

Working time and the Japanese challenge: the search for a European answer

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'Time is our raw material. The whole Japanese economy is founded on overtime'
(A Japanese trade union representative)

'We will not lose the war because of annual working hours'
(A manager at Mercedes)¹

1. Introduction

In the 1960s and 1970s, changes to shift systems in large factories were agreed to without attracting any great publicity. This has changed, and the media now regard as newsworthy the introduction of a night shift at Opel's Bochum plant or of Saturday working at BMW in Regensburg. This attention is increasingly going beyond national boundaries. The new working time patterns mentioned above were reported just as widely in France and England as in Germany. Conversely, the German public is becoming more and more interested in the working and operating hours of its foreign competitors, particularly Japan.

We have investigated the evolution of working time and operating hours in the European and Japanese automotive industries. We conducted interviews with managers, works council members and trade unions at 26 of the 55 largest West European body and assembly plants. In Japan, interviews at Toyota, Nissan and Honda, together with contacts in the Japanese Automobile Workers Union, provided us with information on all the Japanese car producers. We concentrated our inquiries on working time and operating hours in assembly plants, where technology and work organisation are comparable the world over. This approach also enabled us to make a quantitative comparison of operating hours, an exercise seldom carried out elsewhere.²

Comparisons of working time and operating hours of the kind we have carried out can readily be used to 'explain' differences in performance between national economies. Each year, workers in the Japanese automotive industry man their production lines and machines for 250 to 800 hours per person more than their

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¹ Hans-Böckler-Stiftung *et al.* (eds), 1992, p. 108.

² The results of our research are presented in greater detail in Lehnndorff and Bosch, (1993) and Anxo *et al.* (1995).

German counterparts; each year, Toyota utilises its production capacity (plant operating hours) for about 900 hours more than Volkswagen. The competitive advantage that Japanese automotive companies gain from this would appear to require little further comment. The policy consequence to be drawn from this seems equally obvious: the Germans (or the Europeans) must work longer hours.

In fact, the reasons for the success of Japanese industry are more complex. Concentrating on differences in working and social conditions is an easy way of providing simplistic answers and finding scapegoats for the crisis in the European automotive industry, but is a diversion from more fundamental managerial tasks where the key to future success lies. As is most impressively demonstrated in the lean production study by Womack *et al.* (1990), these tasks include, above all, the reorganisation of the design and manufacturing processes and of supplier relationships as well as more extensive utilisation of workers' capacities.

We are fully aware of the risk that our comparisons of working time and operating hours could be used to narrow perspective and provide mistaken answers to the challenges of the future. For this reason, it is our intention in what follows not merely to present the differences in working time and operating hours between the Japanese and European automotive industries (Section 2), but also to outline their effects on costs and competitiveness (Section 3). Our aim is to clarify the implications for the utilisation of human labour inherent in the general concept of 'Toyotism' that lie behind these figures and that can be countered only with an equally convincing, all-embracing alternative (Section 4). By putting forward the notion of an 'European' response, we seek to counter the prevailing tendency in Europe to ignore the social implications of lean production in the drive to emulate the Japanese 'productivity miracle'. New systems of work organisation require new working time arrangements based on the notion of an empowered workforce (Section 5).

2. Differing working times and operating hours in the Japanese and European automotive industries

2.1. Divergence in Europe—standardisation in Japan

Until a few years ago, car plants in both Europe and Japan operated a two-shift system. Moreover, there was virtually no doubt that two-shift operation was the most efficient system for the automotive industry. Firstly, it guaranteed a satisfactorily high level of capacity utilisation (standard operating hours of 80 hours with a 40-hour working week), and, secondly, it was valued for its flexibility, since it left sufficient time between or after shifts for both maintenance and cleaning and for overtime in the event of fluctuating demand. Thirdly, it was simple and readily understandable for workers and managers alike; as a result, it was relatively inexpensive to organise, and its transparency facilitated the task of monitoring employees' working time that was so important with rigid Taylorist time structures. Such widely shared assumptions no longer exist.

In the course of the 1980s, time structures in European automotive plants began increasingly to diverge. We are currently witnessing a widespread search for new time arrangements. The reasons for this transitional phase are numerous and varied.

Table 1. *Fixed assets per employee (Germany; 1990 prices)*

Industry	1990 (DM)	Increase per year (%)		
		1973–1980	1980–1986	1986–1990
Automotive	154,000	3.2	3.2	6.8
Chemical	248,000	7.5	0.4	1.1
Steel	269,000	4.7	2.7	0.3
Machine tool	93,000	4.5	1.5	0.6
Electrical	98,000	6.3	3.9	3.1
Mfg. (total)	136,000	4.9	2.2	1.4

Source: DIW, Beiträge zur Strukturforchung Vol. 136, 1992.

As a result of major investment drives, capital intensity rose greatly (Table 1), making it necessary to extend plant utilisation times in order to achieve a satisfactory rate of return to capital. In such a situation, most firms were no longer prepared, as they had been in the 1950s and 1960s, to accept corresponding reductions in operating hours when individual working time was reduced. The boom in demand in the late 1980s, which exceeded all expectations and could be dealt with in some plants only by extending operating hours, proved to be a decisive impetus for reviewing shift systems. Finally, the increasingly intense competition from the Japanese automotive industry focused attention on operating hours, extension of which is all too often depicted as a decisive source of cost savings—a simplistic, excessively ‘technicist’ response, as we shall see.

These developments led to considerable differentiation within the two-shift system. In many plants, this classic shift pattern was modified in order to maintain operating hours despite cuts in working time. In addition, a number of plants went over to three-shift operation or introduced so-called extended shifts, so that by 1992 18% of all cars produced in EC member states were already being assembled in plants with new shift systems. The extent of this transformation becomes even clearer when the dynamic of change is taken into account. European and American car manufacturers are currently building, or are already operating, a number of plants on greenfield sites in Europe, all of which are designed for longer operating hours than was previously the norm.

Thus, standard operating hours in European automotive plants, which until a few years ago differed only slightly from each other, now range from 3300 to 5300 hours per year. In addition, operating hours have also changed within plants: a number of European plants now leave machines running during breaks.

In Japan, on the other hand, standard operating hours in all car plants are virtually identical at around 4000 hours per year. Japanese car manufacturers organise their operating hours in very much the same way. All plants still operate a two-shift system. Within individual plants, the core departments—press shops, body welding shops, paint shops and final assembly—almost always work to the same schedules. Increasing capacity by keeping machines running during breaks is not considered desirable because it requires breaking up work teams through the use of stand-ins.

Homogeneity and simplicity are the basis for a refined Taylorist time regime. Every worker at Toyota knows whether he belongs to the 'yellow' or 'white' shift and can use the firm's annual work schedule to find out shift and break times, holidays and shift changeover dates.

The Japanese automotive industry was also faced with a boom in demand and rising capital intensity in the 1980s. However, firms in the industry apparently did not feel the need to experiment with new shift systems. On the one hand, the length of standard working times for individuals was not generating any pressure to alter the organisation of operating hours, since they remained unchanged. Moreover, by extensive use of overtime, Japanese car manufacturers were able to increase capacity by about 20% of the annual figure, i.e., from 4000 to 4800 hours. With the exception of Honda,¹ they were assisted in this by their practice of using the day and night shift system in common use in the English-speaking world, which, unlike the Continental European alternating late and early shift system, makes it possible to add extra production time to the end of each shift.

In Japan, therefore, any extension of operating hours depends not on further decoupling of working time and operating hours but rather on a close fit between the two. In other words, any extension of operating hours requires an increase in individual working time (Fig. 1). The fact that labour shortages and the boom in demand for cars were not used in Japan to make a significant improvement in working conditions can be explained only by the very specific industrial relations system that prevails in Japan. Company unions with very close ties to their respective companies are able to exert only very limited pressure for cuts in working time, but do guarantee firms an almost unlimited supply of overtime.

The key role of industrial relations in explaining working time arrangements is confirmed both by the difference between Europe and Japan and by comparisons within Europe itself. In the past 20 years, trade unions in the countries we have investigated have been able to push through working time reductions at national, plant and industry level. Legislation, collective agreements and the disapproval of some trade unions and employees mean there are limits on any potential increase in overtime that have to be respected by all firms in Europe, even Japanese ones. In the medium to long term, therefore, the only way of extending operating hours is to introduce new shift systems. Despite the fact that this is a characteristic common to all the large car producing countries in Europe, there are striking differences in the level of working time and the organisation of operating hours. These are due both to country-specific institutions, legislation and traditions and to company- and plant-specific strategies, power relationships and procedures.

The fact that operating hours in Europe can be extended only by further decoupling them from individual working time has positive employment effects. In

¹ Honda works far fewer hours of overtime than the other Japanese car manufacturers, relying instead on intensification of the work process. Honda has the shortest task times in Japan. Honda uses the Continental European early/late shift system that does not allow any overtime to be worked between shifts. As a result, however, Honda had less reserve capacity during the boom. This was perhaps the reason why Honda was the first Japanese car manufacturer to take the risk of setting up its own production plants in the USA. Because of its lower level of overtime and because virtually all holiday entitlement is actually taken, the Honda system of time organisation is transferable to Europe, unlike those of the other Japanese manufacturers (cf. Lehndorff and Bosch 1993, chapter 3).

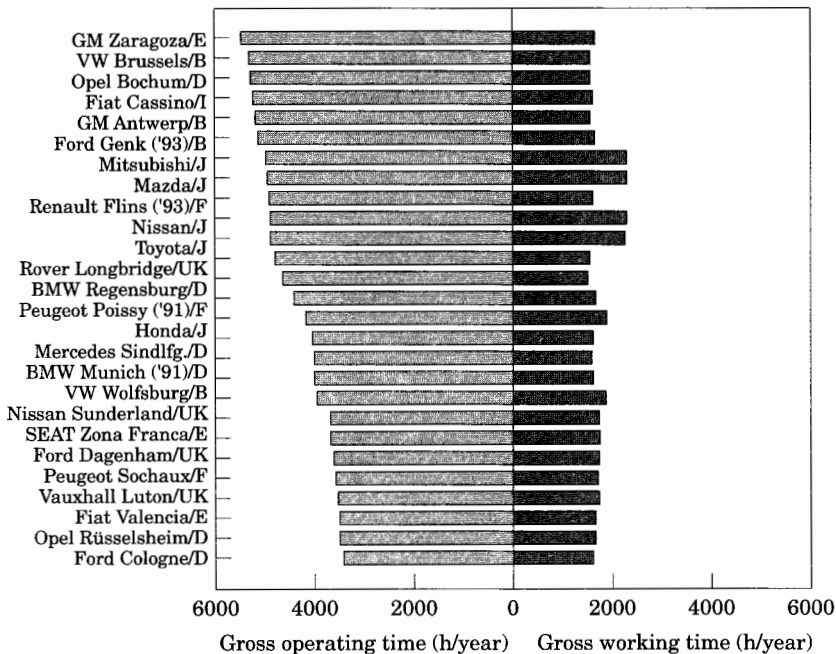


Fig. 1. *The decoupling and coupling of operating hours and working time in European and Japanese car plants in 1990.*

Europe, three shift crews are required to achieve operating hours in excess of 4000 per year, while in Japan 4900 hours can be achieved with just two shift crews. Thus, at the cost of completely exhausting their workers, Japanese manufacturers are able to make their production processes extremely flexible.

In periods of economic downturn, as happened in 1992/93, they are able to cut back on overtime and reduce capacity without the need for redundancies. In Europe, on the other hand, the considerably more humane policy of reducing and limiting working hours in production departments, which helps to improve working conditions at plant level and to secure jobs at the level of the wider economy, has the disadvantage for firms of offering less flexibility. As a result, European firms need generous regulations on short-time working as an important source of flexibility, so that they do not lose their core workforces during periods of recession. If the number of workers is reduced in such periods, it may be that a whole shift crew recruited during the upturn in order to extend operating hours is made redundant again (as happened in 1993 at Opel Bochum, Peugeot Poissy and SEAT Pamplona).

2.2. Working time and operating hours in Japan and Europe: the structure of difference

2.2.1. Working time. In the car plants operated by the major motor manufacturers in Japan and Europe, gross working hours vary widely (Table 2). In 1990, there was a gap of around 850 hours between the Japanese car manufacturer with the longest working time (Mazda) and BMW's Regensburg plant, the European car plant with

Table 2. *Gross working hours per worker in European and Japanese car plants (1990)*

Plant	Country	Working hours
Mazda	J	2392
Mitsubishi	J	2364
Nissan	J	2357
Toyota	J	2323
Honda	J	1938
Nissan Sunderland	GB	1911
Ford Dagenham	GB	1786
GM Saragossa	E	1773
Peugeot Sochaux	F	1771
SEAT Zona Franca	E	1768
Ford Valencia	E	1751
Vauxhall Luton	GB	1749
Peugeot Poissy	F	1725
Ford Genk (from 1993)	B	1702
Opel Rüsselheim	D	1690
Fiat Cassino	I	1680
Fiat Mirafiori	I	1680
Renault Flins (from 1993)	F	1658
VW Wolfsburg	D	1648
Mercedes Sindelfingen	D	1648
BMW Munich	D	1630
Opel Bochum	D	1628
Ford Cologne	D	1628
VW Brussels	B	1625
GM Antwerp	B	1624
Rover Longbridge	GB	1585
BMW Regensburg	D	1548

Source: Interviews, own calculations.

the shortest working time. And even for workers at the European 'leader', Nissan's UK plant, gross working hours were no higher than at Honda, the 'back marker' in Japan.¹

This gap can be explained by differences in the following three components of working time:

(a) Contractual weekly working time in the Japanese automotive industry is still 40 hours; in European car plants, weekly working time was cut during the 1980s from 39 to 35 hours.

Contractual annual holiday entitlement is the same in Italian and Belgian car plants as it is in Japanese plants (four weeks); in France, Spain and Great Britain, however, it is about a week more and in Germany two weeks more. The number of

¹ Our comparisons are based on standard working hours. They are the sum of weekly working time (number of contractual hours' work excluding meal breaks), holiday entitlement and the number of public or collectively agreed holidays. If overtime is included, the result is defined as gross working time; deducting breaks from this latter figure gives net working time. In order to make a realistic comparison between Japan and Europe, we use gross working time, since Japanese car producers make systematic use of high levels of overtime.

Table 3. *Collectively agreed standard working hours in European and Japanese car plants (1990)*

Plant	Country	Working hours
Nissan	J	1808
Toyota	J	1808
Honda	J	1800
Mazda	J	1800
Mitsubishi	J	1800
Ford Dagenham	GB	1778
Nissan Sunderland	GB	1778
SEAT Zona Franca	E	1768
Peugeot Poissy	F	1725
Peugeot Sochaux	F	1725
GM Saragossa	E	1724
Ford Valencia	E	1720
Ford Genk (from 1993)	B	1702
Vauxhall Luton	GB	1688
Fiat Cassino	I	1665
Fiat Mirafiori	I	1665
Renault Flins (from 1993)	F	1658
Opel Rüsselheim	D	1635
BMW Munich	D	1630
Ford Cologne	D	1628
Opel Bochum	D	1628
VW Brussels	B	1625
GM Antwerp	B	1624
Mercedes Sindelfingen	D	1624
VW Wolfsburg	D	1616
Rover Longbridge	GB	1585
BMW Regensburg	D	1548

Source: Interviews, own calculations.

public or collectively agreed holidays is considerably higher in Japan than in Europe. In sum, contractual working time in Japan is between 20 and 260 hours per year higher than in Europe. The differences between European countries in this respect are greater than that between Europe and Japan (Table 3).

(b) In the Japanese automotive industry, operating hours are constantly extended by very high levels of overtime (Table 4). Overtime worked in the production departments of European car plants, even during periods of peak demand, does not come anywhere near the general overtime level in Japan of more than 500 hours per head per year in some instances. Even Nissan, in its expanding British 'transplant', has not pushed up overtime to anything like the level commonly seen in Japan (133 hours in 1991).

(c) It is not common practice for workers in Japanese car plants to take their full holiday entitlement. Moreover, workers keep a considerable proportion of their annual entitlement in reserve in case they should fall sick. If they do not require it for this purpose, any remaining entitlement automatically lapses at the end of the

Table 4. *Collective overtime worked by assembly workers in European and Japanese car plants (per head in 1990)*

Plant	Country	Overtime/year
Mitsubishi	J	513
Mazda	J	496
Nissan	J	461
Toyota	J	457
Nissan Sunderland	GB	133 (in 1991)
Honda	J	112
Peugeot Poissy	F	77
Vauxhall Luton	GB	61
Opel Rüsselheim	D	54
GM Saragossa	E	49
Peugeot Sochaux	F	46
VW Wolfsburg	D	32
Ford Valencia	E	31
Renault Flins	F	30
Mercedes Sindelfingen	D	24
SEAT Zona Franca	E	20 (with time off in lieu)
Ford Saarlouis	D	15
Opel Bochum	D	15
Fiat	I	15
Ford Genk	B	15 (with time off in lieu)
Ford Dagenham	GB	8
BMW Regensburg	D	—
VW Brussels	B	—
GM Antwerp	B	—

Source: Interviews, own calculations.

year.¹ In any event, the 26 to 96 hours of holiday entitlement not taken (figures for Honda and Mazda respectively) represent a volume of 3 to 12 standard working days per year.

If breaks are included in the comparison of working time, i.e., if net working times are considered, then the difference in working time between Japan and some (not all) European countries or plants becomes even greater. In Japan, paid breaks (over and above meal breaks) total on average about 20 minutes, compared with between 30 and 35 minutes in most German and British plants. Calculated over the year, the difference between Europe and Japan amounts on average to between 50 and 80 hours, and in one extreme case to 150 hours. This ignores the fact that, in Japan, breaks are often used for team meetings and that employees often arrive 10 minutes before a shift begins in order to take part in 'voluntary' gymnastics, during which foremen check attendance and plan personnel deployment.

In sum, it can be said that differences in contractual working time offer only a very partial explanation of the difference in hours worked between Japan and Europe. Of much greater significance is the fact that contractual working time in the Japanese automotive industry is merely a theoretical figure. The actual gross working time of

¹ For this reason, absence through illness is usually recorded in personnel statistics as 'holiday'.

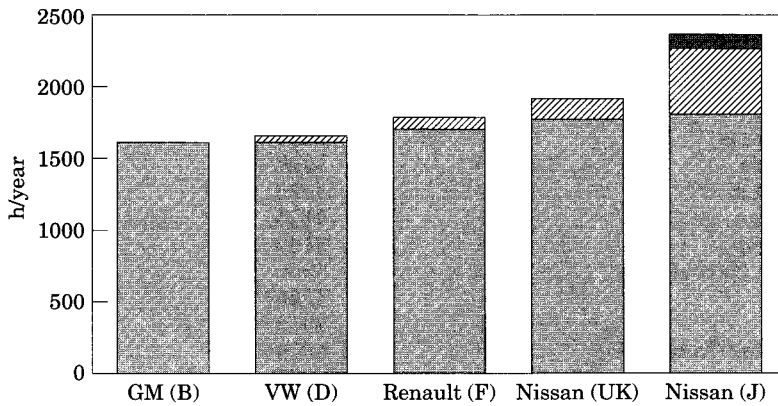


Fig. 2. Breakdown of working time.

Key: ■ Contractual WT; ▨ Overtime; ■ Holidays not claimed.

assembly workers in Japanese car plants is not 40 hours per week but, as a result of the high level of overtime worked, 45 to 50 hours per week. In addition, much unpaid work is done during breaks and as a result of the failure to take the full holiday entitlement (Fig. 2). Thus the fundamental characteristic of the working time system in Japanese car plants is the virtually unrestricted access managers enjoy to their employees' time, irrespective of the official, collectively agreed norm.

2.2.2. Operating hours. For operating hours, the gap between Japanese and European automotive plants is less than that for working time. Through the introduction of new shift systems that have further decoupled individual working time from operating hours, some European plants have even been able to extend their operating hours beyond the peak levels recorded in Japan.

Nevertheless, in those plants that operate a two-shift system, the gap is quite evident. Gross operating hours (i.e., standard working time plus overtime) in most European plants operating a two-shift system are considerably lower than 4000 hours per year, while many Japanese plants, which also operate a two-shift system, achieve more than 4800 hours. Such high operating hours are achieved in Europe only in plants with new shift systems, for which three shift crews are required (Table 5).

Which components of operating hours are responsible for this difference between plants operating two-shift systems?

(a) Differences in the contractual working week are important in explaining the gap in operating hours only in those plants in which the working time reduction has been implemented by cutting daily working time on all or some days of the week. In Ford's German plant, for example, the reduction in weekly working time from 40 to 37 hours led to a cut in standard annual operating hours of around 135 hours. However, most plants have reduced the length of the working week only slightly as a result of the reduction in individual working time, or have even left it at 40 hours. Here, the cut in individual working time has been implemented by offering workers extra shifts off, thus leaving operating hours unchanged.

Table 5. *Gross operating hours and no. of shift crews in European and Japanese car plants (1990)*

Plant	Country	Operating hours	Shift crews
GM Saragossa	E	5434	3
VW Brussels	B	5267	3
Opel Bochum	D	5220	3
Fiat Cassino	I	5175	3
GM Antwerp	B	5140	3*
Ford Genk (from 1993)	B	5086	3
Mitsubishi	J	4946	2
Mazda	J	4912	2
Renault Flins (from 1993)	F	4874	3
Nissan	J	4858	2
Toyota	J	4850	2
Rover Longbridge	GB	4765	3
BMW Regensburg	D	4608	3*
Peugeot Poissy	F	4389	2*
Honda	J	4144	2
Mercedes Sindelfingen	D	4032	2
BMW Munich	D	4000	2*
VW Wolfsburg	D	3964	2+reduced night shift
Nissan Sunderland	GB	3931 (1991)	2
SEAT Zona Franca	E	3672	2
Ford Dagenham	GB	3666	2
Peugeot Sochaux	F	3603	2
Vauxhall Luton	GB	3565	2
Ford Valencia	E	3503	2
Fiat Mirafiori	I	3480	2
Opel Rüsselheim	D	3467	2
Ford Cologne	D	3405	2

*Two-shift systems with shift lengths between 8.5 and 10 hours and multiple teams.

Source: Interviews, own calculations.

(b) Annual production shutdowns are of greater significance. Apart from weekends, production in Japan stops only on collectively agreed holidays, of which there are between 13 and 16. Holidays can be taken on an individual basis only, and so are not combined with plant shutdowns. As a result, the number of standard operating days per year in the Japanese automotive industry is between 245 and 248. Although there are fewer public holidays in Europe (8–14), production comes to a halt in most European car plants during the annual 3–4 week shutdown, which in many cases accounts for most or even all of the employees' contractual holiday entitlement. As a result, the number of operating days in most European plants is reduced to between 227 and 234. Thus in 1990, the gap between European plants was generally between 12 and 19 days (Table 6). With 16 standard operating hours per day, the annual difference in operating hours lay in the range 192 to 304 hours.

(c) The most important component in any explanation of the considerably longer operating hours achieved in Japanese car plants is the large volume of overtime worked in Japan (Table 4). In the boom period between 1990 and 1991, the use of overtime extended gross operating hours in the two-shift system by up to 1000

Table 6. *Number of operating days in European and Japanese automotive plants (1990)*

Plant	Country	Days
General Motors Antwerp	B	257*
BMW Regensburg	D	256*
Mercedes Sindelfingen	D	249**
Nissan	J	246
Mazda	J	246
Toyota	J	246
Mitsubishi	J	245
Honda	J	245
Nissan Sunderland	GB	235
Ford Dagenham	GB	234
Ford Genk	B	234
Volkswagen Wolfsburg	D	233
BMW Munich	D	233
Opel Bochum	D	232
Renault Flins	F	231
General Motors Saragossa	E	231
Fiat Cassino	I	230
Fiat Mirafiori	I	230
Vauxhall Luton	GB	229.5
Volkswagen Brussels	B	229
Peugeot Sochaux	F	228
Rover Longbridge	GB	228
SEAT Zona Franca	E	227
Ford Cologne	D	227
Ford Valencia	E	222
Opel Rüsselheim	D	216

*Including early shift on Saturdays (0.5 operating day).

**Reduced capacity during summer because of smaller shift crews.

Source: Interviews, own calculations.

hours beyond the standard operating hours. In Europe, on the other hand, significantly fewer extra operating hours were gained by working overtime, even at the height of the boom in demand. The leader in this respect was Peugeot's Mulhouse plant, which gained 230 additional operating hours in 1989, while some GM plants gained around 100 hours in 1990. Only the British Nissan plant continuously increased the volume of overtime worked: in 1991, it achieved 265 additional operating hours, although even this lagged a considerable way behind the volume of overtime worked at the parent company's Japanese plant.

In summary, the picture is as follows (Fig. 3). Standard operating hours are higher than the European average, because the 40-hour week has been maintained and, particularly, because there are fewer and shorter shutdowns over the year. Such high standard operating hours can be maintained or achieved in European plants operating a two-shift system by not reducing the length of the working week when implementing individual working time reductions and by reducing the number of days' shutdown per year. Employees then take much of their holiday entitlement on

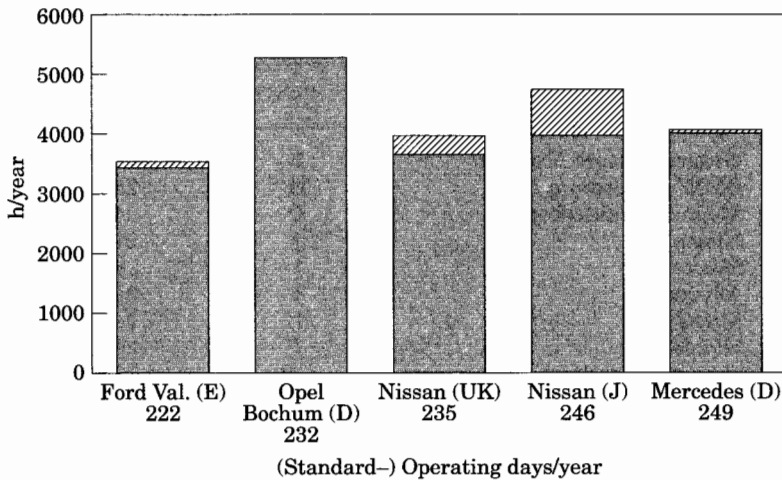


Fig. 3. Breakdown of operating time.
Key: ■ Standard OT; ▨ Overtime.

an individual basis and receive their working time reduction in the form of extra shifts off (also on an individual basis).

As a result, shift systems are becoming more complicated and causing problems for work organisation, to which we shall return later. Japanese car firms regard standard operating hours merely as a starting point, albeit a relatively high one, from which to use overtime on a massive scale. As a result, Japanese plants operating a two-shift system achieve operating hours for which three-shift systems or extended shifts are required in Europe.

3. The Japanese cost advantage: the danger of incorrect answers

Long working and operating hours give Japanese car manufacturers two immediate cost advantages over their European competitors.

(a) European manufacturers require considerably more personnel than their Japanese counterparts if they wish to attain the same level of operating hours. The extensive and permanent use of overtime in Japan makes it unnecessary to recruit a third shift crew. Furthermore, the high share of overtime in operating hours represents a significant and relatively inexpensive source of potential flexibility. In periods of recession, Japanese car plants are able to reduce operating hours by up to 20% and then, in the subsequent upturn, attain the previous level without having to engage in a process of firing and hiring workers and thereby incurring high redundancy and recruitment costs.¹

¹ In practice, however, firms are very cautious in their use of overtime, since overtime plays an important part in the pay structure of their permanent workforces. The stability of the 'company clan' (Deutschmann, 1987) is one of the central pillars of the Japanese productive system. It is in fact the foundation on which rest the vast swathes of Japanese industry characterised by precarious employment relationships, whose existence is at least as important for the cost efficiency of lean production as the sophisticated work organisation found in body and assembly plants. Thus flexibility during downturns is assured initially at the expense of those workers who do not enjoy secure employment relationships; only later do members of core workforces begin to suffer.

(b) Japanese workers are obliged to do a considerable amount of unpaid work, because they forego leave and use holiday entitlement when they fall sick. As a result, Japanese firms are able to plan their manpower requirements on the basis of an average attendance rate of 94 to 95%. In European car plants, in contrast, the absence rate due to illness is between 5 to 15%. Given the same number of operating days as in Japan, a standard holiday entitlement of five weeks in Europe reduces the attendance rate by a further 8%. At a rough estimate, therefore, the actual claiming of holiday entitlement and absence through illness, together with social policy regulations, mean that European firms have to employ at least 13–23% more workers than Japanese firms if they wish to achieve the level of annual operating hours routinely recorded in Japan.¹

The working hours that make long operating hours possible must be paid for, even in Japan, irrespective of whether those hours are worked by two or three shift crews. Moreover, Japan has now become a high-wage country, so that automotive firms are faced with considerable wages bills for their long operating hours, particularly since a significant share of their long operating hours attract overtime bonuses. Assuming equivalent rates of pay, there is little difference in the variable components of wage costs between two factories with the same operating hours but different manpower levels. The difference in wage costs is confined to the fixed components (e.g. recruitment and training costs, employers' social security contributions) that vary with size of workforce. These are crucial to Japanese firms, however, since they invest a great deal in their permanent workforces, the size of which is carefully controlled, and try to develop a high level of commitment to the company through generous welfare benefits and payment by seniority. The order of magnitude of fixed personnel costs can be judged by the fact that, according to calculations by the Japanese Ministry of Labour, it would not be in firms' interest to increase the size of their workforces instead of using overtime unless the overtime bonus was greater than 65%, or even higher in large firms.²

Thus Japanese car manufacturers are able to combine the advantage of long operating hours and correspondingly low unit capital costs with highly flexible capacity utilisation. At the same time, they make considerably more intensive use of their workforces than their European counterparts. Since the Japanese concept of management pervades the whole value added process, the same cost advantages can also be exploited in the supply industry (where they may be even greater in some cases) (Altmann, 1992, p. 27).

The results of our research confirm that European working time and social conditions have their price and help to make production costs higher than in Japan. This makes it easy to harness them in support of the usual unimaginative conservative arguments that always see favourable work and social conditions as the

¹ Since European firms do not seek to do this, most of them have reduced their operating hours by means of an annual shutdown, which covers part at least of the annual holiday entitlement. Thus the cost disadvantage from which European firms suffer leads either to higher labour costs or to a loss of operating hours and output.

² Adjusted for size of plant, the corresponding bonus rates are as follows: plants with more than 500 employees: 74.45%; plants with 100–499 employees: 61.6%; plants with 30–99 employees: 47.4% (Rodu-hakusho, 1986 White Paper on Labour, according to information given by Prof. K. Kezuka, Senshu University, Tokyo).

sole cause of competitiveness and employment problems. The cost effects of higher social security benefits are certainly not to be dismissed, but they explain only a small part of the differences in production costs between Japan and Europe. The various cost comparisons of Japanese and European car production that have been carried out in recent years basically come to similar conclusions: 'Two thirds of all the cost disadvantages suffered by German companies relative to their Japanese competitors are caused not by higher wage and materials costs but essentially by inadequacies in product design and work organisation and a less than advantageous range of manufacturing activities.'¹ In other words, the differences in wage costs that are directly attributable to differences in the length and organisation of working time are made up of social costs (and those of suppliers), which taken as a whole explain at most one-third of the cost difference between Japanese and European car manufacturers. These cost components are described by many managers in the European automotive industry as 'specific to Japan' and 'not open to direct influence'.

Those European managers who have understood that the cost advantages enjoyed by Japanese firms lie for the most part in the overall organisation of the design and manufacturing process are also unlikely to give way to the temptation to follow the conservative outlook of the current period and blame social conditions in Europe for the competitive disadvantages that burden the European automotive industry. They know that such attitudes lead only to the wrong priorities being given prominence in company decision-making. Firms would shift responsibility for the restoration of competitiveness on to the trade unions and neglect their own obligations. And frontal attacks on social benefits would hardly be a way of successfully introducing Japanese working conditions into the different cultural contexts of the various European countries. Moreover, it would be easy to destroy the willingness of trade unions, the various representative groups at plant level and employees themselves to join together in an assault on those decisive factors that are responsible for two-thirds of the cost difference. Any attempt to eliminate two-thirds of that difference will have to build on the remaining one-third.

4. Two worlds: competing time arrangements in Japan and Europe

The European debate on the significance of working time and operating hours in international competition has long been focused almost exclusively on the level of unit capital costs. It was believed that the only way of beating the opposition was through the massive use of new, computer-linked technologies that were to be operated for as many hours as possible. Human labour, regarded as a source of errors and costs, was to be eliminated as far as possible, or at least severely curbed. This 'technicist' approach, described as 'systemic rationalisation' (Altmann *et al.*,

¹ This conclusion is drawn by the head of McKinsey Deutschland, Herbert Henzler (1992, p. 27). Cf. particularly McKinsey & Co. (1989). The McKinsey analysis also provides detailed information on the extent to which the cost difference relative to Japan varies from country to country within Europe, and from car manufacturer to car manufacturer. In contrast to this, Williams *et al.* (1994, p. 135) hold that 'firms do not compete on an abstracted terrain of production where victory goes to the firm with the best manufacturing system.' But at the end of the day these authors, too, conclude (p. 236) that once the 'irreducible minimum' of 150 motor-sector build hours has been reached, 'the outcome of any contest ... is always likely to depend on relative wages and other structural variables.'

1986), led to a systematic underestimation of the role of human workers, who safeguard and monitor processes, fill gaps in automation and take over key production tasks in the labour-intensive final assembly process. Because of the overemphasis on technology, the ultimately decisive question of how efficiently the available time is used over the whole of the production process (and not only in individual, highly mechanised phases) was ignored. Insufficient attention was given to the fact that the organisation of working time and operating hours is an inseparable element of overall work organisation.

Many European managers have concentrated on the short-term, visible cost effects of the organisation of operating hours, and in so doing have taken too little account of the connection between working time and work organisation. For example, in those German and Italian plants that implemented working time reduction in the form of extra days off for individual workers, thereby maintaining 80 operating hours per week, increasing problems with personnel deployment had to be accepted. Strategies combining working time reductions with new approaches to work organisation had, until very recently, a certain scarcity value, not least because of the lack of consistent approaches to personnel policy.

For Japanese automotive firms, on the other hand, working time management must be integrated into personnel policy. To emphasise this point is in no way to ignore the negative social consequences of this policy. Nevertheless, European critics of the anti-social consequences of the production system developed by Toyota, and those who are forced to compete with the resultant products in the world market, should at least recognise one of the great strengths of this system, namely the rigorous implementation of the notion that the production of cars is a social process that should be structured in accordance with a unified set of principles. In 'Toyotism' (cf., *inter alia*, Jürgens, Malsch and Dohse, 1993), the organisation of working time is one of the cornerstones of management control over labour and the manufacturing process. Japanese car manufacturers are not willing to put at risk an internally coherent and coordinated approach to personnel policy for the sake of an increase in operating hours. From this point of view, the organisation of working time and operating hours must not give rise to any complications for personnel deployment and the production process itself.

This is reflected in the characteristic differences between the organisation of working time in European and Japanese car plants to which we have drawn attention in our two separate reports on Europe and Japan:

(a) Individual absences are largely avoided or suppressed. The overriding objective is to keep experienced teams together in order to restrict to a minimum the need to integrate new members into constantly changing teams, a process which is both expensive and potentially damaging to product quality. Holidays and absences are tolerated only on condition that the average attendance rate does not fall significantly below 95%. When individual workers are absent, they are not replaced by substitutes from outside the team; rather, the teams themselves (including, if necessary, foremen and master craftsmen—the so-called *hancho* and *kumicho*) have to cover for their absent colleagues. A cut in working time implemented by giving individual workers extra shifts off—as in Europe—would be completely inconceivable in Japan. Not only short-term, but also medium and long-term increases in

capacity are achieved almost solely with the two existing shift crews and the two-shift system, i.e., through the use of overtime. Firms are even reluctant to increase the number of fixed-term recruits taken on during boom periods. Thus, Japanese managers do not want to increase operating hours because, in so doing, they risk creating the personnel problems associated with the recruitment, training and integration of new workers for an additional shift.

(b) All complications that might be associated with attempts to build up capacity are carefully avoided. Three-shift systems are expressly rejected because, with 8-hour shifts, they leave no room for catching up on possible backlogs in production. Continuing to operate machinery through breaks is also rejected, for much the same reason. In Italy and Belgium, on the other hand (and in some cases in Germany, France and Spain as well), production continues throughout the shorter breaks. In opting not to do this, Japanese managers are not simply avoiding having to deploy additional substitutes or team members; their main objective is to avoid any temporary changes on the shopfloor that might make management more difficult and have negative consequences for product quality. At the same time, they are seeking to leave sufficient space for repairs and maintenance in order to be sure of meeting the challenging daily target in scheduled production time.

The Japanese approach to time management fits seamlessly with the Japanese system of work organisation. Both can be reduced to the simple formula of 'fewer workers—simple systems—more control'. In the current debate on lean production, it is frequently the collective responsibility and participation aspect of the Toyota production system that is emphasised. Those who wish to avoid mere wishful thinking should not lose sight of the relative importance of this one aspect in personnel policy as a whole. In Japan as in Europe, the production line still lies at the heart of modern car production. It faces workers like an order repeated every 3 minutes or even every 30 seconds, with soul-destroying monotony. Today, in direct contradiction of this reality, calls are being made for each individual worker to take joint responsibility for product quality. Thus, workers are being required simultaneously to submit themselves to a monotonous, Taylorist work process that fosters apathy and an instrumental attitude to work and to take a creative and active part in increasing their own efficiency. The Toyota system seeks to eliminate these contradictions, by developing a complex system for integrating core employees into the firm that uses a 'combination of compulsion and consent' to produce an 'unrestricted' or 'maximal contract of employment' (Berggren, 1991, p. 40). The basic elements in the total commitment of the individual to the aims of the company are:

- (a) the declared guarantee of life-time employment for the core workforce;
- (b) the difficulty or even impossibility of finding a different job on comparable terms after a lengthy period of job tenure, since a high proportion of total pay is dependent on seniority and the large firms confine their recruitment almost solely to first job-seekers, whom they can train themselves;
- (c) assessment by superiors: this is the main factor in promotion decisions and plays a part in determining pay rises; the main criteria in such assessments are good behaviour at work, 100% attendance and fault-free work;

(d) a combination of tight management control with intensive social control within the production team;

(e) individual versatility and adaptability fostered by the absence of fixed job descriptions and demarcation lines;

(f) serious consideration given to workers' ideas: when appropriate, even the smallest suggestions for making the work process more efficient are implemented without delay, thus providing tangible evidence of the much-publicised notion of collective responsibility;

(g) the company trade unions, which guarantee a high degree of moral and practical identification with the company and play no part in personnel evaluation, job design or promotion procedures.

This system is efficient because it is based on the rigorous implementation of simple basic ideas; simplicity is also the most certain basis for control. A senior manager in the German automotive industry (Hubbert, 1992, p. 11) has summarised the Japanese approach in the following, easily remembered phrase: 'The Europeans are on the way from the primitive via the complex to the simple, while the Japanese have left out the complexity.' What is true of 'Toyotism' as a whole applies equally to the management of time, which is an inseparable element of the system. The duration and organisation of working time make it crystal clear that availability, subordination and control are of fundamental importance to the overall system of work organisation in Japanese car factories and that this production system allows workers very little freedom. In addition, the entire production process is made more transparent for management by homogeneous working and operating times, so that unnecessary stores and buffers can easily be identified.

The overall picture is apparently paradoxical: Japan behaves as if it were a Third World country that has to fight for access to world markets by keeping working hours at the level of the early 1950s. In contrast to Third World countries, however, these working hours are an integral part of a highly efficient productive system. Those who wish to compete with this potent combination need their own general concept of work organisation, in which the organisation of working time and operating hours has its own customised slot.

Thus what is instructive about the organisation of working time and operating hours in the Toyota system is that it represents a serious attempt at systemic rationalisation, even though, from the European point of view, it is wholly unacceptable, both politically and socially. The objective is nothing less than the rationalisation of the entire value added chain, rather than mere optimisation of sub-processes. In this approach, human beings are not there primarily to plug the gaps not yet filled by machines but to ensure the flexibility of the whole system and product quality. In addition, the means through which this whole concept is put into practice is a system of social organisation of which working time is an integral component, at both the level of the factory and at that of the wider society outside.

The European automotive industry is still a long way from a similarly comprehensive, internally consistent concept of systemic rationalisation. As a result, working time and operating hours are still usually discussed as an issue unconnected with the attempts at rationalisation that are generally referred to by the now

fashionable term 'lean production'.¹ However, the European industry also has to face a quite different challenge to that facing its Japanese competitors: for most workers in Western European countries, short working hours have now become a significant indicator of prosperity. For decades, and not only in Germany, an increasingly clear distinction has been made between working time and personal time. The lifestyles and aspirations of very many people are less centred around work than is still clearly the case in Japan. Some 35 years after the 48-hour week ceased to be the norm, the vast majority of workers in the European automotive industry are unwilling (quite understandably) to work 45 to 48 hours per week on a regular basis. Operating hours policy has gradually adapted to this fundamental change. However, there have been, and still are, situations in which the impression is given, at least in public, that the clock can and must be turned back. But there is a big difference between such passive, contrary reactions and a deliberate strategy for the reorganisation of operating hours systems that takes account of a fundamental shift in the wider society, or even one that takes up the challenge of social change in a positive way and seeks to use it to good advantage in the drive for rationalisation.

Thus, operating hours policy in the European automotive industry can be said to be in a transitional phase, in which largely pragmatic and, in many cases, traditional practices are very gradually being replaced by consciously constructed operating and working time systems.

The transitional nature of this operating hours policy is evident from the numerous contradictions between the organisation of operating hours, the organisation of working time and demands for flexibility that are summarised in Table 7 and contrasted with the Japanese approach. The implementation of the 40-hour week alone meant that a maximum of 4000 operating hours per year could be achieved in European car factories operating a two-shift system, while that figure is still today the minimum level in Japan, where the two-shift system is also used. The further reductions in working time implemented in Western European countries in the 1980s increased the pressure for change (which is why it is no coincidence that the most intensive search for new operating hours systems is being conducted in Germany). Many firms have since been faced with the following alternatives:

- (a) either giving up a certain volume of operating hours when working time is reduced,
- (b) maintaining operating hours, albeit at the cost of a high daily absence rate, or
- (c) extending operating hours by introducing new shift systems, at the cost of reduced flexibility.

Until the end of the 1980s, the overriding management objective in some companies was to reduce unit capital costs by extending operating hours (three-shift systems, 9 to 10-hour shifts). This phase is by no means over: Fiat, for example, is even going so far as to introduce three-shift working on 6 days each week at its two new plants in Southern Italy. And yet there are also signs that this approach is being partially rethought. Some manufacturers have begun to recognise that, although it

¹ 'The conservative attitude of many employers manifests itself particularly clearly during the introduction of lean production methods. Anyone seeking to push the concept to its logical conclusion must give workers greater autonomy in matters of working time.' (Rueß, 1993, p. 20.)

Table 7. Working time and operating hours in comparative perspective

	Japan	Europe
Central ideas	simple, homogeneous, flexible, controllable	diverse, group-specific, strongly geared to reducing unit capital costs
Relation of working time to operating hours	<i>Coupled:</i> long operating hours a result of long individual working time	<i>Uncoupled:</i> operating hours increased in some cases despite cuts in working time
Shift systems	generally two-shift operation	strong dynamic of change, broad diversity
Contractual working hours	40-hour week, entitlement to 4 weeks' holiday	between 35 and 39 hours per week, holiday entitlement 4 to 6 weeks
Enforcement of contractual working hours	<i>Low:</i> no limit on availability of labour (permanently high volumes of overtime, much of holiday entitlement forfeited)	<i>High:</i> availability of labour time-limited (holiday entitlement generally used, volume of overtime cyclically variable)
Operating hours (gross)	between 4000 and 4800 hours depending on extent of overtime	between 3400 and 5400 hours depending on shift system
Flexibility	<i>High:</i> (because of overtime) despite long operating hours	<i>Variable:</i> depending on shift system (operating hours extended in some cases at the expense of reduced flexibility)
Attendance at work and shift crew continuity	<i>Structurally high:</i> no decoupling of (individual) working and operating days: in the event of illness, holiday taken rather than sick leave	<i>Structurally lower:</i> in some cases extensive decoupling of working and operating days (depending on shift system); sick leave taken in the event of illness and holiday entitlement taken on individual basis
Management control over work process	<i>Very high:</i> simple operating hours systems, low absence rate	<i>Made more difficult</i> by complicated shift systems and structurally higher absence rates
Employment effect of increases in operating hours	<i>None</i> (overtime)	<i>Possible in theory</i> through the decoupling of working time and operating hours
Industrial relations	Company unions	Representation of interests at firm and industry level interlinked

is quite possible to achieve longer operating hours than are attainable in the traditional two-shift system, any attempt to achieve the Japanese level under European conditions usually brings with it either reduced flexibility, because they cannot draw on extensive overtime and therefore tend to introduce a third shift instead, and/or the disappearance of stable shift crews, because of the decoupling of plant operating days and individual working days in the course of the year.

This discrepancy cannot be avoided without rethinking the work patterns as a whole, and this cannot be done—as will be shown in the next paragraph—without scrutinizing the organisation of work.

Management consultants have recommended a 'strictly European approach to the optimisation of quality, time and costs'¹ as a resolute response to 'Toyotism'. It seems reasonable to suppose that such an approach would have to include the organisation of working time. What might that mean in conceptual and practical terms? It is this question to which we finally turn.

5. The search for a European response

In our view, the Japanese time arrangement cannot be transplanted to Europe. European workers and their trade unions would regard the high degree of external control and the unrestricted access to their time as a reversion to the practices of the last century and fight them accordingly. Managers consider any attempt to impose the Japanese system to be doomed to failure and undesirable. Lehner and Naschold (1992) reflect a widespread consensus when, on the one hand, they suggest that 'the concentration on human skills in Japanese industry' should be taken as a model, while on the other hand they criticise the Japanese time arrangement for its 'excessive demands on workers, particularly in the form of long working hours and short holidays as well as high work intensity'.

The example of the European automotive industry shows that this consensus also has practical significance. The few operating hours systems introduced to date that are clearly embedded in an overall work organisation strategy differ markedly from the Japanese system in terms of the level of working hours but do, in their various ways, reflect the core idea that individual workers bear responsibility for the efficiency of the production process and product quality. If this trend were to continue, it would constitute a significant shift away from the pervasive everyday experience of workers on the assembly lines of European car plants, who have heard their supervisors tell them countless times that, 'You're here to work not to think'. Walter Riester (1992, p. 18), vice-president of IG Metall, the German engineering workers' union, describes the importance of this aspect in the following terms: 'What the Japanese do is very rigid; nevertheless, these processes involve continuous improvement and make it possible for workers to assess questions relating to

¹ This is the headline with which management consultants Roland Berger & Partners introduced the conclusions drawn from an analysis of competition commissioned by a large European car producer and carried out in Japan between 1988 and 1990 (Hirschbach and Cremante, 1992). This concept is endorsed in what follows, albeit with the proviso that work organisation always has nationally and locally specific characteristics, as does the organisation of working time and operating hours (Turner and Auer, 1992). Moreover, sophisticated analysis of European operating hours systems reveals that employees' interests are not taken into account to the same extent in all countries. Thus the 'European-specific' incorporates a range of different practices.

efficiency and work organisation with real expertise.' The head of personnel at Nissan's Sunderland plant in northeast England justifies the equal treatment of manual and white-collar workers at his plant with a phrase that neatly summarises the company's personnel policy (Wickens, 1987, p. 186): 'Put simply, you do not get a first-class response from second-class citizens.'

And yet the apparently glad tidings turn out to be ambiguous. 'Responsibility for quality based on workers inspecting their own work' is, as Jürgens, Malsch and Dohse (1989, p. 214) observed long before the lean production debate, 'wholly compatible with repetitive assembly-line tasks. It is also compatible with (...) alternatives to assembly-line production.' In other words, the central notion of the thinking, responsible worker accords with both the 'combination of compulsion and consent' and the extremely tight horizontal and vertical control of the Toyota system as well as with a European alternative to that system in which production workers' self-reliance is given a key role in ensuring productivity and quality. The authors of the study by management consultants Roland Berger referred to above (Hirschbach and Cremante, 1992, p. 60) implicitly distance themselves from the Toyota model. Without calling the existing power structures at plant level even remotely into question, they shift the emphasis in a 'specifically European' direction: 'Human beings and not machines are the key to success. Thus, the aim should be to raise the training, performance and informational level of each worker in such a way that each individual, working independently or in a team, is able to perform a complete task adequately, without monitoring by supervisors or their subordinates and to the time, cost and quality standards laid down.'

The ambiguity of the notion of individual responsibility makes it reasonable to assume, therefore, that working time arrangements in the European automotive industry can in future be based on two different strategies, both of which can be described, with equal justification, as a 'European response to the Japanese challenge'. Table 8 presents ideal types of the two strategies for the purposes of comparison.

(a) The first strategy closely follows the Japanese model of the 'combination of compulsion and consent'. We would describe it and the ensuing working time system as a European variant of lean production. The prototype is Nissan/UK's Sunderland plant.

(b) The second strategy places greater emphasis on self-monitoring by workers than on external control. It is linked to relatively high social standards and thus incorporates working time reductions. This strategy is the basis for what we would call innovative working time arrangements (admittedly a concept that can be interpreted in as many different ways as 'lean production'). This approach is less highly developed and tested in practice than the first strategy, so that the corresponding working time arrangements exist only in embryonic form.

The working time arrangement ensuing from the European variant of lean production is not a direct copy of the Japanese system. Working time at the Nissan UK plant is indeed longer than the European average but even further from the Japanese average. Japanese operating hours systems are based to a large extent on unpaid work, but this is not the case in Sunderland, or at least only to a much less extent. Workers there are able to take most of their holiday entitlement. Thus

Table 8. *New time arrangements in manufacturing*

Japanese model	European lean production	Innovative working-time arrangements
Long working hours with high levels of overtime	Short working hours with high overtime levels	Short working hours
Access to paid overtime and unpaid work	Access to paid overtime	Limited opportunities for overtime
Modified Taylorism, high external control	Modified Taylorism, high external control	Some group work, combination of external control and self-monitoring
High work intensity	High work intensity	High work intensity
Working time and operating hours coupled	Working time and operating hours coupled	Working time and operating hours decoupled
Few employment effects when operating hours extended	Few employment effects when operating hours extended	High employment effects when operating hours extended
Company unions	Marginalisation of trade unions and creation of representative structures at plant level	Independent industry unions, interlinked with representative structures at plant level

management does not have unrestricted access to workers' time. In contrast to the unlimited working hours in Japan, the Nissan system has been adjusted to the fundamental European principle of an agreed limit.¹ Thus Nissan has shown at its English plant how management can adjust to significantly shorter operating hours than in Japan and thus put into practice the fundamental principles of the company's approach to the organisation of work and production.²

However, assembly line workers at Nissan UK do actually work longer hours than their counterparts in all other Western European car plants. Continuous overtime at a comparatively high level is a permanent part of the working time arrangement and is expressly included in the company collective agreement. If the entire European car industry were to work the same level of overtime, the employment policy effects would be catastrophic: even more unemployment would have to be financed instead of jobs being created.

Working time at Sunderland—just as in Japan—is an indicator of the general thrust of personnel policy. Workers are very closely controlled, the work is extremely standardised, the pace of work is very high and absenteeism has been considerably

¹ Honda's British plants have gone even further in accommodating European working time customs and norms. During the British unions' campaign for working time reductions, the company unilaterally cut weekly working time from 39 to 37 hours. However, Honda has also been successful to date in shutting the unions completely out of its plants.

² The wage system at Nissan/UK has also been adapted, since it is not based on seniority with absolute power for supervisors in employee appraisal.

reduced. Just as in Japan, however, the encouragement and rapid implementation of employees' proposals for improving efficiency play a central role.¹ Protagonists of the 'Nissan Way', such as the head of personnel (Wickens, 1987, p. 95), see these characteristics as reflecting the goal of total individual commitment, while critics such as Garrahan and Stewart (1992) interpret them as a 'New Regime of Subordination'.

Nissan Sunderland is an example of the kind of working time arrangements that might be found in future in the European automotive industry. It is based on two fundamental preconditions.

(a) The Nissan working time system works only for an expanding plant in a regional labour market with very high levels of unemployment, from whose massive pool of available labour a young, hand-picked workforce can be recruited. (When setting up new plants in Europe, Japanese car manufacturers favour regions with high unemployment.)

(b) Dealings with trade unions and the reshaping of employee representative structures play a key role. The approach has similarities in method with Japanese practice (company unions) but takes a different form. Nissan UK has concluded an exclusive agreement with a single trade union, but in practice the union's influence is far less than that of the newly created Company Council. Thus the 'Nissan Way' is based not on the crushing or breaking-up of trade unions, but can be tailored to suit national and local conditions and makes use of the specific opportunities available in each location for completely reshaping industrial relations.

These preconditions certainly act as a constraint on the diffusion of the working time arrangement linked to the European version of lean production. Nevertheless, it is quite possible that the example of Nissan will become accepted in a few more car factories. The high level of unemployment in most European car-producing regions would be a necessary though not sufficient condition. A further, political condition would be that those car producers (particularly in France and Italy) that have benefitted considerably from weak or fragmented trade unions and plant-level representative structures commit themselves fully to nationally and locally specific strategies for the reshaping of industrial relations in company representative structures. In other words, if one car producer or another felt strong enough to push through lean production without the unions, or even in opposition to them, the company management would still have to establish firmly rooted employee representative structures at both company and plant level and work in partnership with them. At least this would create a considerably stronger political base at plant level for attempts to reform long-established working-time arrangements and to permanently increase individual working time again.

It is still too early to forecast whether European car manufacturers will seek to go down this route. The likelihood is that isolated attempts will be made at one site or another to restructure working time. However, for firms that have to deal with

¹ Taking the Californian joint venture between General Motors and Toyota (NUMMI) as an example, Adler (1993, p. 108) analyses this type of modified Taylorist factory organisation and concludes that Taylorist discipline and formal bureaucratic structures are essential for efficiency and quality in routine operations, such as those involved in car assembly, but that NUMMI shows the route that leads away from the view of 'Taylor as villain' to the development of a 'truly learning-oriented bureaucracy'.

relatively strong and united trade unions—as in Belgium and, above all, in Germany, but also to a certain extent Great Britain and Spain—the situation is somewhat different. They will be obliged to consider how they can use union influence as a factor in the redesign of production facilities. If they are to escape the blind alley in which trade union influence is always regarded solely as a hindrance, they will have to seek some sort of consensus as to the development of new production systems.

Circumstances of this kind favour the introduction of innovative working time arrangements. They are one component in an approach to personnel policy and work organisation based on high social standards and workers' self-reliance. Such an approach, if rigorously implemented, would be a logical extension of demands for the 'humanisation' of production processes (Brödner, 1986).

Innovative working time arrangements form part of a compromise package. They are based on the realisation that relatively short working hours and the widespread rejection of night or weekend working are a reflection of socio-cultural standards. In classic Taylorist systems, these standards, along with high wages, offered a material basis for keeping workers quiet and ensuring their commitment to the firm. Today, however, personnel policy is less concerned with keeping workers quiet than with mobilising all workers in furtherance of company goals. If workers' self-esteem is to be enhanced to this end, then indicators of prosperity such as short, socially acceptable working hours act as the necessary though not sufficient condition for the implementation of the new production systems.

An innovative strategy requires the car manufacturers in question to make a virtue out of the need to cut working time. Early examples of this are the operating hours systems at BMW's Munich plant and the new Mercedes plant at Rastatt. Both systems are based on extended shifts, which provide longer daily operating hours than normal two-shift systems without any significant loss of flexibility. Furthermore, by allowing the composition of shift crews to remain stable instead of causing constant changes as individuals take their free shifts, they provide a good basis for teamwork, which is particularly attractive to companies. As far as employees are concerned, the advantages are a 4-day week and a daily working time of under 9 hours. Without the 35-hour week, these advantages for both sides could not be realised without considerable restrictions.

The British manufacturer Rover introduced a system based on similar thinking in 1990. The company met trade union demands for a cut in working time by replacing the previous two-shift system and the 39-hour week with a completely new operating hours system (a 37-hour week for crews operating a two-shift system, a 36-hour week for crews operating a three-shift system and a 31.5-hour week for crews working a 7-day week). Under the conditions prevailing at the time, the changeover to three-shift working even meant a reduction in night working for individual employees, since they had previously worked alternating day and night shifts. The working time system is one of several large compromise packages with which the company has sought to bring about fundamental changes in industrial relations and work organisation (the so-called Rover New Deal).

The challenge for companies is to use socially acceptable compromises on the organisation of working time as a means of strengthening employees' identification

with company aims and objectives. Clearly such a strategy also constitutes a challenge for the unions. Some European unions consider integrated personnel policies primarily as an insidious means of ensuring that workforce representative bodies underwrite management decisions, while others see them as offering new opportunities for employee representation. IG Metall, for instance, looks back to the humanisation debate of the 1980s and demands radical reform of work organisation and employment relationships: 'Continuous improvements,' argues Lang (1992, p. 54), can 'be achieved only if workers are included in the planning of production processes, if they are involved in them and are able to influence the form they take.' At the same time, it is recognised that those unions that go down this path are taking unavoidable risks. The basic problem is the massive increase in the pressure to perform efficiently that is associated with the new production systems implemented to date (with the exception of the Volvo experiment, now concluded for the time being). Moreover, cutting absenteeism is a high priority for car manufacturers, and they regard new production systems not least as a means of enlisting the assistance of plant-level representative bodies and even the trade unions in solving this problem.

Considered solely in the short term, compromise packages involving new, socially acceptable working time arrangements are costly for firms. Some manufacturers regard it as a significant advantage in international competition not to have to make costly compromises. However, Mehl (1992, p. 265) rightly counters this view with the example of Fiat: 'It may appear on the surface advantageous to Fiat to pay much lower wages than other manufacturers or the rest of the Italian engineering industry. However, taken in conjunction with inadequate education, insufficient vocational training for the vast majority of employees, repetitive and monotonous work and an authoritarian management style, the low pay would seem to be a significant factor in the low level of efficiency and poor motivation.' Those willing to pursue this line of thought will seek not only to introduce training programmes but also to find additional sources of the work satisfaction and pride that are urgently required for workers involved in zero-fault production. Each additional increase in labour productivity ensuing from this would help to offset, or possibly more than fully compensate for, the cost effect of working time reductions.

The basic question is how much importance is attached to investment in human capital in attempts to increase competitiveness. Sengenberger (1992) states the case for high standards in working conditions in order to promote labour productivity and thus improve economic performance: 'Firms will not be inclined to invest in human resources if they are cheap.' Car manufacturers seeking to extend operating hours and to develop a highly motivated, self-reliant workforce but having to deal with determined trade unions and effective representative bodies will be the firms most readily prepared to make innovative working-time arrangements part of their 'European response'.

References

- Adler, P. S. 1993. Time and motion regained, *Harvard Business Review*, January/ February
 Altmann, N. et al. 1986. Ein "Neuer Rationalisierungstyp"—Neue Anforderungen an die
 Industriesoziologie, *Soziale Welt*, Jg. 37, Heft 2/3, 189–207

- Altmann, N. 1992. Japanische Arbeitspolitik—eine Herausforderung?, in Hans-Böckler-Stiftung *et al.* (eds), 24–34
- Anxo, D. *et al.* (eds) 1995 *Work Patterns and Capital Utilisation: An International Comparative Study*, Dordrecht, Kluwer
- Berggren, C. 1991. *Von Ford zu Volvo: Automobilherstellung in Schweden*, Berlin, Springer
- Brödner, P. 1986. *Fabrik 2000: Alternative Entwicklungspfade in die Fabrik der Zukunft*, Berlin, edition sigma
- Deutschmann, C. 1987. Der “Betriebsclan”: Der japanische Organisationstypus als Herausforderung an die soziologische Modernisierungstheorie, *Soziale Welt*, Jg. 38, 132–47
- Garrahan, P. and Stewart, P. 1991. Work organisations in transition : the human resource management implications of the ‘Nissan Way’, *Human Resource Management Journal*, Jg. 2, Nr. 2, 46–62
- Hans-Böckler-Stiftung *et al.* (eds) 1992. Lean Production—Schlanke Produktion—Neues Produktionskonzept humanerer Arbeit?, Düsseldorf
- Henzler, H. 1992. Lange Fristen, *Wirtschaftswoche*, 9.10
- Hirschbach, O. and Cremante, F. 1992. Bei Qualität, Kosten und Zeit überlegen werden, *Automobilproduktion*, Jg. 6, 58–62
- Hubbert, J. 1992. Den Japanern auf den Fersen, *Automobil-Produktion*, July
- Jürgens, U., Malsch, T. and Dohse, K. 1989. *Moderne Zeiten in der Automobilfabrik: Strategien der Produktionsmodernisierung im Länder- und Konzernvergleich*, Berlin, Springer
- Jürgens, U., Malsch, T. and Dohse, K. 1993. *Breaking from Taylorism: Changing Forms of Work in the Automobile Industry*, Cambridge, Cambridge University Press
- Kobayashi, I. 1994. *Twenty Keys to Workplace Improvement*, Portland, Productivity Press
- Lang, K. 1992. Toyotismus ist eine Rationalisierungs- und keine Humanisierungsstrategie, *Mitbestimmung*, Heft 4, Jg. 38, 53–55
- Lehndorff, S. and Bosch, G. 1993. *Autos bauen zu jeder Zeit? Arbeits- und Betriebszeiten in der europäischen und japanischen Automobilindustrie*, Berlin, edition sigma
- Lehner, F. and Naschold, F. 1992. Deutsche Stärken bei Kundenorientierung und Qualitätsproduktion besser als bisher nutzen, *Handelsblatt*, 24.3
- McKinsey & Co. 1989. *Steering the European Car Industry through the 1990s*, Final Report (Ms.), November
- Mehl, R. 1992. *Organisatorischer Wandel und externer Handlungsrahmen in der Automobilindustrie—das Beispiel Fiat Auto*, Dissertation, Hamburg
- Riester, W. 1992. Unsere Tarifverträge sind ein Spiegelbild der tayloristischen Arbeitsorganisation, *Mitbestimmung*, Heft 4, Jg. 38, 16–20
- Rueß, A. 1993. Hohe Motivation, *Wirtschaftswoche*, 3.9
- Sengenberger, W. 1992. Labour standards in the international economy: Challenges and perspectives. Referat, gehalten auf der Tagung des Arbeitskreises SAMF (Sozialwissenschaftliche Arbeitsmarktforschung) “Internationale Integration und Regulierung von Arbeitsverhältnissen” in Gelsenkirchen, 16/17.12. Gelsenkirchen
- Turner, L. and Auer, P. 1992. The political economy of new work organization: Different roads, different outcomes. WZB discussion papers ISSN Nr. 1011–9523, Berlin
- Wickens, P. 1987. *The Road to Nissan: Flexibility, Quality, Teamwork*, London, Houndmills
- Williams, K. *et al.* 1994. *Cars: Analysis, History, Cases*, Providence, Berghahn
- Womack, J. P., Jones, D. T. and Roos, D. 1990. *The Machine that Changed the World: The Story of Lean Production: How Japan’s Secret Weapon in the Global Auto Wars Will Revolutionize Western Industry*, New York,