4 Employment relations in manufacturing and international competition

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Introduction: the worker and the 'British disease'

During the decades after the Second World War, British industrial workers acquired a reputation for being altogether 'bloody-minded'. They were said to engage in restrictive practices – a refusal to work up to their productive potential – as they sought to control the relation between the work that they performed and the pay that they received. Some observers even alleged that workers spent their time inventing new restrictive practices so that they could make 'concessions' to employers to forgo 'customary' work rules in exchange for higher pay and more employment security (see, for example, McKersie *et al.* 1972).

While shop-floor employees were trying to enforce their versions of 'custom and practice' in their workplaces, national unions sought to exert collective power, sometimes through parliamentary means and sometimes through strikes, to protect the employment security and living standards of their members. The ability of workers to exercise power in the workplace, the industrial sphere and the political arena made it plausible to blame the labour movement for Britain's faltering economic performance in the 1960s and 1970s. For some, including the government of Margaret Thatcher in the 1980s, the power of the British labour movement amounted to nothing less than the 'British disease' (Bassett 1986: ch. 2; Maynard 1988: chs. 6–7). For example, Michael Edwardes, the managing director of BL (formerly British Leyland) in the late 1970s and early 1980s, recounted how at a meeting with BL senior executives in 1981 the economic adviser to Thatcher, Alan Walters, launched the theory that the closure of BL, whether as a result of a strike or in cold blood, could have a positive effect on the British economy within six months (1983: 216–17). The short-term impact on regions such as the west midlands and on the balance of payments might soon be offset, according to Walters, by the beneficial effect of the shock of closures on trades union and employee attitudes across the country. Restrictive practices would be swept away, pay increases would be held down and a more rapid improvement in Britain's

competitiveness would thus be achieved through the closure of BL than by any other means available to the government.

In historical perspective, blaming the British worker for the nation's relatively poor competitive performance since the 1960s seems simplistic. Such an explanation fails to ask why and how British workers gained so much bargaining power over the conditions of work and pay that they could impede the growth of the economy. Well into the twentieth century, after all, Britain was a dominant economic power. Why should British workers and their unions be any more or less disruptive to the process of economic growth than workers and unions in nations such as the United States, France, Germany, Sweden, Italy, Canada, and Japan – advanced capitalist countries that are Britain's main competitors for global manufacturing markets?

Indeed, some studies of labour–management relations in the other countries have argued that trade unions often promote productivity (for the case of the United States, see Freeman and Medoff 1984; for the case of Japan, see Koike 1988). Why should British unions do just the opposite? In historical perspective, can it be assumed that the power of British workers has always been a barrier to economic progress? If not, when and why did the exercise of power by workers become a problem for British economic performance?

To provide answers one needs to inquire into the historical evolution of British shop-floor relations from the last decades of the nineteenth century in the manufacturing industries directly subject to international competition. Skilled workers made a crucial contribution to British economic performance in the last half of the nineteenth century. 'Craft' organisation, and the industrial relations structures for which it provided the foundation, augmented both the skill and effort that British workers were able and willing to supply to the production processes in which they laboured.

The rise of international competition altered the ability of British employers to abide by the traditional bargains over the relation between work and pay – bargains that had been the essence of the cooperative employment relations that had been critical to superior British performance in the last half of the nineteenth century. In the short run, employers and skilled workers continued to cooperate within the framework of the traditional bargains in order to adapt to the pressures of foreign competition. In the long run, however, as the pressure of competition from technologically dynamic foreign rivals became too great, conflicts erupted between employers and skilled employees, with adverse impacts on economic performance.

In explaining how British employment relations became an impediment to superior economic performance, one must stress the rise of foreign competition and the limits inherent in the skills and machine technologies that Britain used. The root cause of Britain's inferior economic performance was the failure of British enterprises to invest in modern managerial structures that could plan and coordinate shop-floor work.

The British labour force before the First World War

Although manufacturing remains important to the overall performance of the British economy today, it was more important earlier in the century. British manufacturers and the workers they employed found themselves under increasing competitive pressures from the 1890s, but it would only be in the inter-war years that dramatic changes in the occupational structure would begin. In 1911 the occupational structure was much the same as that which had been in place when Britain dominated global competition in the 1870s and 1880s (see the census data for earlier years in Mitchell and Jones 1971: 60).

Table 4.1 shows that in 1911 over 38 per cent of the British labour force were engaged in the manufacturing sector (namely, all the categories listed consecutively in Table 4.1 from metal manufacture and machinery through food, drink and tobacco). All such sectors were subject to direct international competition, whereas occupational categories like building and construction and gas, water and electricity supply were not. The percentage occupied in manufacturing plus mining and quarrying (another industrial sector that exported to global markets) was 45 per cent. Another 14 per cent of the British labour force, mainly women, were occupied in domestic and other service. The other major employers of labour were transportation (9 per cent), agriculture (8 per cent) and building (6 per cent). By way of contrast, fifty years later manufacturing occupied only 22 per cent of the working population, and manufacturing plus mining under 25 per cent (Mitchell and Jones 1971: 36).

Price and Bain (1988: 164) have estimated that in 1911 7 per cent of the occupied population were employers and proprietors, another 19 per cent were non-manual workers, and the remaining 74 per cent were manual workers. Fifty years later, employers and proprietors had dropped to under 5 per cent of the occupied population, but non-manual workers almost doubled their share, to 36 per cent, and the manual workers' share dropped to 59 per cent. By 1981, just under 48 per cent of the occupied population of Britain were manual workers.

While manufacturing employed a high proportion of women (45 per cent) in 1911, 70 per cent of female manufacturing workers (and 32 per cent of all occupied females) were concentrated in textiles and clothing. Another 40 per cent of the female labour force were engaged in domestic service. Of

Table 4.1. *Occupational distribution of the British labour force, 1911*

Occupational sector	Number male (000s)	Number female (000s)	Percentage of labour force	Percentage male
Public administration	271	50	1·7	84
Armed Forces	221	0	1·2	100
Professions and services	413	383	4·3	52
Domestic and personal	456	2,127	14·1	17
Commercial	739	157	4·9	82
Transport and communications	1,571	38	8·8	97
Agriculture	1,436	60	8·2	96
Fishing	53	0	0·3	100
Mining	1,202	8	6·6	99
Building	1,140	5	6·3	99
Metal manufacture and machinery	1,795	128	10·5	93
Woodwork	287	35	1·8	89
Bricks, cement, pottery, glass	145	42	1·0	77
Chemicals	155	46	1·1	77
Leather	90	32	0·7	73
Paper, print	253	144	2·2	63
Textiles	639	870	8·2	42
Clothing	432	825	6·9	34
Food, drink, tobacco	806	308	6·1	72
Gas, water, electricity	86	0	0·5	100
All others	741	98	4·6	88
Total	12,931	5,356	100.0	70

Source: Mitchell and Jones (1971: 60).

the manufacturing sectors, metal manufacture and machinery as well as woodworking and furniture – preserves of craft labour – were the most heavily male dominated.

In 1911, women represented 30 per cent of the total occupied population and 31 per cent of all manual workers. Figure 4.1 illustrates that men had a much greater commitment than women to continuous employment in the paid labour force. Many married women stayed in the paid labour force out of economic necessity, the prevailing ideology being that a woman's place is in the home. To make the gender-based division of labour possible the male workers needed to earn a wage sufficient to support a family (see Humphries 1977). During the inter-war period the share of women in total employment remained at about 30 per cent (Price and Bain 1988: 166).

Table 4.2. *Relative wages of selected workers by pay level, 1886–1926 (highest wage in each year = 100)*

	1886	1913	1920	1926
High pay				
Bricklayers (building)	79	83	72	80
Coalgetter (coal mining)	79	100	100	89
Mule spinners (cotton)	82	89	95	87
Turners (engineering)	75	82	73	70
Engine drivers (railways)	100	92	76	100
Medium pay				
Painters (building)	72	74	71	80
Putters and fillers (coal mining)	62	73	79	65
Grinders (cotton)	54	63	71	64
Machinemen (engineering)	56	66	65	49
Guards (railways)	69	66	62	75
Low pay				
Labourers (building)	49	55	62	62
Labourers (coal mining)	54	65	73	60
Female weavers (cotton)	46	47	53	49
Labourers (engineering)	45	46	53	46
Goods porters (railways)	51	48	54	56

Source: Rowe (1928: 42).

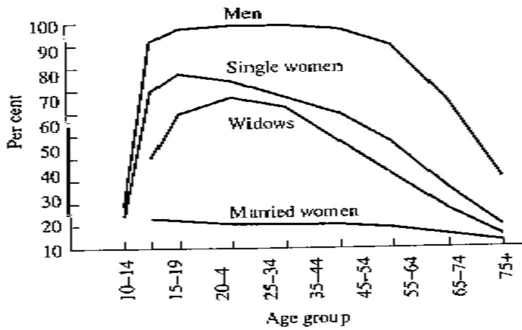

Figure 4.1 Rates of participation in the labour force, 1911 (England and Wales)
Source: calculated by Baines (1981) from the *Census of Population*, 1911.

Indeed, the labour force participation rate of women – the percentage of women who worked for pay – actually fell slightly from 35 per cent in 1911 to 34 per cent in 1931 and to less than 33 per cent in 1951 (Price and Bain 1988: 168). Only thereafter did the labour force participation rate of women begin its steady rise, reaching over 45 per cent by 1981.

Among the industrial labour force the men most able to earn enough to support a family were those who, by some type of apprenticeship systems, had acquired specialised craft skills. Table 4.2, derived from a compilation made by J. W. F. Rowe in 1928, shows the relative earnings of selected categories of workers in five major sectors in 1886, 1913, 1920 and 1926, with a value of 100 assigned to the highest paid category of worker in each year. The movement of coalgetters (or hewers) to the top of the pay scale among the selected categories in 1913 and 1920 reflects a combination of the enhanced power of the unions and a strong demand for their labour in the years around the First World War rather than an upward movement in their productivity. So too in the case of the mule spinners (see Benson 1982; White 1982; Clegg *et al.* 1964: chs. 3 and 11; Clegg 1985: chs. 2 and 3). By way of contrast, as we shall see, mechanisation and redivision of labour combined with weak craft unionism constrained pay gains by the turners – the labour elite of mechanical engineering – despite rising productivity (Zeitlin 1983). Depending largely on the degree of mechanisation and the pressure of international competition, each industry had its own unique history of industrial relations.

In setting out the wage rates of the various categories of workers from which Table 4.2 is derived, Rowe (1928: 42) labelled the high-paid workers 'skilled', the medium-paid 'semi-skilled', and the low-paid 'unskilled'. But by any account, the cotton weavers, male or female, were at least 'semi-skilled', as Rowe (1928: 31–3) himself noted. Yet even male weavers received wages that were low in comparison with semi-skilled workers in other industries. The low wage was not from a lack of union organisation: before the First World War the cotton weavers had the second largest union in Britain. Rather the cause was the even split of weaving between men and women. Many women continued to work as weavers after marriage, thus contributing to family income. As a result, male weavers in Lancashire did not have to earn a 'family wage' to have access to a 'family income'. Although the payments per unit of output (piece rates) specified in the wage lists that governed earnings in Lancashire did not discriminate against women, on average female weavers earned less than male weavers because on average they tended fewer looms, and hence generated less output per unit of time (see Wood 1910; Lazonick 1986).

Table 4.3 shows how the wages of the high-paid workers varied in relation to the medium-paid and lower-paid workers. From 1886 to 1926

Table 4.3. *Relative pay of selected workers by industry, 1886–1926*

	1886	1913	1920	1926
High pay/medium pay				
Building	1·09	1·12	1·01	1·00
Coal mining	1·20	1·36	1·27	1·38
Cotton	1·53	1·41	1·35	1·35
Engineering	1·33	1·26	1·11	1·18
Railways	1·44	1·40	1·22	1·33
High pay/low pay				
Building	1·62	1·51	1·15	1·30
Coal mining	1·37	1·53	1·36	1·48
Cotton	1·79	1·91	1·78	1·78
Engineering	1·68	1·77	1·38	1·53
Railways	1·97	1·93	1·42	1·80

Source: Rowe (1928: 42).

mule spinners along with the railway engine drivers did best relative to other workers in their own industries. In all five industries the rapid wage inflation after the First World War compressed relative wages. The less skilled workers gained the benefits of union organisation (see, for example, Hyman 1971).

The organisation of the less skilled had begun in 1889, with the rise of general unionism, but before the First World War it was still the elite craft workers – known as the aristocracy of labour – who were best organised to protect their conditions of work and pay (see Hobsbawm 1964: ch. 10). In 1910 by far the largest union was the Miners Federation, with almost 600,000 members, while the next largest were those of the weavers (112,000 members) and engineers (100,000 members), all comparatively skilled. As Table 4.4 shows, after a stagnant period in the first half of the 1900s, union membership rose steadily, especially in the First World War, and then exploded during the tight labour market conditions of the immediate post-war years, only to fall dramatically with the coming of depressed economic conditions. The vast majority of union members were men; a small increase in the proportion of female union members occurred during the First World War and its aftermath. The density of male union membership (that is, the proportion of prospective male union members who were actually in unions) doubled between 1905 and 1915, and then doubled again by 1919. Male union density fell off during the 1920s and the first half of the 1930s. Setting aside the extraordinary number of working days lost

Table 4.4. *Union membership, density and work stoppages, 1893–1939*

Year	Union members (000s)	Percentage male	Density, males (%)	Density, females (%)	Work stoppages	Working days lost (000s)
1893	1,559	na	na	na	509	30,440
1894	1,530	na	na	na	903	9,510
1895	1,504	na	na	na	728	5,700
1896	1,608	91	14	3	906	3,560
1897	1,731	92	15	3	848	10,330
1898	1,752	92	15	3	695	15,260
1899	1,911	92	16	3	710	2,500
1900	2,022	92	17	3	633	3,090
1901	2,025	93	17	3	631	4,130
1902	2,013	92	16	3	432	3,440
1903	1,994	92	16	3	380	2,320
1904	1,967	92	16	3	346	1,460
1905	1,997	91	16	4	349	2,370
1906	2,210	91	17	4	479	3,020
1907	2,513	90	19	5	585	2,150
1908	2,483	90	19	5	389	10,790
1909	2,477	89	18	5	422	2,690
1910	2,565	89	19	5	521	9,870
1911	3,139	89	23	6	872	10,160
1912	3,416	89	24	7	834	40,890
1913	4,135	90	30	8	1,459	9,800
1914	4,145	90	30	8	972	9,880
1915	4,359	89	31	9	672	2,950
1916	4,644	87	32	11	532	2,450
1917	5,499	84	36	16	730	5,650
1918	6,533	82	42	22	1,165	5,880
1919	7,926	83	62	24	1,352	34,970
1920	8,347	84	55	24	1,607	26,570
1921	6,632	85	44	18	763	85,870
1922	5,625	85	39	16	576	19,850
1923	5,429	85	37	15	628	10,670
1924	5,544	85	38	15	710	8,420
1925	5,506	85	37	15	603	7,950
1926	5,219	84	35	14	323	162,230
1927	4,919	84	32	14	308	1,170
1928	4,806	84	31	14	302	1,390
1929	4,858	84	31	14	431	8,290
1930	4,841	84	31	13	422	4,400
1931	4,624	84	29	13	420	6,980
1932	4,443	83	28	12	389	6,490
1933	4,389	83	27	12	357	1,070
1934	4,570	84	29	12	471	960
1935	4,867	84	31	12	553	1,960
1936	5,295	85	33	13	818	1,830
1937	5,842	85	37	14	1,129	3,410
1938	6,063	85	38	15	875	1,330
1939	6,274	84	39	16	940	1,360

Sources: membership: Mitchell and Jones (1971: 68); density: Price and Bain (1988: 68); stoppages and days lost: Pelling (1976: 293–5).

during the General Strike of 1926, the most working days lost were to strikes when the unions were coming into their strength, in the boom periods centring on 1912 and 1920 (Cronin 1982).

How, then, did the workers and their organisations influence the economic performance of the British economy? And did the employment relations into which the workers entered have a different impact on British economic performance in Britain's period of dominance than later? We focus here on those machine-based industries – iron and steel, mechanical engineering, shipbuilding and cotton textiles – central to Britain's rise to international economic leadership, and on the new industries of the twentieth century, such as car manufacturing, that made heavy use of mechanical technologies.

Skill and effort in the 'workshop of the world'

In the early 1880s Britain's share of world exports of manufactures was 43 per cent, vastly greater than the 6 per cent of the United States and the 16 per cent of Germany. By 1913 Britain's share had dropped to 32 per cent, whereas the share of the United States had increased to 14 per cent and that of Germany to 25 per cent (Matthews *et al.* 1982: 435). Even in relative decline, British industry still supplied almost one third of the world's manufactured exports.

Chief among such exports was cotton yarn and cloth, which constituted 36 per cent of all British exports in 1870 and 24 per cent in 1910. Other major British manufactured exports were woollen yarn and cloth and iron and steel products. In 1910 machinery represented almost 7 per cent of all exports (up from less than 2 per cent in 1870), while coal and coke represented almost 9 per cent of all exports in 1910 (up from less than 3 per cent in 1870). During the inter-war years, iron and steel and textiles remained important exports, but by 1950 machinery and vehicles, the new industries, had become Britain's leading export sectors (Mitchell and Jones 1971: 304–6).

The production of goods to be sold both at home and abroad required particular combinations of physical resources (structures, machines, materials) and human resources (workers, technicians, managers). Such combinations of inputs are called simply 'technologies', and a restructuring of the physical and human resources to generate a given product or to generate a new product is called a technological change. In an economic system based on the employment of wage labour an employer pays workers wages to induce them to contribute their skills – their abilities to provide useful labour services – to the operation of those technologies in which the enterprise has already invested.

The ensuing relation between the employer and the worker cannot be considered a mere market transaction – the impersonal exchange of a specified wage for specified labour services. The employment relation invariably entails attempts by both employers and workers to exercise power over the quantity of labour services supplied – what is generally called 'effort' – and the amount of wages paid (see Lazonick 1990). Workers want to be paid well for their effort, and may through individual and collective actions seek to limit the effort they give per hour and to increase the wages received in return. At the same time the employer wants to reduce unit costs, and prefers therefore to get high levels of effort and output in exchange for a given wage. The effort supplied by the worker affects unit labour costs, of course, but also the utilisation of plant and equipment and unit capital costs: a worker strolling between machines instead of running will use the machines less efficiently. Any analysis of the contribution of labour to economic performance must allow for the relative power inherent in relations between employers and workers to control the relation between effort and pay.

The analysis of employment relations and economic performance dates back to the nineteenth-century writings of Karl Marx (1867(1977)). Marx placed the evolution of employment relations at the centre of his analysis of British capitalist development. In Marx's view, that the capitalist employer controlled the physical means of production gave the employer power to extract more effort from the worker for a given wage. As long as workers had specialised skills to supply to the production process they could resist the attempts by employers to 'intensify their labour' – that is, to extract more effort per unit of time. But according to Marx, with the advent of machine technologies that rendered the specialised skills superfluous the worker became an easily replaceable input into production. In making the worker 'an appendage to the machine', as Marx (1867 (1977: 799)) put it, the capitalist was able to increase the intensity of labour to the maximum possible, while paying the worker the low wage for unskilled labour.

Subsequent historical research has offered a different perspective on employment relations. Notwithstanding the mechanisation of production in the nineteenth century the skills of key groups of shop-floor workers remained central to the technologies that permitted Britain to become an industrial giant (Samuel 1977), and indeed remained important well into the twentieth century (Harley 1974; More 1980). Marx overemphasised the degree to which the mechanical technologies in which British capitalists invested superseded the need for complementary skilled labour. Contemporaries marvelled at the new machines, but the technologies were still far from being fully automated. They required skilled labour to keep them in motion and thereby to enable high volumes of output to be generated on the shop floor.

Marx also overestimated the power of British capitalists to control the shop floor. Employers relied heavily on experienced shop-floor workers to manage the recruitment, training and utilisation of junior workers and to keep up the pace of work. The control over the management of production gave the experienced workers power in dealing with their employers, called 'craft control' (Zeitlin 1985; Lazonick 1990: ch. 6).

The foundation of craft control was not the power of unions. Rather the origins of craft control can be found in the willingness of British employers to leave the control of work organisation on the shop floor. The authority and responsibility to manage the shop-floor organisation of work in turn provided a basis for key groups of workers to form powerful trade unions that, through collective bargaining over the conditions of work and pay, consolidated craft control (Burgess 1975; Harrison and Zeitlin 1985; Lazonick 1990: ch. 3). The key groups of workers became known collectively as 'the aristocracy of labour' (Hobsbawm 1964 and 1984). They included such workers as turners and fitters in mechanical engineering, boilermakers in shipbuilding, puddlers in iron manufacture, mule spinners in cotton textiles, and hewers in coal mining.

The persistence of craft control and the consequent power of craft unions depended on the regional concentration of industry, the degree of industrial fragmentation among employers and the pace of skill-displacing technological change. All of the three factors were inextricably linked in the evolution of British industry, and created a uniquely British system of industrial relations.

A prime impetus to regional concentration of industry was the practice of senior workers recruiting new workers locally at an early age and employing them as assistants or apprentices receiving on-the-job training. The junior workers expected to find future employment as senior workers in the crafts and districts in which they were trained. In the cotton industry a piecer would hope to be promoted to the position of minder on self-acting spinning mules, while a tenter who assisted in weaving hoped one day to be granted his or her own complement of power looms (Lazonick and Mass 1984). In the iron and steel industry, again, the underhands provided a source of potential skilled workers (Elbaum and Wilkinson 1979). In the coal-mining districts of Durham and Northumberland, haulers looked forward to becoming hewers, at much higher pay (Daunton 1981). In some of the mechanical engineering industries (such as shipbuilding), formal apprenticeship systems were widespread (Pollard and Robertson 1979: chs. 7–8; Lorenz and Wilkinson 1986; Lorenz 1991: ch. 3).

To be sure, some young men took their training acquired in their home districts and migrated to other districts or, more typically, abroad. But most who acquired highly specialised on-the-job training remained ready to take up employment in the industrial districts and specific trades where they had grown up. The prime incentive for junior workers to remain put was the prospect of promotion into the aristocracy of labour.

As a result of the training and incentive systems the supplies of labour with particular skills reproduced themselves, and indeed tended to grow, in the industrial districts in which those skills were already in heavy demand. The concentration of particular types of workers in particular industrial districts itself reinforced the tendency toward regional specialisation of industry. New firms tended to locate in the same regions, where labour with the requisite skills was already abundant.

As a consequence the industries became increasingly concentrated in particular localities (Hudson 1989). Employers got access to large supplies of skilled labour. They could take advantage of proximity to suppliers and distributors to smooth the flow of work-in-progress. British industry became characteristically 'disintegrated', that is, split into different firms through the vertically related stages of purchasing, production and marketing. Given the localised concentration of industry, new businesses were able to specialise in a narrow range of activities, relying on specialised firms to supply them with inputs and on still other specialised firms to purchase their outputs. As more firms set up as specialists the suppliers and buyers for intermediate products became all the more readily available, thus reinforcing the trend to vertical specialisation. The specialisation had an important cost: British managers did not get experience in managing the large, integrated firms of the future. Therefore firms tended to confine themselves to single-plant operations – which made it easier for new firms to enter, and hence increased further the extent of horizontal and vertical fragmentation of industry.

The narrow product and process strategies of British industrial enterprises reinforced both their willingness and their need to rely on craft control in their production processes. In contrast to the organisation-building that characterised managerial capitalism in Germany and the United States, such relatively small, specialised firms did not need to invest in managerial structures. Hence the British firms could not achieve what have come to be called internal economies of scale and scope (Chandler 1990).

In the evolution of managerial capitalism in the United States, for example, the assertion of managerial control over shop-floor production activities was generally a final step in the development of a firm's capabilities to plan and coordinate its various business activities. The managers actually managed. The relatively underdeveloped organisational capabilities that characterised most British industrial firms gave such employers no choice but to rely on craft control to coordinate the organisation of shop-floor work. Before the 1890s the ready availability of skilled labour made British firms quite willing to countenance the persistence of craft control.

Nevertheless, even as they accepted craft control as a normal mode of productive organisation, British employers would have preferred that craft control not be translated into union power. The 1830s and 1840s saw major conflicts in the cotton textile industry over the right of workers to engage in collective bargaining. As late as 1854 the cotton manufacturers of Preston locked out their workers rather than recognise the union (Dutton and King 1981). The newly formed Amalgamated Society of Engineers suffered a major defeat in the lockout of 1852 (Burgess 1975: 23–4). In the iron industry, union organisation was nearly obliterated in the late 1860s after a series of industrial conflicts (Elbaum and Wilkinson 1979: 285).

The confrontations between employers and their workers did not, however, usher in a non-union era. The cohesion of workers was increased by their geographic concentration. On the employers' side, meanwhile, the 'great Victorian boom' of the third quarter of the nineteenth century undermined the incentive and ability of British firms to fight unionisation (Burgess 1975: ch. 1). Eager to generate output for sale while there were profits to be made, employers became receptive to sharing power with workers' organisations.

The 1852 lockout in mechanical engineering is a case in point. The official reason that the engineering firms gave for locking out the workers was to end their opposition to systematic overtime and piece rates. But for many employers the ultimate goal of the lockout was to eliminate the recently founded Amalgamated Society of Engineers as an effective bargaining agent. After three months of lockout the engineering employers emerged victorious. Impecunious workers signed declarations that they would give up union membership as a condition for being allowed to come back to work (Burgess 1975: ch. 2).

Yet despite the apparent defeat of worker organisation in mechanical engineering in 1852, over the following two decades the Amalgamated Society of Engineers emerged as the epitome of the 'New Model' union, that is, a union that entered into cooperative bargaining with employers, gaining job security and higher wages for an emerging aristocracy of labour (Cole 1962). For as in other British industries during the Victorian boom, engineering employers found that it was better to win the cooperation of workers by bargaining than to risk the loss of revenues from labour conflict. Across the staple industries in which Britain ruled the

world the foundations for negotiating collective bargains were customary work practices and earnings norms, some of which had been embodied in wage lists issued by employers in the non-union era (Huberman 1992). The period that proved to be the apex of British industrial dominance saw the consolidation of craft control.

The employers' acceptance of collective bargaining in turn opened the way for political transformations that served to reinforce the power of unions to preserve craft control. In the eyes of the British political elite of the 1860s and 1870s the advent of cooperative industrial relations under the aegis of business-minded union leaders transformed craft workers from uncontrollable subversives into responsible citizens. One result was the 1867 extension of the right to vote to the better-paid of the workers. With the acceptance of workers as responsible members of the political community in the 1870s came changes in labour law that facilitated the accumulation of strike funds by unions and the staging of strikes (Pelling 1976: ch. 4; Hunt 1981: ch. 8). To build its electoral strength the Liberal Party (which was strongly influenced by the interests of industrial capitalists) entered into a political alliance with working-class leaders. The alliance endured from the 1870s until 1901, when the infamous Taff Vale decision convinced most workers that they had to seek independent political representation (Saville 1960).

From the late 1860s through the late 1880s the employers and workers in various manufacturing industries sought formal systems of wage determination, permitting both sides to share the gains of the good times and the burdens of the bad (Porter 1970). The cotton industry, for example, saw the institutionalisation of their wage lists. By the 1880s the major source of conflict in the industry was the adjustment of earnings over the ups and downs of the business cycles. In iron and steel, hosiery, footwear and coal mining 'conciliation boards' were set up to settle disputes. Iron workers and coal miners agreed to 'sliding scales,' which adjusted wages over the course of the business cycle according to changes in the selling prices of the iron or the coal (Clegg *et al.* 1964: 15–23). In mechanical engineering, in which employers were continually seeking to substitute unskilled workers for skilled workers, the Amalgamated Society of Engineers was able to establish and enforce standard district rates. In shipbuilding the skilled workers – and in particular the platers, riveters and caulkers, collectively known as boilermakers – were highly organised by the 1870s. But because the shipbuilding industry was subject to severe ups and downs the workers had only limited success in engaging in collective bargaining (McClelland and Reid 1985).

The growth of union influence and the spread of collective bargaining through the 1880s enabled experienced workers to consolidate their positions of craft control on the shop floor. Even the weavers of coarse cotton goods, whose skills were much more easily replicable than those of, say, puddlers, boilermakers, fitters or mule spinners, were able to maintain customary divisions of labour and manning ratios as the bases for collective bargaining (Hopwood 1969: ch. 17; Fowler and Fowler 1984).

Employment relations and foreign competition

Until the 1890s the reliance on craft control improved the international competitiveness of British industry. On-the-job training from an early age (children started factory work in their early teens) generated an abundant supply of workers whose skills had evolved specifically to complement the newest machinery. In coal mining, for example, which was barely mechanised before the First World War and in which employment almost tripled from 1870 to the First World War, reaching 1.1 million in 1913, output depended almost entirely on accumulations of human strength and skill (Daunton 1981).

But, as indicated earlier, the achievement of high levels of productive efficiency is not merely a matter of the accumulation of skill. Through its day-to-day, and even minute-to-minute, application to the production process, skill must be transformed into effort. As a result the contribution of workers to superior economic performance depends on their attitudes. Workers will only expend high levels of effort in the production process if they expect to receive what they consider to be a 'fair share' in the consequent returns. In industries in which, as was generally the case in late nineteenth-century Britain, individual firms had small market shares, employers were too subject to intense competitive pressures to be able to make credible promises to workers that their shares would be 'fair'. Workers required the power of collective organisation to feel confident that they would have some bargaining power. By giving workers the assurance that their expectations for rewards would be met, collective organisation made workers more willing to contribute high levels of effort to production.

Craft control helped to elicit high levels of effort from senior workers, and from junior workers whose future employment prospects depended on how well they helped senior workers. The prospect of eventual promotion to a senior position encouraged junior workers to contribute high levels of effort despite low wages. The chances for junior workers to be promoted were greater when the industry was growing. But promotion was not absolutely assured.

From the late 1880s, however, the rise of foreign competition, combined with the availability of large supplies of low-paid but capable junior workers who had been trained on the job, created incentives for employers to attack craft control. The employers looked for ways to cut costs by using cheaper labour. Some industrialists even campaigned to cease collective bargaining altogether in order to restore to themselves the 'power to manage'. The engineering employers, as in the early 1850s, were in the forefront. Colonel Dyer, president of the Engineering Employers' Federation (EEF) put it thus in a letter to the *Times* on the eve of the 1897–8 engineering lockout: the employers in his organisation were determined 'to obtain the freedom to manage their own affairs which had proved to be so beneficial to the American manufacturer as to enable them to compete ... in what was formerly an English monopoly' (quoted in Pelling 1976: 112). Colonel Dyer held up Carnegie Steel, which had rid itself of unions in 1892, as an example of how to regain the power to manage. The Carnegie victory of 1892 was indeed the beginning of a non-union era in American industry that would last until the unionisation of mass-production workers during the 1930s (Brody 1980: ch. 1).

Faced by low wages well into manhood the younger workers became more susceptible to black-leg tactics on the one hand and to new forms of industrial unionism on the other. The threat to the privileged positions of the labour aristocrats became particularly apparent in the wake of the 'New Unionism' of the 1880s (Hobsbawm 1964: ch. 10).

Another threat to craft control came from the wave of skill-displacing technologies of the late nineteenth century, most of them emanating from the United States (Rosenberg 1976: chs. 1 and 2; Hounshell 1984; Thomson 1989). As a whole British industry was laggard in adopting the new technologies (though see ch. 3). The abundance of skilled labour and the successes of craft control had convinced many firms to stick with, and even make more investments in, the traditional technologies. Nevertheless, the diffusion of new technologies in Britain varied from industry to industry. In boot and shoe manufacture the rapid adoption of new technologies resulted in the serious erosion, if not obliteration, of craft control (Clegg *et al.* 1964: 24–6). In the mechanical engineering industries, new technologies were by the 1880s and 1890s creating opportunities for substituting unskilled for skilled men (Zeitlin 1983; McKinlay and Zeitlin 1989). In cotton textiles the adoption of ring spinning permitted the employment of low-paid female operatives instead of high-paid male operatives on the mule spindles. Yet even when substantial numbers of ring frames were adopted, in the decade prior to the First World War, mule-spinning factories remained the norm and the craft control of the operative mule spinners was as solid as ever. In cotton weaving the highly productive automatic loom barely entered the British industry before the First World War, and even in those firms where it was introduced the utilisation of the new technology – especially the number of machines per weaver – quickly became an issue of collective bargaining (Sandberg 1974; Lazonick and Mass 1984). In coal mining, mechanised coal cutting remained rare before the First World War, but, as Daunton (1981) has shown, differences across coal-mining districts in the hierarchical and technical divisions of labour had different implications for craft control. Toward the end of the nineteenth century, in short, the labour aristocrats began to feel pressure from above and below.

The persistence of craft control

The cotton textile industry was central to British economic development. In 1900 the industry employed over 3 per cent of the British labour force and contributed over 26 per cent of the value of all British exports. Moreover, in the decades before the First World War the number of firms in the industry expanded by 14 per cent and both the numbers of spindles and looms by almost 25 per cent (Jones 1933: 275–7; Sandberg 1974). In the post-First World War period, however, the cotton textile industry experienced a rapid and, as it turned out, permanent decline. During the inter-war years the British cotton textile industry lost its lower quality markets to Indian and Japanese competition, and in the decades after the Second World War it lost its higher quality markets to competitors in western Europe and the United States (Sandberg 1974; Lazonick 1986; Mass and Lazonick 1990).

But in the product markets for the coarsest cotton goods, competitive pressures of Indian production were already being felt in the 1880s. The loss of markets to India lay behind the major confrontation in 1891 over 'bad spinning' – the attempt to cut costs by using lower cost cotton. The conflict prompted Lancashire's spinning mill owners and managers to form the Federation of Master Cotton Spinners' Associations, with a militant faction advocating that the employers use their new-found unity to renounce the wage lists. The dominant faction in the employers' federation argued, however, that orderly relations with the minders constituted the industry's most valuable asset (Macara 1923; see also McIvor 1988). Moderation prevailed, in the form of the 1893 Brooklands Agreement creating formal procedures for cyclical adjustments in earnings and the resolution of shop-floor grievances. In the absence of any concerted attempt by employers to transform the shop-floor division of labour, mule spinners were able to use a combination of coercion and concessions to keep their junior workers in line. All the essential features of work organisation in mule spinning remained intact, and indeed were to persist into the 1950s.

In weaving, too, the rise of international competition did little to alter the traditional division of labour. The Uniform List of 1892 covering all cotton-weaving districts remained in force into the second half of the twentieth century. In 1935 the List, revised to take into account the high levels of unemployment, was made statutory by Act of Parliament. In the 1930s the cloth manufacturers made some attempts to increase the number of power looms per weaver above the standard four. On the whole, however, they were not successful. As in spinning, traditional modes of work organisation continued to characterise the weaving section of the cotton textile industry.

In the iron and steel industry, Britain lost its dominant position in the late nineteenth and early twentieth centuries. In 1870 Britain produced 50 per cent of world tonnage of pig-iron and 43 per cent of steel. By 1913 the United States was producing 40 per cent of world tonnage of iron and steel, and Britain only 10 per cent. After controlling about three-quarters of world exports of iron and steel around 1870, the British industry still accounted for over one third in 1913. But by 1913 Germany had surpassed Britain as the world's leading exporter. Despite this fall from hegemony the British iron and steel industry expanded steadily in the late nineteenth and early twentieth centuries, from an average annual output of 1.8 million tons in the period 1880–1904 to 7.0 million in 1910–14 (McCloskey 1973; Elbaum 1986: 51, 57).

On the eve of the First World War, British iron and steel continued to maintain international competitive advantage in higher quality sheet and tinplate markets. At home the industry was serving the still dominant British shipbuilding industry, which alone took 30 per cent of the nation's steel output in 1910–12. Like the cotton textile industry, British steel suffered from excess capacity in the 1920s. Although the industry experienced a recovery in the late 1930s, its fragmented structure of industrial organisation so obstructed the rationalisation and re-equipment of the industry that by the 1950s nationalisation had become a necessary, if not sufficient, condition for its technological renewal and ultimate survival (Elbaum 1986; Tolliday 1986a).

Rising iron and steel output made for harmonious labour relations. After a series of industrial conflicts in the 1860s employers and employees joined together to set up boards of arbitration and conciliation to negotiate the standard tonnage rates. Through the 1870s the skilled workers were generally contractors who employed underhands on fixed time-wages. The boards also negotiated sliding scales for tonnage rates to adjust for cyclical variations in the selling price of manufactured iron (Elbaum and Wilkinson 1979; see also Vichniac 1987).

Skilled iron and steel workers saw their earnings grow, because their bargaining power enabled them to maintain tonnage rate levels even as, largely through technical change, productivity increased. Left behind at first were the underhands, paid time-wages and possessing little bargaining power to extract higher wages from the senior workers who employed them. But unlike the piecers in cotton spinning, who were never able to organise independently of their worker bosses, from the 1880s the underhands formed their own unions and were increasingly successful in putting an end to the contracting system. They were able to negotiate their own tonnage rates directly with employers.

The breakdown of contracting did not spell an end to craft control, however. Even as underhands gained the right to bargain directly with employers, work organisation on the shop floor remained essentially unchanged. Indeed, with various classes of underhands now trying to control their particular occupations, craft control became even more entrenched and collective bargaining even more fragmented by type of job. Such was the overall balance of power between workers and employers in the iron and steel industry, moreover, that the first national sliding-scale agreement negotiated in 1905 endured until 1940 (Wilkinson 1977). Despite conflict during the depressed conditions of the 1920s, in iron and steel, as in cotton textiles, collective agreements concerning work and pay became 'laws' of employment relations that employers dared not challenge.

In sharp contrast, therefore, to the experiences of workers during the non-union era in the US iron and steel industry, British iron and steel workers continued to exercise substantial control over the relation between effort supplied and pay received. In particular, bargains for particular types of work that applied across all firms enabled workers to capture large shares of productivity gains.

The workers' power to capture productivity increases deterred the more financially solvent and potentially aggressive firms from making high fixed-cost investments in new technologies. The relatively low earnings of workers in low productivity plants facilitated the survival of firms that sought to rely on existing plant and equipment. The persistence – and indeed the spread – of craft bargaining reinforced the fragmented structures of industrial organisation in deterring investment in best-practice steel technologies (Elbaum 1986; and for another view McCloskey 1973).

In British iron and steel, as in cotton textiles, therefore, the existence of firms too weak to exercise control over external market forces, let alone over their own internal organisation, discouraged the industry from making investments in new technologies. Confronted by the new international competition from the late nineteenth century, employers in the staple industries sought the cooperation of their workers in the attempts to cut costs on the traditional organisational structures and technologies.

A willingness to share power with workers did not, however, characterise all the manufacturing industries. In the engineering industries – building textile machinery, steam engines, boilers, locomotives, iron ships and agricultural implements – employers united in the late 1890s. In a number of important dimensions the engineering lockout of 1897–8 replicated the attack on engineering workers in 1852. Both lockouts took place during the upswing of the trade cycle, as employers and workers sought to establish their claims to shares of productivity gains. The workers' demands were the same: an end to 'systematic' overtime, elimination of piece-rate payments and a ban on the use of 'illegal' men. In both lockouts the Amalgamated Society of Engineers (ASE), founded in 1850, represented the skilled workers, primarily the turners who shaped metal parts and the fitters who fitted the parts into the machines (Burgess 1975: ch. 1).

The ASE opposed systematic overtime because it increased unemployment among their members during periods of slack trade. In cotton there was 'short-time working', maximising the number of workers who could share in available wages while preventing the growth of an industrial reserve army pitting the unemployed against the employed. Engineering firms, however, preferred to hire fewer workers for longer hours, in order to employ only those workers whom they considered to be the best. The division between the employed and unemployed aided employers in the reduction of wages and the extraction of more effort from the workforce.

The ASE opposed piece-rate systems, too, not as a matter of principle but because in practice engineering employers had the power to use piece rates to divide and conquer the workers on the shop floor. In the conflict of 1852 the ASE had objected in particular to the 'piece-master system', the practice of subcontracting work to a skilled worker supervising gangs of workers paid time-wages. Unlike the mule spinners and skilled iron workers, whose unions preserved internal subcontracting and piece rates, engineering workers found that the piece-master system enabled a small proportion of skilled workers to strike individual bargains with employers and thereby gain the right to supervise gangs of other workers. The piece masters would employ less experienced workers, whom the displaced skilled workers deemed to be 'illegal men'. But even when skilled fitters and turners were employed they found themselves in the same subordinate position as piecers in cotton spinning.

The skilled engineering workers in fact faced much dimmer prospects than did the piecers. Each senior mule spinner – called a 'minder' – generally employed one 'big' piecer, who was in line to be promoted to minder status when he entered manhood, whereas the piece masters employed many skilled adult males, with no orderly line of promotion to piece-master status. In cotton textiles the minder-piecer system provided the shop-floor foundation for the rise and consolidation of union power and collective bargaining after the 1840s, whereas in engineering the piece-master system served only to break down the solidarity among skilled workers.

With employment conditions buoyant and technology relatively stable in the third quarter of the nineteenth century, skilled engineering workers had little reason to complain about systematic overtime and the use of illegal men. By the early 1890s the ASE had become the largest single union in Britain, with the skilled fitters and turners making up most of its membership of over 70,000 (Hyman 1985: 105). But by the 1890s the cooperative relations between the ASE and engineering employers were eroding rapidly – again under competitive pressure from America and Germany. In 1880 Britain had 63 per cent of world exports of capital goods, but by 1899 this share had fallen to 44 per cent. Making the greatest gains was the United States, whose share rose from 6 per cent in 1880 to 23 per cent in 1899, with American strengths lying in machine tools, agricultural machinery, locomotives and sewing machines. For the British economy itself the rise of US competition in both machine tools and machinery was, by the late 1890s, being characterised as 'the American invasion' (Saul 1960a).

Under the pressure of international competition, British engineering employers began to challenge the structures of work organisation and the levels of pay that had been put in place during the earlier decades of economic prosperity and industrial harmony. As in the 1840s, so in the 1890s the introduction of skill-displacing machine tools led employers to hire less skilled and less expensive labour in place of ASE members. At the same time the pressure of the new competition prompted employers to disavow existing arrangements for giving workers shares in the value that their labour helped to produce. Once again in the mid-1890s, ASE opposition to systematic overtime, piece rates and illegal men came to the fore. Despite its size and entrenched position as a New Model union the ASE was vulnerable because its membership included only about half of the fitters and turners in the engineering industry. There was in engineering, moreover, an ample supply of less skilled, adult male workers whose employment was independent of the fitters and turners, and who, unlike workers who had served apprenticeships, had no avenues of eventual entry into the ranks of the skilled. The semi-skilled workers were willing and able to operate the new machine tools, and displace the fitters and turners (Zeitlin 1983).

As had typically been the case with British working-class movements of the nineteenth century the ASE sought to unify and build its national membership during the 1890s by campaigning for a shorter workday (in

this case, eight hours). In 1896 the engineering employers reacted by forming the Engineering Employers' Federation (EEF). As the introduction into British industry of American machine tools quickened in the last half of the 1890s (particularly during the boom in bicycle manufacture that permitted the use of mass-production methods), employers renewed the assault on craft control that they had failed to carry through almost a half century before.

Like the defeat of the workers in the 1852 lockout, the 1897–8 lockout ended with ASE members going back to work on the employers' terms. Indeed, if one reads the 'Terms of Settlement' that the ASE executive was forced to sign to put an end to the lockout, one gets the distinct impression that engineering employers had put an end to craft control – that they had gained 'the power to manage' (Zeitlin 1983).

Yet the defeat of the ASE was only partial, particularly when compared with the eradication of collective bargaining in the metal-working industries of the United States in the early decades of this century. The very insistence by the EEF that the ASE sign the Terms of Settlement reveals that British engineering employers accepted collective bargaining as an unavoidable fact of industrial life. In the United States, employers insisted on, and won, the right to manage. In Britain, employers had to be content to struggle over, as they themselves put it, the power to manage, the right of British employers to manage having been irrevocably lost sometime and somewhere in the last half of the nineteenth century (Wigham 1973).

As it turned out, even the power to manage was severely circumscribed in British engineering firms after the turn of the century by the tendency of employers to continue to rely on experienced workers to coordinate the shop-floor division of labour and the transformation of inputs into outputs. Between the end of the lockout in 1898 and the First World War, British engineering employers did invest in more automatic machine tools, and they did employ less expensive labour to perform many tasks. The problem is that, unlike their American counterparts, most British firms failed to make the investments in managerial structures that, in conjunction with the new mass-production technologies, were needed to take the control of work off the shop floor. Like employers in the cotton textile and iron and steel industries, British engineering firms chose the low-cost strategy of relying on shop-floor workers to run their production. In 1914 some 60 per cent of the labour force in firms that belonged to the EEF was classified as 'skilled' – a classification that may have been more an indication of the persistence of craft control than of the persistence of difficult-to-replicate craft skills (Zeitlin 1983: 35).

The clearest manifestation of persistent craft control was the growing importance of the shop steward – a workers' representative drawn from the ranks of the operatives, with whom employers negotiated particular piece rates for the performance of particular, narrowly defined tasks (Hinton 1973). The shop steward's knowledge of production and his standing among his fellow workers became a critical link in the attempts by the engineering firms to introduce piece rates. Shop stewards began to play important roles in coordinating the organisation and flow of work on the shop floor. From 1909, shop-floor control and plant-level bargaining became the basis for a resurgence of labour militancy. It led to the replacement of the old ASE executive, who had sought to help employers enforce the Terms of Settlement. In 1913, the same year that the cotton spinners withdrew from the Brooklands Agreement negotiated in 1893, the ASE unilaterally rejected the Terms of Settlement (Zeitlin 1983 : 44). Craft militancy among engineering workers gained momentum during the First World War, in part to ensure that 'dilution' from the influx of women would not remain permanent (Reid 1985 ; Downs 1987).

In 1914 the ASE had 170,000 members, up from fewer than 100,000 in 1897. By 1918 membership was close to 300,000; and by 1920, under the newly formed Amalgamated Engineering Union (AEU), about 450,000. Membership in the employers' organisation, the EEF, also grew, from 714 firms in 1914 to 1,468 in 1918 and 2,600 in 1921 (Zeitlin 1983 : 47). But the very number of member firms in the EEF in the 1920s reflected a degree of industrial fragmentation.

In 1922 the EEF, in yet another attempt to regain the power to manage, locked out the workers, and once again the workers were forced to return on the employers' terms. As in the aftermath of the signing of the 1898 Terms of Settlement, engineering employers used their victory to continue the shift from time-wages to payment by results. In 1886 only 6 per cent of fitters and turners and 11 per cent of machinists in British engineering had been on piece work; by 1906 the numbers had climbed to 33 per cent and 47 per cent, with most of the increase apparently coming after the defeat of the workers in 1898. In 1914, 31 per cent of all engineering workers were paid by the piece; and in 1918, 41 per cent. By 1927 piece workers were 49 per cent of all engineering workers (Lewchuk 1987: 109). British engineering employers continued to rely on the manipulation of piece rates to elicit effort from workers. They did not take the path of the other capitalist economies, such as the United States, Germany and Japan, in building managerial structures that could exercise direct control over the shop floor.

The legacy of craft control

During the 1920s and 1930s, in the newer and expanding engineering industries such as motor vehicles and electrical equipment, British firms invested in mass-production machinery, permitting them to shift from skilled to semi-skilled workers. Because unions were not entrenched in the newer engineering industries, the EEF victory of 1922 virtually ended formal collective bargaining, thus ushering in a non-union era throughout the inter-war years. Yet, in sharp contrast to mass production in the United States, substantial control over the organisation of work and the determination of the relation between effort and pay remained with workers on the shop floor (Lewchuk 1987 : ch. 9 ; Tolliday 1985 and 1986b).

Through multinational investments in Britain the American mode of shop-floor management was to some extent transported across the Atlantic. Most notably, the Ford Motor Company, which began operations in Britain in 1911, invested in managerial capabilities to plan and coordinate the flow of work on the shop floor. Ford chose to pay its workers time-wages. In Britain, as in the United States, Ford used a high-wage policy, coupled with close supervision, to gain the cooperation of its shop-floor workers (Lewchuk 1987: ch. 8; Tolliday 1991).

But as Lewchuk (1987) has demonstrated in his comparative study of the British and American motor vehicle industries, the British mass producers chose not to invest in managerial structures. Instead they relied extensively on payment by results to elicit effort. Stressing the critical organisational difference between the American and British systems of automobile production, Lewchuk has argued:

> The majority of British motor vehicle workers in the 1930s could not be classified as skilled workers. In fact the production techniques used were surprisingly similar to those found in many American factories. New types of machinery and the emergence of volume production drastically reduced the skill required from individual workers. The most striking contrast between the American and British system was the limited extent to which British management had been able to exert direct control over labour effort norms and the limited extent to which management had claimed responsibility for organising the work place. Labour retained a significant say over the setting of effort norms and the organisation of work, while management controlled the process by which piece-rate prices were set, allowing them to control the ratio of wages to effort. (Lewchuk 1987: 185)

During the 1930s, when the major car producers were making large profits, motor vehicle workers received wages that were toward the high end of the earnings scale of engineering workers, with piece workers in the automobile industry doing especially well (Lewchuk 1987 : 94; Jolly 1988 : 102). With the level of piece-rate incentives under managerial control, workers had to supply enough effort to earn a decent wage but not so much as to provoke cuts in the piece rates. To avoid frequent rate-cutting that would have prompted workers to engage in restricting output (that is, keeping effort, and hence output, levels deliberately low in order to keep piece rates high), employers implemented premium bonus systems. Yet, without close supervision or significant managerial coordination of the flow of work between vertically related production activities, the supply of effort remained under the control of workers.

So that workers could not bargain over the piece rates the non-union engineering firms tended to avoid group incentives, preferring instead to enter into informal piece-rate bargains with individual workers for particular tasks (Lewchuk 1987: ch. 8; Zeitlin 1983: 39–40). A *de facto* division of labour emerged on the shop floor. The shop-floor workers were induced by piece rates to keep the flow of work proceeding apace from one part of the plant to another (the system was called 'induction'; Lewchuk 1987: 142). British managers were content to leave the coordination of the flow of work-in-progress to the workers.

In an industry such as motor vehicles, informal bargaining based on shop stewards had generally preceded formal union recognition, precisely because employers preferred bargaining with individual workers and their shop stewards to the collective power of a union (Purcell and Sisson 1983: 101; Batstone 1984: 99). In the 1940s and 1950s, as in the inter-war period, workplace bargaining was left in the hands of lower level managers – rate-fixers and first-line supervisors – and within the firm the shop-floor bargaining took place independently of high-level planning.

During the full employment decades of the 1950s and 1960s the mass-production metal-working industries became increasingly unionised. But in the absence of managerial planning and coordination of production activities, 'custom and practice' became the foundations for workplace bargaining. The shop stewards had considerable leverage in interpreting the customs and practices of the workplaces that they knew so well – and about which enterprise managers above the first-line supervisory level know so little (W. Brown 1972). As argued by the authors of a well-known study of labour relations in the car industry in the mid-1960s:

> In a sense the leading stewards are performing a managerial function, of grievance settlement, welfare arrangement and human adjustment, and the steward system's acceptance by managements (and thus in turn the facility with which the stewards themselves can satisfy their members' demands and needs) has developed partly because of the increasing effectiveness – and certainly economy – with which this role is fulfilled. (Turner *et al.* 1967: 214)

Elsewhere one of the authors of the study ascribed even more profound managerial functions to the shop stewards, arguing that 'the shop steward organisation ... aimed, ultimately, to keep men at work and to control – even discipline – union members'. He continued: The 'senior shop stewards were involved in the enforcement of collective agreements, and concerned with the implementation (even planning) and co-ordination of many details of production – such as transfers of men around the factory the scheduling of overtime or short-time working, and the recruitment and training of labour' (Clack 1967: 97–8).

Given the absence of personnel management in major British firms the shop stewards were critical for maintaining labour peace and eliciting effort. In the 1950s the shop stewards were particularly prominent in the metal-working industries, and in the 1960s and 1970s the model spread across all unionised sectors (Terry 1983; Batstone 1984: 79–82). Reliance on shop stewards enabled British industrialists to continue to avoid investments in personnel management, while creating a coherent, if informal, system of employment relations.

Economically, the peculiarly British system of workplace bargaining benefited both employers and workers as long as existing technologies and workplace practices could generate sufficient productivity to enable British firms to compete. But already by the early 1960s, as German and then Japanese, Swedish, French and Italian manufacturers joined the Americans in competing for world markets, British industry found itself in an increasingly competitive international environment. A response required investments in high-throughput technologies, which in turn required significant – and in most cases dramatic – alterations in shop-floor 'custom and practice' to generate returns on the investments. But reliance on payment by results and 'informal' shop-floor bargaining were resulting in upward 'wage drift' – that is, the power of workers to capture the gains from productivity growth for themselves (Marsh and Coker 1963). The results were inflationary pressures in the British economy and an erosion of profits for British manufacturing industry (Armstrong and Glyn 1986: 55).

Many observers of Britain's inferior performance in manufacturing have been quick to point the finger at labour. What they are observing is the legacy of craft control. But in long-run perspective, craft control has persisted in Britain because British firms chose not to build managerial structures. By contrast, the Japanese since the early twentieth century have pursued a strategy of investing in the skills of managers as much as shop-floor workers, and American firms have pursued a strategy of investing at least in the skills of managers (Lazonick 1990: chs. 7–10, 1991: ch. 1).

In contrast to both of these strategies (in the late twentieth century it is the Japanese who are showing the best results), British employers chose simply to leave skills on the shop floor, giving workers control over the utilisation of the firm's investments. Even in the absence of unions, and in the presence of unions often in conflict with formal bargaining agreements, British employers came to rely on shop stewards. Attempts to reform the informal system in the aftermath of the famous Donovan Report of 1968 ended by increasing the power of shop stewards (Terry 1977; Batstone 1984: 183).

A century ago, craft control played a productive role in making Britain an industrial power. Even, in the twentieth century, with the rise of managerial capitalism abroad, it was possible for a time for British industry to compete in international markets, in part because it had access to an abundance of industrial skills without having to make high fixed-cost investments in them. Over time, however, organisational and technological innovation abroad raised productivity to levels that rendered the British strategy competitive only if workers supplied more effort for lower pay. In reaction to attempts to erode their standard of living, British workers sought to protect craft control. Given the strategy of avoiding investments in managerial structures that British firms had been pursuing for decades, the firms were ill-prepared to take the control of work off the shop floor.

The Thatcherite attack on the trade union movement in the 1980s succeeded in diminishing the ranks of union membership in manufacturing and the ability of unions to stage effective strikes (Bassett 1986; MacInnes 1987). But in the absence of positive measures to encourage the building of managerial structures to plan and coordinate the productive transformation on the shop floor, British firms have tended to continue their reliance on shop-steward organisation. As Peter Nolan (1989: 118) argued in a critique of the so-called 'productivity miracle' during the Thatcher years:

> The (survey and case study) evidence seems to point to labour intensification as a key element in recent productivity gains ... The progressive weakening of labour, both collective and individual, has helped entrench the legacy of the past. Firms have sought short-term gains, through a series of step-by-step adaptations, which have left untouched basic structural weaknesses. (Nolan 1989: 118)

In an age of global competition, it is perhaps not enough to overturn the shop stewards. To put in place the organisational capabilities that global manufacturing competition in the late twentieth century requires, the firms and the nation must make large investments in the capabilities of their employees – whether managers or workers.