cash earnings of women were just over 50 per cent of those of men; in manufacturing the female–male proportion was only 42 per cent (*JSY*, 1989, p. 94).

Male–female income inequality is inherent in women's lack of access to permanent employment, the seniority wage system, and membership of enterprise unions. These are the three features of Japanese employment relations that make the Japanese system unique – an OECD report of 1977 called them the 'three pillars' of Japanese industrial relations (OECD, 1977). The pillars support the house of male labour only.

Employment Classifications

The official government classifications of workers are not very helpful for understanding the very different labour markets into which men and women enter in the Japanese economy. The government classifies those participants in the labour force who do not fall into the categories of 'self-employed' and 'family workers' as 'employees', who are then subdivided according to the duration of their employment contracts into 'regular', 'temporary', and 'daily' workers. Regular workers have contracts of indefinite duration, temporary workers have contracts for one month to one year, and daily workers have contracts for less than one month. Many companies employ temporary workers to expand their labour forces in periods of abnormal demand and to avoid overcommitting themselves to the long-term employment of these recruits. Not surprisingly, temporary workers find their conditions of work much less satisfactory than regular workers (see, for example, the critical account of work life as a temporary worker in Kamata, 1982). On the basis of performance, however, it is possible for temporary workers to be promoted to regular employee status.

Over 70 per cent of all Japanese workers, and 90 per cent of all employees, are classified as regular workers. About two-thirds of all regular employees are men and about 95 per cent are regular workers. About four-fifths of all female employees also have regular-worker status, although this proportion has fallen by about 5 per cent since the 1960s and 1970s while the proportion of female employees who are temporary workers has risen by a similar amount (*YBLS*, 1960, p. 16; *YBLS*, 1965, p. 12; *JSY*, 1989, pp. 72–3).

Permanent Employment

Most men, but very few women, who are classified as regular workers have permanent employment status. Permanent employment is found especially in companies that have attained large and entrenched, if not dominant, market shares in their industries, and which are hence both willing and able to offer workers the prospect of long-term attachment to their particular companies. By ensuring the long-run attachment of the employee to the firm, permanent employment enables employers to develop the skills of employees and makes it less necessary for employees to place the attainment of their short-run individual interests ahead of the longer-run goals of the enterprise as a collectivity. Given permanent employment, during the first decade of an employee's career, promotion and pay increases can occur without reference to an employee's productive contributions. During this developmental stage, job rotation into different technical specialities and different workplaces is the rule. In contrast to the American practice of applying the terms unskilled, semi-skilled, and skilled to different types of jobs to be filled by different types of blue-collar workers, the Japanese have used these terms to apply to the stages through which a blue-collar worker passes during the first ten years of employment. When qualitatively new investment strategies require qualitatively new skills, the permanent employment system gives employers the incentive to invest in the retraining of blue-collar workers who are in mid-career.

The existence of permanent employment and the emphasis on seniority in promotion and rewards encourages workers to identify with the goals of the company and to cooperate with each other in contributing to the fulfilment of these goals (see Aoki, 1988, chs 1 and 2). These collective efforts are rewarded by semi-annual bonuses that can amount to one-third of an individual's annual earnings but that are adjusted according to the current profitability of the firm and the financial requirements of long-term investments (see Freeman, 1989, ch. 12, who, however, overemphasizes the importance of bonuses as the foundations of Japanese employment relations). It is only in mid-career that promotion on the basis of individual performance becomes important, although even then seniority continues to have some influence on promotion decisions and remains the main determinant of wage increases.

In terms of the promise of long-term attachment, Japanese 'white-collar' positions are similar to junior management positions in well-managed corporations in the United States. Indeed, the burgeoning research into the history of US managerial enterprise in the United States suggests that the extension of 'permanent employment' to managerial personnel dates back as much as a century in the United States (see Chandler, 1977 and 1990 for long-run historical perspectives and abundant references). But, with a few exceptions, such as IBM and Kodak, these same US corporations will not countenance the notion that blue-collar workers are permanent members of the enterprise. Seniority provisions of US collective bargaining agreements do, it is true, often ensure that the most experienced workers have long-term attachments to particular workplaces. But, as evidenced for example by corporate resistance to laws that would require that affected workers receive advance notice of plant closure, the ideology of American management has been that the company should be able to hire and fire blue-collar workers at will.

Enterprise Unions

In Japan, enterprise unions are the prime institutions for protecting the integrity of permanent employment and the seniority-wage system. Despite the widespread recognition that permanent employment is a characteristic feature of Japanese employment relations, the employment security inherent in it does not have clear-cut legal status. According to one authority, 'no reference to [permanent employment] is found in any collective bargaining agreement or the Rules of Employment [under the Labour Standards Law]' (Gould, 1984, p. 11). The Labour Standards Law, passed after the Second World War, states that any employer has the right to dismiss an employee but must give 30-day prior notice or else 30 days' severance pay. Under the doctrine of 'abuse of the right to dismiss', however, the courts have circumscribed the ease with which employers can terminate employment by demanding that the employer justify a dismissal on grounds that the court deems to be legitimate (Koshiro, 1983, p. 245; Gould, 1984, pp. 11, 70, 109). Given the nebulous legal status of the workers' right to long-term employment security, the union movement, dominated by enterprise unions, has been a critical institution for protecting the permanent employment status of its members.

Indeed, the percentage of the Japanese labour force that is unionized is usually put forward as the estimate of the proportion of the labour force that possesses permanent employment status (see, for example, Abegglen and Stalk, 1985, p. 201). In 1970 35 per cent of employees in the Japanese labour force were union members, in 1980 31 per cent, and in 1988 27 per cent (*JSY*, 1989, p. 114). But not all union members are in enterprise unions, and not all employers who offer long-term employment security deal with unions. Enterprise unions, moreover, organize both white-collar and blue-collar employees together. College-educated male employees who enter the firm as white-collar workers are generally on career tracks that will take them out of the ranks of unionized employees into managerial positions with the same company. They continue to enjoy permanent employment status, but they are no longer counted as union members.

If one assumes that all men who work for public and private corporations that employ 100 or more people have permanent employment status, then the proportion of the Japanese labour force permanently employed at the end of 1987 was 25 per cent – a figure just a few percentage points less than the proportion of the Japanese labour force in unions at that time. Only a portion of the male regular workers are blue-collar workers. At the end of 1987, regular male production workers in manufacturing establishments with 30 or more employees represented 59 per cent of male regular workers in these establishments, and only 9 per cent of all males in the entire Japanese labour force (*YBLS*, 1987, pp. 8, 14).

But just because a male worker is not counted as a permanent employee does not mean that he is a member of what US economists have called the secondary labour force. As already indicated, the long-term character of relations between core companies and their satellite firms has a stabilizing impact on the employment and earnings of workers in smaller (although to a much lesser extent in the smallest) enterprises which do not have enterprise unions (on the 'peripheral' labour force in firms that are subcontractors, see Chalmers, 1989). The success of the core companies in capturing large shares of international markets – a success that is in part attributable to the cooperative employment relations that have permanent employment as their foundation – has increased the economic viability and strengthened the permanency of these interfirm relations. The permanent employment status of regular male workers in core companies reflects, therefore, just part of a broader structure of the long-term employment relations that characterize Japanese industry and that have been integral elements of the dynamics of Japanese economic growth.

Women in the Labour Force

The employment experiences of male regular workers who can harbour expectations of permanent employment must also be distinguished from those of women who generally cannot. At the end of 1987 women represented 31 per cent of all regular workers in Japanese manufacturing and 36 per cent of all regular production workers in manufacturing establishments with 30 or more employees (*YBLS*, 1987, pp. 8, 14). Although the employment tenure of these women is of unspecified duration, the prevailing expectation is that they will drop out of the labour force after marriage. In the United States, the labour force participation of women remains stable between the ages of 20 and 45 at about 70 per cent (Edwards, 1988, p. 245n). But in Japan the labour force participation of women is significantly lower for those aged 25–34 (54.5 per cent in 1988) than for those aged 20–24 (73.7 per cent), 35–44 (64.5 per cent), and 45–54 (66.4 per cent) (*JSY*, 1989, p. 71). As these figures indicate, many women re-enter the labour force when their children are grown. But they do not retain the right to reinstatement with a particular employer. The traditional gender-based division of labour in the society is reinforced by statistical discrimination – the assumption by employers that the women whom they currently employ will sooner or later drop out of the paid labour force to become home makers. As a result of this assumption, even those women who intend to remain in the paid labour force are denied the opportunities for skill development and earnings growth that firms offer to male regular employees as a matter of course.

The traditional gender-based division of labour also makes it possible to employ women as 'part-time' workers. In Japan, a 'part-time' worker is one who is employed for less than 35 hours per week, and is therefore not entitled to all the pay and welfare benefits of 'full-time' workers.

About 70 per cent of part-time workers are women. About 17 per cent of female part-timers were in manufacturing, representing 14 per cent of the female manufacturing labour force. They were fairly evenly distributed across small, medium, and large manufacturing enterprises (*JSY*, 1989, p. 103; *YBLS*, 1986, p. 9).

Part-timers are not necessarily temporary workers. Of workers who made up the non-agricultural labour force in 1986, part-time employees represented 12 per cent of the total and 23 per cent of women, whereas temporary employees were only 6 per cent of the total and 15 per cent of women (*Japan Labor Bulletin*, 1 November 1987, p. 5).

The proportion of the non-agricultural labour force in part-time employment has been rising steadily from the 1960s when just over 6 per cent of all workers and 8–12 per cent of women were part-timers. A 1984 survey found that 86 per cent of female part-timers were married and 78 per cent were aged 35 or over. In response to the query of why they had taken up part-time work, 54 per cent answered to earn supplementary household income, 15 per cent to improve their standard of living, 11 per cent as a main source of income, and 10 per cent to earn income for leisure (Japan Institute of Labour, 1986, p. 14).

Responses to Labour Shortages

In sharp contrast to the movement of women into part-time employment, some more highly educated women have managed recently to gain permanent employment status. The continued growth of the Japanese economy and the expansion of its overseas business activities in the 1980s created severe shortages of highly educated personnel. In 1984 women represented over 23 per cent of enrolments at Japanese universities. But Japanese employers had been reluctant to hire female university graduates (as distinct from junior college graduates) on the grounds that they were likely to drop out of the labour force in their mid-20s. While the traditional gender-based division of labour has always provided the rationale for denying permanent employment to women in general, highly educated women have been particularly subjected to statistical discrimination. The productive potential of university-educated women could be greatly increased through in-house training programmes. But the company would not benefit from its investment in these human resources if (as was expected) these women chose not to pursue their careers.

From 1986 the impetus that the labour shortages gave to hiring female university graduates to be trained as technical specialists was reinforced by the implementation of the Equal Employment Opportunity Law (EEOL). This law did not compel employers to grant permanent employment status to women. But, through what the Japanese call 'administrative guidance', the state in effect legitimized employers' desire to develop long-term employment relations with women whose capabilities could be enhanced by costly in-house training and who could thereby alleviate the shortage of technical specialists. The EEOL also encouraged female university graduates to pursue careers by making it socially acceptable for them to refuse to be home makers in the traditional gender-based division of labour (see Cannings and Lazonick, 1994).

The proportion of women among new university graduates entering employment had been increasing steadily throughout the 1960s and 1970s, but then levelled off in the early 1980s. These women were regular employees but were not considered to be permanent employees. The EEOL appears to have had an impact on the quantity of female university graduates employed as well as on the quality of their employment. Between 1986 and 1987, for the first time in Japanese history, the number of female university graduates who entered employment increased while, simultaneously, the number of male university graduates who entered employment decreased. During the remainder of the 1980s, as acute labour shortages for educated personnel persisted, women continued to account for almost all of the annual increases in the number of university-educated recruits (*JSY*, 1985, p. 90; *JSY*, 1989, p. 90; see also Cannings and Lazonick, 1994).

Since the passage of the EEOL, university-educated women have, by virtue of the in-house training required to enable them to fill the shortage of technical specialists, been granted permanent employment status. But, in general, they have not been granted this status on the same terms as men. Under the traditional system, when virtually all permanent employees were men, all university graduates would enter the company as white-collar employees to be groomed for promotion into the managerial ranks after a decade of service. With the implementation of the EEOL, alongside this traditional 'managerial employee track' has arisen a 'clerical employee track'. In some firms, lying between these two tracks, is another one for 'specialized employees' in jobs requiring high levels of skill and knowledge, so that there is now a 'multiple-track employment system' for university-educated white-collar employees. Among other things, the lower tracks do not require their occupants to move to different localities over the course of their careers, and promotion ladders run only up to lower-level or local management positions. The evidence thus far is that these tracks have been filled almost entirely by women (Sugeno, 1987). Of particular importance for the shop-floor focus of this essay, moreover, the extension of (Japanese-style) 'equal employment opportunity' for women has been confined to the 'white-collar' ranks. If anything, through the use of 'part-timers', the tendency during the 1980s was to make employment for 'blue-collar' women more insecure.

Although the shortages of highly trained technical specialists posed the most acute labour supply problems for Japanese companies during the 1980s, the expansion of Japanese business at home and abroad has created labour shortages of blue-collar workers as well. There have been at least four different types of employer responses to these shop-floor labour shortages. One response (or more accurately non-response) has been to resist pressures (largely emanating it seems from Japan's international competitors) to reduce Japan's long work week. With labour in short supply, employers would not easily be able to secure the person-hours of labour required to meet their output targets by hiring more workers for fewer hours each. In addition to the quantitative problem of scarce labour, the extent to which companies invest in the capabilities of specific workers also encourages employers to insist on using these human assets more intensively. Moreover, the existence of permanent employment leads employers to want to minimize the number of workers to whom they are committed. In any case, Japanese enterprise unions have not demanded a short work week for their members, most likely because of the ability of workers to share in the gains that derive from high levels of output per worker (see Japan Economic Institute, 1990, where it is also argued that workers prefer long hours because of the expense and inaccessibility of leisure in Japan).

A second response has been to seek out new sources of temporary labour. In recent years, there has been a small but visible influx of foreign workers, some of them illegal, into the Japanese labour force (see for example *Japan Labour Bulletin*, 1 November 1988, p. 8). Of much more importance has been the shift of manufacturing operations overseas, in part to the United States and Europe (Kenney and Florida, 1991; Oliver and Wilkinson, 1988, ch. 5), but increasingly also to Asian countries such as Malaysia and Thailand (see *New York Times*, 8 May 1990, pp. A1, D18). In 1990 Japanese companies already employed 10 per cent of the Thai manufacturing labour force, with a predicted rise to 15 per cent by 1992 (*New York Times*, 10 May 1990, pp. D1, D9).

Meanwhile, at home, labour shortages have eased the social problems of structural adjustment in heavy industry. Because of worldwide excess capacity, the steel and shipbuilding industries have had to cut back their labour forces dramatically since the mid-1970s, and these cutbacks have continued in the 1980s. At the end of 1982 the iron and steel industry employed 268,000 regular workers, down by 100,000 from 1975, while the shipbuilding industry employed 156,000 regular workers, down from 255,000 in 1975. At the end of 1987 iron and steel employed 223,000 regular workers and shipbuilding 89,000 (*YBLS*, 1975, p. 15; *YBLS*, 1982, p. 19; *YBLS*, 1987, p. 15; the figures cited are for employees in establishments with 30 or more workers). The labour shortages, combined with the high level of general education of Japanese blue-collar workers, have facilitated the reallocation of the displaced workers to new employments.

Moreover, rather than, in the face of excess capacity, letting these 'mature' industries simply run down (which would only ensure that another round of employee cutbacks would have to come later), the Japanese steel and shipbuilding companies have continued their former policies of scrapping existing but serviceable plant and equipment and making massive investments in state-of-the art technologies to ensure that they will have long-run international competitive advantage (see McCraw and O'Brien, 1986). As one report has put it:

> A few years ago the belching smokestacks [of Kimitsu works, Japan's largest steel plant] were a symbol of the kind of inefficient heavy industry that the [Japanese] Government was committed to paring down in the face of heavy competition from South Korea. But today, after hundreds of millions of dollars of investment and a program to retire or retrain excess workers the Nippon Steel Corporation's giant Kimitsu Works has caught up with its lower-cost Korean competition, and 13,000 workers keep Kimitsu running at closer to capacity. (*New York Times*, 11 April 1990, pp. A1, D7)

As even this example of a so-called 'mature' industry shows, labour shortages as well as Japan's relatively low cost of capital have encouraged investments in shop-floor technology that replace labour with machines. In 1980 Japanese industry already had installed about 20,000 robots at a time when US industry had only installed a few thousand. By 1989 the number of robots in Japan was over 200,000 while the number in the United States was less than 40,000. Indeed, in 1989 the number of robots installed in Japanese industry was greater than the entire stock of robots in the United States in that year (Tanzer and Simon, 1990).

The low cost of capital, a factor that is often cited as the prime reason for Japan's competitive success (see for example Iacocca, 1990) is not unrelated to the labour shortages. Inexpensive finance as well as scarce labour are both cause and effect of a cumulative process of economic growth. Capital has been inexpensive in Japan because the financial system has been structured to make financial resources available to industrial enterprises for economic development (see Suzuki, 1980; Ballon and Tomita, 1988). Inexpensive finance makes it easier for industrial enterprises to make long-run commitments to workers, while labour shortages encourage firms to do so. These employment commitments in turn help to ensure the cooperation of workers in developing and utilizing the productive resources in which these enterprises have invested. The superior development and utilization of productive resources in turn enable firms simultaneously to pay higher wages to workers, charge lower prices to consumers (thus increasing the market shares of these firms), and reap higher profits as a residual (see Lazonick, 1990, Appendix). The results of this cumulative process of growth are increases in the supply of finance available to industry as well as the demand for labour, not only in manufacturing industry itself but also (in part because of the augmented incomes of employees as consumers) in services. These conditions of cheap capital and scarce, but still cooperative, labour in turn encourage new rounds of investments in effort-saving technological change which again open up the possibility for the generation of value gains that can be shared among employers, workers, consumers and (even) shareholders.

In historical perspective, this dynamic process of economic growth is not unique to Japan. As I have argued elsewhere (Lazonick, 1990), on the basis of highly integrated managerial structures but less cooperative employment relations with blue-collar workers, such a cumulative process of value creation characterized the rise of US industry to international dominance in the first half of this century. Indeed, in the United States this dynamic process of economic growth was most evident in the high fixed-cost consumer goods industries such as automobile and electrical appliance manufacture – the very industries in which, beginning in the 1960s, leadership passed to Japan. The next section of this essay will explain why Japanese industry came to possess the cooperative employment relations that I have thus far only described. Then section IV will outline how these cooperative employment relations have contributed to the superior productive capabilities that Japanese industry brings to international competition.

III EMPLOYMENT RELATIONS AND TECHNOLOGICAL CHANGE

Effort-Saving Technology

Cooperative employment relations in Japan are both cause and effect of what I call 'effort-saving' technological change – technological change that increases the amount of output that can be produced from a given input of effort (see Lazonick, 1990, Appendix). Attempts to create value – high-quality products at low unit cost – by increasing the supply of effort on a given technology are limited by the physical capabilities of workers or, even before the limits of these physical capabilities are reached, by their refusal to work longer and harder. Attempts to create value by investing in effort-saving technologies can overcome these physical and social limitations. An effort-saving technology permits the same amount of effort to produce more output per unit of time than is possible using the old technology, thus creating the possibility for making managers and workers better off without necessarily requiring the expenditure of more effort by workers.

The extent to which an investment in an effort-saving technology in fact creates this 'positive-sum' situation depends on the costs of introducing the new technology. Because investment in effort-saving technologies generally increases the company's fixed costs, the value gains (if any) on the new technology compared with the old technology are greater at high levels of effort than at low levels of effort. But, as long as the level of effort supplied by workers before the technological change is high enough to offset the higher fixed costs of the new technology once it has been put in place, then the effort-saving impact of the technological change can increase the amount of surplus value and workers' wages without requiring workers to supply more effort than before.

Mainstream economic theory has a limited understanding of the interaction of employment relations and technological change in the process of economic growth. In neoclassical economic theory, the choice of process technology is simply a managerial response to relative factor prices. The elasticity of substitution of labour for capital determines shares of capital and labour in the value of the output produced. A neoclassical economist might allow that, by raising wages and hence by altering relative factor process, employment relations – specifically, the collective bargaining power of labour – can affect the choice of technology. But neoclassical theory has viewed the productivity of any particular technology (a particular combination of capital and labour inputs) as exogenous to the firm and hence as independent of the structure of employment within the firm.

Such a view ignores the role of employment relations in determining productivity. As efficiency-wage theorists have recognized, a critical dimension of the employment relation is not only the level of wages but also the level of effort supplied by workers (see Akerlof and Yellen, 1986; Katz, 1986). Indeed, a central assumption of efficiency-wage theory is that, because of the nature of firm-specific employment relations (in particular, the tendency of workers to 'shirk' in the absence of positive wage incentives), high wages are offset by high levels of effort in the determination of unit labour costs. But efficiency-wage theory has not developed the implications of its focus on the 'effort bargain' for the firm's choice of technology among readily available alternatives or for the firm's decision to invest in the development of new technologies, including the in-house development of workers' skills. Efficiency-wage theory does not analyse the possibility that, through its effort-saving impact, technological change can make it possible for the incomes of both capitalists and workers to increase without workers necessarily supplying higher levels of effort.

Marxian economic theory (at least as put forth by Marx himself) recognizes that technological change is *potentially* effort-saving – it can permit workers to supply less effort to the production process without reducing labour productivity. The orthodox Marxist view is, however, that, alongside its effort-saving character, technology is also *skill-displacing* – it deskills shop-floor workers. Indeed, a basic tenet of Marxian theory is that, by deskilling shop-floor workers, technological change increases the power of capitalists to extract more effort from workers for less pay, and that indeed, in terms of employment relations, deskilling of shop-floor labour and the extraction of unremunerated effort are characteristic features of *successful* capitalist development (see Marx, 1977, ch. 15; Braverman, 1974).

These Marxian conclusions distort the historical experience of successful capitalist development. At any point in time, there are groups of workers in even the most successful capitalist economies who are subject to persistent exploitation – they are compelled by the force of the circumstances under which they sell their labour-power to provide high levels of effort for low levels of pay. The tendency toward exploitation increases, moreover, when firms, industries, and national economies that have been successful in the past enter into periods of relative decline. But when a capitalist economy is ascendant, the long-run tendency has been for workers to share in the benefits of effort-saving technological change. Indeed, workers' expectations of such benefits have resulted in their cooperation in the development and utilization of the new technologies that are the foundations of long-term economic growth (see Lazonick, 1990, chs. 6–10).

Shop-Floor Skills and Industrial Leadership

With cross-national shifts in international industrial leadership, the shop-floor characteristics of this dynamic interaction of employment relations and technological change have been transformed dramatically. When, in the last half of the nineteenth century, UK industry held a dominant position in the international economy, capitalist employers remained heavily dependent on experienced shop-floor workers to keep imperfect machinery in motion, to coordinate the flow of work through the production process, and to train the next generation of workers. Employers also paid these experienced workers relatively high and stable wages to ensure that these workers would supply high levels of effort.

The prime reason for the persistence of craft control in UK industry well into the twentieth century, when the UK was no longer the 'workshop of the world', was that capitalist employers had relied so heavily on the skills and efforts of shop-floor workers throughout the nineteenth century when UK industry was predominant. In the process, capitalists had not developed the managerial structures and related employment relations that, as the cases of the United States and Japan, among others, would show, were to become increasingly critical to the development and utilization of effort-saving technology in the twentieth century (Lazonick, 1990, ch. 6).

In the first half of the twentieth century, when US industry rose to a position of international dominance, employers did design process technologies to reduce their reliance on shop-floor skills. To develop and utilize these new technologies, however, employers had to make substantial investments in the skills of managerial employees, many of whom were skilled workers elevated from their prior shop-floor positions. At the same time, the very extent of the fixed costs incurred by these investments in both machines and managers made it imperative for employers to pay their shop-floor workers relatively high and stable wages to ensure the high levels of shop-floor effort required to get the volume of production per unit of time that could drive down not only unit labour costs but also unit capital costs (Lazonick, 1990, chs. 7–9).

Hence, in the context of successful capitalist development in the United States, the Marxian notion of the deskilling of shop-floor workers is relevant, but only when it is recognized that this deskilling could only be accomplished by creating a hierarchy of highly skilled employees within the managerial structure. Moreover, the high fixed costs of the deskilling strategy gave machine operatives (generally classified as 'semi-skilled') considerable power to inflict damage on their employers, and hence made it imperative for employers to try to win the 'good will' of these workers through the offer of higher pay, more employment stability, and better work conditions. Despite the deskilling of shop-floor labour and virtual absence of collective bargaining in the oligopolistic industries, during the 1920s blue-collar workers were still able to reap some of the benefits of effort-saving technological change (Lazonick, 1990, ch. 7).

In terms of the skill content of shop-floor work, the Japanese case of successful capitalist development over the past four decades contrasts sharply with both the UK model of the nineteenth century and the American model of the first half of the twentieth century. Whereas UK employers simply *left skills on* the shop floor and American employers sought to *take skills off* the shop floor, Japanese employers have *put skills on* the shop floor by investing in the development of the capabilities of their shop-floor workers.

It might appear at first sight that the Japanese model stands in sharper contrast to the American than to the UK model because in both the UK and Japanese cases skills remained in the possession of workers on the shop floor. But seen from the perspective of the development of the skills of *all* employees – both those who occupy 'white-collar' positions in the managerial structure and those who do 'blue-collar' work on the shop floor – the Japanese model is much more an extension of the US model than the UK model. For what the Japanese have done is to extend the organization-specific investments in human resources, which have long been critical to the success of US managerial structures, to male shop-floor workers as well as to managerial men. In the UK case, in contrast, until quite recently even larger companies made little in the way of organization-specific investments in human resources, whether at the managerial or shop-floor level.

What remains to be explained, therefore, is why employers in Japanese industry have been willing to develop the cognitive capabilities of their shop-floor workers, whereas US industrial employers have, since the late nineteenth century, been obsessed with taking skills off the shop floor. After answering this question, I shall then be able to explain how the development of the skills of blue-collar workers has enabled Japanese employers to take the lead in the introduction of effort-saving technology in the last half of the twentieth century. For these investments in workers' skills and effort-saving technology have been central to the cooperative employment relations that are both cause and effect of Japan's economic success.

IV THE EVOLUTION OF JAPANESE EMPLOYMENT RELATIONS

Pre-Second World War Origins

Why have Japanese managers been willing to develop the skills of their shop-floor workers? In many respects, the evolution of organizational structure in dominant Japanese industrial enterprises from the late nineteenth century into the 1930s resembles what Alfred Chandler (1977) has called the 'managerial revolution' in American business. As successful enterprises expanded the scale and scope of their activities, there was an increased separation of asset ownership

from managerial control and the replacement of owner-entrepreneurs by professional managers promoted from the ranks. Just as the first two decades of the twentieth century saw a radical transformation of the US system of higher education to serve the technical and organizational requirements of big business, so too in Japan the larger firms in industries such as textiles, shipbuilding, machine making, electrical manufacture and oil refining were recruiting large numbers of college graduates by offering them careers within their organizations. During the 1920s in both the United States and Japan dominant industrial enterprises established systematic internal career structures for the purpose of developing managerial skills and forming the next generation of top executives (compare Daito, 1986 and Lazonick, 1986; see also Hirschmeier and Yui, 1981, pp. 205–7; Yonekawa, 1984; Morikawa, 1989).

As the managerial hierarchies evolved during the interwar period, foremen became the lowest-ranking salaried employees. As in the United States, in Japan foremen tended to be promoted from the shop floor, and occupied the highest position to which blue-collar workers could normally aspire (Daito, 1986, p. 174; Koike, 1988, ch. 4). In both countries, male blue-collar employees of dominant firms had by the 1920s received implicit promises of employment security that were broken in periods of depressed trade. In both countries, through the interwar decades, shop-floor workers failed to get *formal* employment security, and the organized labour movements, although often militant, remained weak (Gordon, 1985, Parts II and III; Garon, 1987; Levine, 1958, ch. 3; Evans, 1970; Okayama, 1983).

In the late nineteenth century, Japan, like the United States, had skilled workers, often employed as internal subcontractors, who exercised considerable control over hiring, firing, and the organization of work on the shop floor. But there was one critical difference between US and Japanese shop-floor relations in this era. Japan's skilled workers did not form collective organizations that succeeded in exercising craft control on the shop floor. In the United States, the American Federation of Labour (AFL) was formed in 1886 to increase the bargaining power of craft workers as industrial enterprises themselves expanded in size and became more powerful, and as the combination of mechanization and the influx of immigrant labour threatened the craft workers' jobs. A victory such as that of the Amalgamated Association of Iron and Steel Workers over Carnegie Steel in 1889 revealed the considerable power that an AFL union could wield. Then again, the stunning and irreparable defeat that the very same union suffered at Carnegie Steel's Homestead works in 1892 showed how a powerful mass producer could ultimately get the upper hand.

The struggle over the 'right to manage' that US corporate management took up when it confronted the craft unions and created the non-union era profoundly influenced the evolution of US labour–management relations during the first half of the twentieth century and beyond (see Lazonick, 1990, chs 7 and 8). First, the 'Japanese employment system', and in particular the promise of employment security and pay increases based on seniority (Gordon, 1985, Part II). Again, on the surface, these attempts to reduce labour mobility were not very different from the employment strategies pursued by the most progressive US mass producers in the 1910s and 1920s. But because Japanese employers were not engaged in a battle to obliterate craft control and, what is the other side of the same relationship, because they were willing to develop the skills of their shop-floor workers in whatever manner could best serve the needs of production, they tied pay increases *directly* to length of service with the company as well as life-cycle needs and individual merit. Japanese management did not insist, as was the case in the United States both during and after the non-union era, on paying for the job rather than for the worker.

Developments after the Second World War

Andrew Gordon (1985, p. 350) has argued that, in the aftermath of the Second World War, with the aid of pro-union legislation promoted by the Supreme Commander of the Allied Powers (SCAP), 'Japanese workers very nearly established a labour version of the Japanese employment system: guaranteed job security, an explicitly need-based seniority wage, and a significant labour voice in the management of factory affairs.' The most radical shop-floor action of the new unions was not to control the allocation and demarcation of jobs as was the case with both the AFL and CIO unions in the United States, but to exercise 'production control': the taking over of idle factories by the workers so that they could be put into operation, create value, and enable workers to earn a living (Gordon, 1985, p. 343; see also Moore, 1983). As far as workers were concerned, it was management that was guilty of the 'restriction of output' that was keeping them unemployed.

Through SCAP containment of the union movement, including a Red Purge of 12,000 unionists (that mimicked the ouster of 900,000 alleged communists from the American CIO in 1949) and the promotion by the companies of enterprise unions that organized blue-collar workers with white-collar workers, the 'labour version' of the Japanese employment system was defeated (Gordon, 1985, ch. 10; Cusumano, 1985, ch. 3; Halberstam, 1986, Part III). Japanese management moved forward under the slogan 'recovery of management authority'. Yet, unlike the 'right to manage' movement in the United States in the 1940s (see Harris, 1982), the importance of creating a structure of labour relations that permitted the skills of the Japanese worker to be developed and utilized was never an issue.

Indeed, by forcing reluctant Japanese management to recognize enterprise unions as an alternative to independent industrial unions, Japanese workers helped to create a system that would ensure them a share in the value gains of the

enterprises for which they worked. As we have seen, only 25 to 30 per cent of the Japanese labour force have permanent employment. But virtually all the male employees of the dominant mass producers – the companies primarily responsible for Japan's penetration of world markets – have this status. Since the late 1950s the enterprise unions that represent these workers in bargaining with their particular employers have been able to capture shares of the value gains that, by adjusting variations in the companies' economic performances, reflect the abilities of their companies to pay. The union may take up any particular worker's grievances concerning promotion and transfer. But the bargaining process that resolves these grievances has not imposed the rigid work rules and job classifications that became characteristic of unionized workplaces in the United States. Hence, in contrast to their US counterparts, Japanese employers do not face worker-imposed barriers to the development of workers' skills by means of job rotation and the retraining of workers to meet the labour requirements of technological change.

Although disciplined by the presence of the enterprise union (as well as evolving labour law – Gould, 1984) to keep their promises of employment security, Japanese management remains both willing and able to place skills and authority with workers on the shop floor (Koike, 1988, ch. 4; Aoki, 1988, ch. 2). With the cooperation of the enterprise union and the collective skills of its shop-floor labour, Japanese management has also been both willing and able to remain in the forefront of changes in process technology.

V ORGANIZATION AND TECHNOLOGY ON THE JAPANESE SHOP FLOOR

During the 1980s the search for new structures of cooperative industrial relations took on fresh urgency in the United States as formerly dominant mass producers realized that they were rapidly, and perhaps irreversibly, losing their market shares to foreign competitors, and in particular to the Japanese. At the beginning of the 1980s – after a decade in which the Japanese share of the US automobile market had increased from 4.2 per cent (less than half the European share) to 22.8 per cent (well over five times the European share – Altshuler et al., 1986, p. 24), prominent US government and corporate officials still took the position that lower wages accounted for Japanese competitive advantage (see the discussion in Abernathy et al., 1983, pp. 58–9). Remuneration to Japanese automobile workers at the beginning of the 1980s was on the order of only half that paid to their US counterparts (see Abernathy et al., 1983, p. 60; Cole and Yakushiji, 1984, pp. 124–6).

Closer scrutiny revealed, however, that Japanese competitive advantage was driven by more than lower wages. Productivity estimates showed the Japanese advantage in terms of small cars produced per unit of labour to be anywhere from 1.2:1 to 2.4:1. According to the Abernathy, Clark, and Kantrow estimates (rounded off for ease of exposition), the total Japanese labour-cost advantage was about $670 in purchased components and materials (which constituted about 55 per cent of the total unit costs in the US and about 57 per cent in Japan), and another $340 in other manufacturing costs. That is, lower wages represented only about 30 per cent of Japan's unit manufacturing cost advantages. Of the $2110 in higher unit manufacturing costs, US companies recouped about $810 because of lower shipping, sales and administration costs (Abernathy et al., 1983, p. 61; Cole and Yakushiji, 1984, pp. 124–6). But the salient point is that, whatever the wage advantages of the Japanese automobile producers, they were clearly superior to their US competitors in the creation of value on the shop floor.

The argument that Japan's prime competitive advantage was lower wages justified the adaptive (as distinct from innovative) response of US producers to the competitive challenge by relocating in areas where they would have access to cheaper, non-union labour. But, as the Japanese continued to make inroads into the US market, despite 'voluntary export restraints' that began in 1981 – and as more and more observers from U.S. industry and academia trooped over to Japan to see just what the 'miracle' was all about – Americans began to recognize Japanese manufacturing superiority, not only in automobiles, but also in consumer electronics, electrical machinery, semiconductors and steel. It became clear, moreover, that Japanese value-creating capabilities derived not only from the possession of superior product design and process technology, but also, and perhaps even more fundamentally, from the ways in which dominant Japanese manufacturing enterprises organized their productive activities and, in particular, developed and utilized skills on the shop floor.

Visitors to Japanese factories observed, and began to write about, Japan's use of just-in-time inventory systems (JIT), shop-floor quality control (QC), and flexible manufacturing systems (FMS). In these workplaces, the creation of value requires that shop-floor workers not only have more and better skills than has been traditional in the United States but also that they have degrees of authority and responsibility to plan and coordinate the flow of work that, since the late nineteenth century, have been denied to most US workers. Japanese shop-floor workers have responsibility, and the necessary skills, for ensuring the quality as well as the quantity of the manufactured goods that they produce (see Cusumano, 1985; Jacobson and Hillkirk, 1986, ch. 7; see also Ohno, 1982).

Flexible manufacturing systems permit frequent variations in the characteristics of products manufactured in a given workplace. In contrast to the traditional mode of transforming high fixed costs into low unit costs by manufacturing large

volumes of a standardized product, with FMS high levels of capacity utilization, and hence economies of 'scope', can be achieved by serving various smaller segments of a product market during a given time period. Critical to the success of FMS are rapid set-up times in changing equipment from one relatively short production run to the next. In Japan, the term 'single set-up' means making the necessary changes in under ten minutes. In other countries these set-ups take several hours (Cusumano, 1985, pp. 285–7). Dramatically reduced set-up times have been achieved in Japan in part through mechanization, but also by training workers to coordinate the set-up process, including the performance of preparatory tasks while machines are still producing the previous job lot.

The success of FMS requires that workers possess the skills necessary to coordinate the changes and that they supply their effort to set up the new run as quickly as possible. The history of Toyota indicates that in Japan flexible mass production originated before the advent of numerically controlled machine tools, computers, and other high-technology components of modern FMS. The prior development of shop-floor skills and the delegation of authority to workers created the human-resource basis for the introduction of flexible technologies, which in turn have enabled Japanese manufacturing companies to transform the high fixed costs of these investments in FMS into low unit costs.

The more skill that workers possess and the more effort that they supply, the greater the reduction in unit costs as the fixed costs of plant and equipment are spread over the output produced for a variety of market segments. In effect, such 'flexible mass production' lowers unit costs by means of 'shop-floor economies of scope' (for the importance and meaning of economies of scope, see Chandler, 1990, ch. 1; Lazonick, 1991, ch. 3). The use of just-in-time inventory systems is particularly cost-effective in flexible mass production. With input requirements changing from one product run to the next, long runs of 'product-specific' intermediate inputs cannot be transformed into final output as quickly, and hence the use of JIT avoids the stockpiling of many different types of supplies.

JIT originated at Toyota in 1948 not only as a cost-cutting measure but also because, facing a total market demand for all types of transportation vehicles that was a tiny fraction of the US market (one and a half day's production in 1950), a large variety of small runs was required to spread out fixed costs (Cusumano, 1985, pp. 265–6). Developed at Toyota in the 1950s and 1960s and then diffused to other Japanese mass producers in the 1970s and 1980s, JIT requires workers to coordinate the flow of work across vertically related activities, using the kanban system of worker-generated orders and withdrawals to 'pull' the necessary intermediate products where and when they are needed.

By relying on blue-collar workers to coordinate and implement JIT, management has left considerable initiative and decision-making power on the shop floor. The failure to order and deliver inventories 'just in time' can bring the whole set of downstream activities to a halt. As practised in Japan, the success of JIT assumes that management can rely on workers to cooperate in supplying effort to facilitate the smooth and speedy flow of work. In addition, the success of JIT requires that Japanese shop-floor workers possess broad-based skills, developed through systematic job rotation, that enable them to participate in the prevention of machine breakdowns, the minimization of downtime, and the repair of defective work-in-progress whenever and wherever they are needed. Japanese workers involved in JIT also have the authority to stop the flow of work if and when bottlenecks occur (Cusumano, 1985, pp. 276, 305–7, 327–8).

Japanese management would not, therefore, be able to make use of JIT if it did not trust workers' abilities to make the right decisions or if it thought that workers would use their positions of shop-floor control to delay the flow of work for the sake of on-the-job leisure. In his account of the development of JIT at Toyota in the 1950s, Cusumano (1985, p. 265) related how the 'workers checked for mistakes as they took the parts they needed, eliminating large numbers of inspectors, and corrected defectives in process, eliminating large rework or reject piles'.

In contrast, employment relations on the US model have not permitted shop-floor participation in ensuring the quantity and quality of work. Struggling as they were with unionized workers over the 'right to manage' in the decades after the Second World War, US management had little reason to believe that, if the necessary skill and authority were vested in shop-floor workers, the rejects would not pile up. Given the history of labour–management conflict in US manufacturing, US managers had good reason to believe that workers would make use of such control to restrict output, and thereby decrease the amount of effort that they had to expend to earn a given wage (see Lazonick, 1990, chs 7–9). In any case, the detailed internal job structures and promotion policies that had become basic to plant-level collective bargaining in the United States by the 1950s made it impossible for workers to develop the broad-based skills necessary to contribute to JIT.

At the same time, however, the experience of Japanese transplants abroad suggests that, given the appropriate employment environment, many of the basic features of the Japanese model of employment relations can be adopted with success outside Japan (for Japanese transplants in the United States, see Fucini and Fucini, 1990; Florida and Kenney, 1991; in the UK, see Oliver and Wilkinson, 1988). The appropriate employment environment is one in which, first and foremost, a company is able and willing to make realistic promises to its shop-floor employees that they are permanent members of the organization. To provide such realistic promises, the company must already be dominant in its industry and must have demonstrated that it has been willing and able to make the commitment of permanent employment to its shop-floor employees in the past. In the ACCs of the West, there are many companies that have sufficient

market dominance to make permanent employment a realistic possibility for shop-floor workers. Indeed, as an essential element of their rise to dominance, these companies have invariably offered something akin to permanent employment to their managerial employees. But, especially in the UK and the United States, these long-term commitments have generally not been extended to 'hourly-rated' workers on the shop floor. Once entrenched, such a legacy of exclusion is difficult to overcome. Shop-floor workers are suspicious of the promises of management and hence are prone to use whatever power they have to reduce the amount of effort they expend for a given wage. In turn, management is reluctant to make significant investments in the skills of workers for fear that the possession of such capabilities will increase the power of workers to control the relation between effort and pay.

Enhanced capabilities by shop-floor workers are critical for the successful use of not only JIT but also QC. When defective inputs appear using JIT, throughput cannot be maintained by drawing replacements from a buffer stock; there is none. But the very involvement of shop-floor workers in the coordination of JIT puts them in the position to engage in quality control. They can inspect work-in-progress while they coordinate the flow of work. Quality control can be made a line rather than a staff function. As operated in Japan, QC does not require a large quality-control bureaucracy within the managerial structure (Cusumano, 1985, pp. 265, 293, 328; see also Hayashi, 1983). For QC to occur on the shop floor requires, however, that workers have the skills to determine when an intermediate product is defective. The Japanese have developed relatively simple statistical control techniques that can be used and applied by shop-floor workers in contrast to the much more complicated techniques generally used in the United States that can only be understood and applied by highly trained engineers (Cusumano, 1985, pp. 320–21). In 1962 Japanese mass producers began to establish QC circles – groups of workers meeting together to discuss quality control problems – to promote, in Michael Cusumano's words, 'the shift of QC and inspection responsibilities to the shop floor and the improvement of company methods for personnel administration and worker training' (Cusumano 1985, p. 333).

The basic QC concepts originated in the United States, dating back some sixty years to a book written by a Bell Laboratories engineer, W.A. Shewhart (1931). In the 1950s, a small number of Americans, most notably Armand V. Feigenbaum, W. Edwards Deming, and J.M. Juran, brought the QC concepts to Japan. In 1956 Feigenbaum wrote in a *Harvard Business Review* article entitled 'Total Quality Control' that 'in organizing a modern quality control function the first principle to recognize is that quality control is everybody's job'. From his perspective as head of quality control at General Electric, Feigenbaum went on to say:

> The simple fact of the matter is that the marketing man is in the best position to evaluate adequately customer's quality preferences; the design engineer is the only man who can effectively establish specification quality levels; the shop supervisor is *the individual who can best concentrate on the building of quality* [my emphasis]. Total quality control programs therefore require as a first step, top management's re-emphasis on the responsibility and accountability of *all* [his emphasis] company employees in new design control, incoming material control, product control, and special process studies. (Feigenbaum, 1956, p. 98; see also Cusumano, 1985, pp. 324–5)

For Feigenbaum, as for most other managers of US mass-production enterprises in the decades after the Second World War, 'all company employees' did *not* include shop-floor workers. Whatever the seniority rights that the unions had foisted on management, US managers did not consider hourly-rated shop-floor workers to be members of the corporation. Hence for purposes of making 'quality control everybody's job' (as well as for virtually all other activities requiring the integration of conception and execution), 'everybody' went no further down the organizational hierarchy than the first-line supervisor – that is, those employees who were part of the managerial structure. As in the case of JIT, so too with QC: US management was not about to grant workers skills and authority that they might use to exercise control over the flow of work.

In 1981 Kaoru Ishikawa, a leader of the QC movement in Japan, explained why firms in his country had been successful in introducing QC on the shop floor whereas US firms had made QC a managerial function. As described by Cusumano, every reason that Ishikawa gave pointed to an organizational segmentation between management and the blue-collar workforce in the United States that did not exist in Japan.

> Most important, he believed, was Japan's weak tradition of specialization in industry. Japanese companies never felt comfortable with the Taylor system of creating a rigid set of rules for job routines to distinguish responsibilities among workers and between labor and management. The absence in Japan, after the mid-1950s, of powerful industrial unions, which enforced job classifications in the United States, also allowed managers to rotate employees freely and to assign them multiple tasks. Furthermore, the 'vertical' character of personal relationships in Japanese society, reproduced in companies, made it seem natural for managers to make QC primarily a 'line' rather than a 'staff' function, and to extend the responsibility to maintain quality to the factory level while reducing the roles of staff specialists. (Cusumano, 1985)

Ishikawa went on to add that Japan's superior educational system made it possible to teach statistical control methods to workers, and that the practice of lifetime employment gave the firm an interest in investing in the worker, while secure employment and the Japanese seniority-based pay system made it easier for the worker to identify with the goals of the enterprise (Cusumano, 1985, p. 331).

In sum, like FMS and JIT, QC as applied in Japan requires that shop-floor workers possess a high degree of skill and puts them in positions of consider-

able authority and responsibility to coordinate the flow of work. Why have Japanese manufacturers been more successful in developing and utilizing these work innovations than their American competitors? It may well be that Japanese workers have different 'utility functions' than their American counterparts, and hence are willing to supply more effort for a given amount of pay, even though their skill endowments and their related responsibilities in the production process provide them with more power than workers in the US to control the pace of work. If so, I would argue that these effort–pay preferences are not simply or even primarily the products of a distinctive Japanese culture but have been greatly influenced by the social relations of the workplace that have evolved in Japan over the past century. The history of particular employment environments matters because the evolution of social relations of production plays a role in shaping the behaviour – or culture – that workers manifest at a point in time. In turn, the existence of a culture that has evolved on the basis of a particular employment environment makes it difficult, if not impossible, to alter the social relations of production that have characterized the past – even when what worked in the past is no longer suitable for creating value in the present (see Lazonick, 1990, chs 6–10, and 1991, chs 1–3).

In participating in the value-creation process, Japanese workers are involved in structures of social relations that provide them with incentives to cooperate in achieving high rates of throughput without sacrificing quality (see Aoki, 1988). It is indeed the expectation of such cooperation that gives Japanese management the incentive to invest in both human skills and effort-saving machines as well as to delegate considerable authority and responsibility for the coordination of work to employees on the shop floor.

As I have already argued, since the late nineteenth century, the managers of US companies engaged in mass production have been concerned with taking skills and authority *off* the shop floor to deprive workers of the power to control the pace of work. It would require a dramatic restructuring of labour relations in the US to give US managers the confidence that shop-floor workers would use their skills and authority inherent in Japanese practices to augment the managerial surplus rather than restrict output.

Shop-floor skills and worker attitudes required to create value using flexible mass production do not appear just because a company has invested in flexible machine technologies (see Shaiken et al., 1986; see also Shaiken, 1984). US companies that invest in FMS do not take advantage of the potential complementarity between programmable technology and shop-floor skills. On the contrary, management tries to use the new technologies in ways that increase its control over the flow of work (see Noble, 1979 and 1984). The transformation of labour–management relations so that shop-floor workers have an interest in using their skills to enhance productivity rather than restrict output constitutes a precondition for the effective utilization of these technologies in today's international competition.

VI COOPERATION AND ECONOMIC GROWTH

The rise of Japanese industry to international dominance has rendered obsolete the structure of shop-floor employment relations that characterized US industry during its era of hegemony. Unlike Japanese enterprises (although with a few exceptions already noted), US industrial enterprises had never made long-term employment *commitments* (as distinct from implicit promises) to their shop-floor workers. Inherent in the insistence by US managers of their 'right to manage' the shop floor was the ideology that, at any time and for any job, any individual shop-floor worker was dispensable – paid by the 'hour' for the job at hand and no more. In terms of workers' skills, this managerial ideology could claim some relevance. Intent on taking skills off the shop floor where workers might use them to control the pace of work, US managerial enterprises had not made significant investments in the skills of shop-floor workers, thus making it unnecessary for management to look on any particular shop-floor worker as one of the company's valued assets. But in terms of workers' *efforts*, managerial ideology was much less well founded. In practice, to gain the cooperation of shop-floor workers in maintaining the rapid and steady flow of work so essential to achieving low unit costs, management had to offer them a measure of employment security and a share (however indirect) in the prosperity of the enterprise (see Lazonick, 1990).

Before the Great Depression, some of the more farsighted industrial managers had systematized their personnel policies to provide hard-working shop-floor workers with realistic promises of economic security. When, during the Great Depression, the promises were not kept, workers took the matter of economic security into their own hands. Once the major industrial corporations had recognized the new mass-production unions, it was not managerial personnel policy but workers' own collective organizations, emphasizing as they did seniority rights, that would provide workers with the employment security and economic gains critical for eliciting their cooperation in the workplace. In effect, managers of most of the great US industrial corporations came to rely on independent union organizations to ensure the long-term relation between these workers and the company.

This institutional arrangement remained viable as long as the US industrial corporations continued to dominate their markets. But when, in the 1960s and 1970s, the corporations stumbled in the face of international competition, and sought to roll back the bargaining gains that workers had made over the previous

decades, the adversarial character of US labour–management relations broke through the corporate veneer. In industries such as steel and automobiles that were dominated by adaptive (as distinct from innovative) oligopolists, the costs of the accord with labour that had been struck in the 1940s began to outstrip productivity gains. As long as there were no serious foreign competitors and no significant domestic price competition, US corporations were able to pass off higher labour costs to consumers in the form of higher prices. By the late 1960s, however, the limits of the adaptive strategy had been reached. With powerful international competitors on the scene, domestic inflation only served to erode US international competitive advantage.

The US competitiveness problem was not only higher wages but also lagging productivity growth. High wages, tight labour markets, and the availability of unemployment benefits – not to mention the restiveness of younger blue-collar workers, both black and white, in the wake of the civil rights and antiwar movements – had weakened managerial control over shop-floor workers. Alienated in any case by the routine nature of their work and without any formal power to influence the nature of the work environment, blue-collar workers sought to control their expenditure of effort by unauthorized work stoppages, work to rule and absenteeism, all of which had adverse consequences for productivity.

In the 1970s many observers of US industry pointed to the alienated shop-floor worker, confined to routine and repetitive tasks requiring little skill development, as an explanation of the slowdown in the growth of labour productivity in US manufacturing that had begun in the mid-1960s. In many plants around the country, companies initiated experiments in job enlargement and job enrichment to try to enhance 'the quality of work life' (as it was called) in order to elicit more effort from workers. Although the initial impacts of these programmes were generally positive, many of the experiments in the early 1970s were cut short when the workers whose jobs had been enriched and enlarged began questioning traditional managerial prerogatives. In the long run, attempts such as these at piecemeal transformation of the organizational structure may well have reduced rather than enhanced organizational capability by creating expectations for more meaningful work which in the end were not fulfilled (Marglin, 1979; Walton, 1985).

As stated earlier, in the 1980s Japanese success in taking market share away from once-dominant US mass producers made it clear that the prime source of Japanese competitive advantage was not low wages (as many Americans had chosen to believe in the 1970s) but superior organizational capabilities. As a result, many US industrial managers also came to recognize that the major difference between the internal organization of US and Japanese enterprises was the extent to which Japanese managers *developed* skills on the shop floor and delegated authority to blue-collar workers to use those skills to ensure a rapid flow of high-quality work. As a result of the Japanese challenge, US industrial managers began to realize that enhancing 'the quality of work life' was not just a means of eliciting effort from workers (as had been the case in the failed experiments of the 1970s); rather industrial managers came to recognize that upgrading the skills of the shop-floor labour force was an end in itself because it augmented the human resource assets that the company 'possessed'. To maintain the rapid flow of high-quality work using new automated manufacturing technologies requires shop-floor workers with the cognitive capabilities to ensure that the machines work properly with a minimum of downtime. US mass-production industries could no longer compete using workers whose own mechanical motions merely complemented those of the machine, as had previously been the case. The effective use of the new technologies requires shop-floor workers who can ensure the quality, as well as the quantity, of work.

As a precondition for technology-specific training for workers under the auspices of the employing enterprise itself, the large-scale adoption of new 'flexible' technologies requires a supply of more highly educated shop-floor workers than US industry has used or has had available in the past. To generate a large supply of workers capable of acquiring the requisite training both within and outside the manufacturing enterprise, institutional rigidities in the US educational system must be confronted. When, in the early twentieth century, vocational schooling entered US secondary education to track youths away from college and into the blue-collar labour force, the resultant segmentation of the labour force was consistent with the social division of labour between managers and workers in the world of work (see Bowles and Gintis, 1976). But in recent decades the same educational system has lost touch with the changing human-resource needs of an industrial era in which the potential for automation has created a new role for shop-floor workers in monitoring the quality, as well as ensuring the quantity, of work.

What is now needed is an educational system that rejects the conception of the worker as a mere appendage of the machine, and prepares future workers for active involvement in speeding the flow of work while maintaining its quality in the 'flexible' factory. There is no point, however, in building new organizational structures and educational systems if those who run the largest industrial corporations eschew innovative investment strategies that can make use of skilled workers who are encouraged to exercise initiative on the shop floor. Yet prevailing organizational structures may be inhibiting the adoption of innovative investment strategies. Existing organizational structures within the US manufacturing enterprises reflect a century-long managerial obsession with taking skills off the shop floor. It would appear that even as we enter the 1990s many if not most US managers are reluctant to develop skills on the shop floor for fear of losing control over the flow of work to an adversarial labour force.

There is no doubt that the dramatic rise of Japanese industry has rendered obsolete the sharp gulf between shop-floor workers and management that characterized leading capitalist competitors in the past (for the transformation of employment relations in different national contexts, see Boyer, Chapter 1, this volume). During the twentieth century, the organization of industry in the most successful capitalist economy has become increasingly collective, requiring planned coordination and cooperative relations among individuals, enterprises and states involved in the development and utilization of productive resources (see Lazonick, 1991). More than any other capitalist economy in history, the Japanese have elaborated the model of collective capitalism, in large part by constructing cooperative employment relations that include workers on the shop floor. Japanese employers have invested in shop-floor productive capabilities, including the skills of shop-floor workers. In turn, Japanese shop-floor workers have provided the high levels of effort that are required to transform these investments into high-quality products at low unit costs. As a result, both employers and employees have reaped the material benefits of capitalist economic growth.

Once the dynamic between cooperation and growth has been set in motion, success has bred success. Cooperative employment relations have contributed to the growth of the Japanese economy, and the growth of the Japanese economy has sustained the viability of cooperative employment relations. For those business organizations and national economies that want to meet the Japanese challenge, the task will not be easy but the message is clear. Cooperative employment relations must replace the conflictual relations of the past.

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