

# FUTURES

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# THE HIDDEN DIMENSION OF INDUSTRIALIZATION

## An expanding division of labour

Richard A. Walker

The division of labour is the forgotten category of classical political economy. Yet the present transformation of the industrial economies turns in large part on the relentless expansion of the division of labour and the difficulties created for the orchestration of production systems. These stumbling blocks for capitalist firms and nations demand new forms of industrial organization. So, too, the communist economies fell flat over the impossibility of coping with complexity in a rapidly moving context. Any viable socialism must learn from the organizational innovations of capitalism. Also, the politics of economic governance pertains not only to discredited communist regimes; regional or national capitalisms cannot prosper without political renewal in their class system and state politics.

The division of labour was a fundamental category of political economy from the 18th century physiocrats to Karl Marx, and was central to the analysis of early industrialization put forth by Adam Smith, the patriarch of modern economics.<sup>1</sup> With the rise of sociology as a discipline at the end of the 19th century, the division of labour was portrayed as the central fact of social life by Emile Durkheim, and Max Weber continued to study its effects in the form of occupations and social stratification. For most of the 20th century, however, the division of labour virtually disappeared from the roster of key concepts in the social sciences. A few economists—Marshall, Young, Stigler, Coase, Hayek—brought up the matter, but it was pushed to the background in mainstream political economy and social theory.

To the contending orthodoxies, the problem of the division of labour

The author is Professor in the Department of Geography, University of California-Berkeley, Berkeley, CA 94720, USA (Tel: +1 510 642 3903; fax: +1 510 642 3370). Many of the arguments in this article have been developed more fully in A. Sayer and R. Walker, *The New Social Economy: Reworking the Division of Labor* (Cambridge, MA, Blackwell, 1992). The author would like to thank Andrew Sayer for various ideas which appear in this article.

appeared to have been solved. For the neo-classical economist, the price system worked its magic on every entrant into the marketplace, however diverse in form or function.<sup>2</sup> To the defenders of state socialism in the Soviet Union, central planning answered the questions that the market left unresolved. In the domain of industrial sociology, Ford's assembly line triumphed so completely that one could hardly imagine a more productive way of composing the chorus of collective labour in the factory. For the organization theorist, there was the epic of modern management, from the German state bureaucracy to the multi-divisional form of the US corporation embodied by Dupont. In contrast to the paeans sung to market, state and corporation by the academic burghers, oppositional voices denounced the overweening collective power of finance capital, monopoly and oligopolistic corporations, and the corporate state. Yet almost nowhere in this century of unprecedented aggregations of power, centralized control and large-scale production, was much thought given to division, fragmentation or disintegrative tendencies set loose by the industrial revolution and capitalist development—except at the level of national rivalries, imperialist blocs and the ravages of war.

The world looks very different now, as the Soviet Union lies in tatters and the American half-century comes to a close. Capitalism is still with us, to be sure; its triumph over communism is hailed from the rooftops of every city, East and West. But even as it spreads into unconquered territory, the capitalist economy is being reshaped into new configurations of nations, competitive advantage, production and distribution that give the lie to simple notions of concentration, central control and stable geographic hierarchies of more and less developed places. The USA has seemingly lost its grip on the world, despite lofty proclamations from the White House; once invincible companies like General Motors and IBM are staggering under the blows of competitors; globalized currency trading shatters the carefully crafted Maastricht Treaty on European monetary union; Fordist automobile plants lie shuttered from Brazil to Paris. In this atmosphere, academic inquiry has turned to such themes as *The Rise and Fall of Great Powers*, *The Competitive Advantage of Nations*, and *The End of Organized Capitalism*.<sup>3</sup>

### The forgotten division of labour

Just when things seem ready to fly apart, the division of labour has returned to the agenda of political economy, masquerading in various guises. One prominent school of thought calls this the era of 'flexible specialization' or, more broadly, flexible accumulation. The gist is that large, mass-production operations and lumbering corporations are being succeeded by constellations of smaller firms and factories utilizing more flexible machinery, mutually supportive mixes of batch production, and deployments of labour (critically, of skilled labour); these are often found in spatial agglomerations, or industrial districts, like those of Central Italy and Silicon Valley. Another school speaks of the 'information age' in which an increasingly dispersed global economy is held together by advanced communication systems driven by computers, giving shape to what is less a spatial division of labour made up of hard bits of factories and warehouses than a 'space of flows' in which global cities occupy the key nodes in the web of whirling information. A third line of thinking gives prominence to economic 'networks', whether global or local, among large or small firms, or pertaining to production or innovation, in which the social embeddedness of bare-bones economic relations is crucial. This hardly exhausts the permutations involved in the recent revival of political eco-

nomy in the face of mutations that are wholly inexplicable in the doggerel of marginal economics.<sup>4</sup>

The contemporary debate over what is frequently called 'post-Fordism' recalls the discourse of the post-World-War-II generation concerning what then seemed equally unprecedented changes in the industrial or capitalist system. From the vantage point of the years centred on the 1950s, one could perceive potentially revolutionary developments leading from the machine age to an age of cybernetics, from a managerial age to one of organizational systems, from the proletariat to the technocracy, or from industrialism itself to an economy of services.<sup>5</sup> While the millenarian spirit of the manifestos of Daniel Bell, Ludwig von Bertalanffy or Norbert Wiener dates them today, the qualitative sense of transformative movement in the economic basis of modern society connects them with present concerns and with the underlying force of an expanding and deepening social division of labour.

Conversely, hasty proclamations of a new epoch of history give one pause as to the validity of more recent pronouncements of post-Fordism and its equivalents. Those who imagine that we live in a post-industrial economy of services might look to the relative success of those countries with the most vibrant manufacturing sectors, pre-eminently Germany and Japan. Those who think mass production is obsolete might look more closely at the millions of cars rolling off Japanese assembly lines or thousands of computer housings extruded by plastic-forming machines in Taiwan; indeed, batch production has been pushed to look more like mass production, even as the latter becomes more flexible in the array of products it can turn out in large quantities. The machine age is very much with us, thanks to the latest and most wondrous machine of the industrial revolution, the computer: from machines that made machines we have now machines to direct other machines. Some US corporations may be shrinking, but the giant firm lives on, its ranks swollen by Korean *chaebol* and Japanese companies that have become the sumo-wrestlers of the corporate world. Nonetheless, small and medium-sized firms persist and even prosper in a way that negates the old story of unlimited centralization of capital in one legal entity; new and more robust kinds of subcontracting, financing, and non-market affiliation give them a staying power little imagined in the heyday of Carnegie and Rockefeller.

Political economy has been living in a world of 'post-hockery'. Lacking a name or a date, all phenomena can be rendered significant by the name post-this or post-that. Where post-industrialism once held away, now it is post-Fordism—or post-modernism, if one is entering by the way of cultural theory. Flexible production has the merit of being a positive ascription, but suffers from dysplasia of the critical term 'flexibility', itself subject to the loosest sort of application. Flexibility is certainly an essential component of capitalist strategy today, but it denotes only reconfiguration without movement. It fails to capture the fundamental historical fact of evolution, even revolution, in the process of economic development in the modern, capitalist epoch. I have toyed with falling back on the old bulwark of industrial revolution, and calling the present age simply 'the new industrial revolution' in order to emphasize, with Marx, the continuing advance in the forces of production as a whole,<sup>6</sup> but this term defaults on the crucial elements of innovation taking place outside the realm of the factory and machinery.

It is thus necessary to take a different stance in addressing the present moment, if not to capture the whole of the economic transition before us, then at least to shine light from a new angle, to let us see things in a fresh way. I suggest,

therefore, that the best designation for the industrial future of the near term would be 'the new social economy'. The thesis is that the principal dynamic at work today is a widening and deepening division of labour and its correlate, increasingly sophisticated means of integration. It is this, I believe, that constitutes the elephant of which everyone has laid hold of one or another part, eager to proclaim the nature of the beast. It is a large and somewhat ungainly animal, this pachyderm division of labour, but no less mobile or active for all that. And I do not mean to make it sound tame, as in the 'social economy' of Christian reformers of capitalism; the latter's dark faces of class oppression, speculative mania, anarchic dyspepsia and unrelieved toil still haunt the globe. But I do mean to contest the popular radical slant on the capitalist system that it is merely anarchic or presently disorganized: the level of disorder in a highly divided economy is often extreme, yet at the same time forces of order and coordination are busily at work tying up the loose pieces and softening the discordant elements, and these forces are advancing across a broad front that exceeds in scope the narrow confines of the factory, the corporation or the market.

### **The expanding division of labour**

The division of labour has exploded, with the consequence that the industrial economy looks very different than it did 100 years ago. Both the social and technical divisions of labour have been extended to a degree that would have surprised even the most forward-looking observer of industrial revolutions in the 19th century. New kinds of work have appeared in profusion, while long-standing tasks have been chopped up, reshuffled and elaborated in the most fanciful manner. Yet the overall architecture of the industrial system remains familiar despite the changing nature of the building blocks: on the one hand commodity production, overwhelmingly of material goods; on the other hand consumption, whether by citizenry, business or the state; and in between and all around, the flux of circulation. What we have seen and will continue to witness is the embellishment of the industrial division of labour that has been with us for at least two centuries.

In the realm of production, the division of labour expands in several dimensions. First, the range of commodity sectors grows as new products appear on the market. This may involve the extension of product lines, the addition of whole new area of material technology (such as aluminium), or the breaking off of enlarged arenas of input supply. In the mid-19th century machinery makers branched off on their own, followed by makers of machine tools to make machines and electric motors to drive machines more precisely; in the mid-20th century computers appeared which could command other machines and software companies to create packaged machine-regulating instructions. The web of input-output relations thus created defies easy summary, so rich are the flows and counterflows from sector to sector in this production of commodities by means of commodities. The term 'production systems' is frequently employed as a way of capturing the unity of disparate pieces of the social division of labour as they cross-cut companies and industries.

Every commodity output requires a complex social labour process as well, involving not only the hands-on labour of workers on the production line but a host of supporting actors and people working behind the scenes. Technologies must be developed, products designed and processes engineered; parts must be

stocked, machines maintained, factories cleaned; finished goods need to be checked, tested, boxed and loaded; machines need to be installed, adjusted and ideas taken back to the supplier for new designs and uses. Production needs to be monitored, records kept, assessments made. New machines have to be ordered, workers hired, buildings constructed, telephones installed, and on and on. All this must be managed in some fashion, coordinated and directed, shaped into a functioning complement of social labour. And the same goes for every other workplace, from office to construction site, and extends to multiples of workplaces operating in conjunction or under the same organizational umbrella.

Industrial production creates an immense flux of goods in circulation, most of them traded through the market as commodities with a price, but many never leaving the confines of large corporations. Commercial trading, including wholesaling and retailing, is the physical manifestation of commodity circulation, with its immense network of shipping, warehousing and retail outlets. Alongside the tangible flux of goods and labour services courses a steady stream of payments for commodities exchanged, which is then disbursed as wages, rents and profits to workers, landlords and capitalists. These payments are made in money, which is handled, stored and created by financial institutions, led by commercial banks. Money has the further function of serving as investable funds, or capital, which circulate in search of profit; the spiralling expansion of capital, known as accumulation, is the most important form of circulation in market-dominated economies. The monetary and financial systems must expand in tandem with production, and do so today principally by means of credit creation—whether by credit cards, bank loans or government debt financing. Securities are another instrument by which credit is generated for capital investment, but so-called capital markets, such as stock exchanges, are chiefly involved with the trading of property rights, a kind of 'shadow circulation' that nonetheless occupies a great many people and some of the cleverest minds. And all this movement of things, money and deeds involves a mammoth contrapuntal flow of information, which is both a representation of and accompaniment to their circulation, whether as shipping manifests, price lists, bills or telephone calls.

Circulation is a fundamental category of political economy, but one that has received rather short shrift from both left and right, who either dismiss it as subordinate to production or mislabel it as 'service sectors' detached from industry. Circulation is, in fact, essential to industrial production and capitalist economies as a whole, part of a thickly interwoven division of labour. It not only links up the pieces of the industrial system, and ties them to consumers, but assists in the coordination and administration of production as surely as the corporate manager (often in the person of a merchant, broker or venture capitalist).

Consumption is normally thought of as the end-point of the chain of production and circulation, and itself outside the realm of the industrial system even as both have expanded their extrusion and absorption of masses of commodities. Yet the process of consumption demands, and commands, its own division of labour. This begins with the sales effort, into which industrial and retail capitalists pour an extraordinary amount of money and labour to attract, beguile and serve their customers, in the process bringing the producer and the buyer closer together than ever, meshing wants with outputs in finer and more variable fashions. Consumption is more than absorption of industrial outputs, however; it is human activity that requires additional labour. Since this labour has traditionally been provided in large part by women and servants in the household, in a social realm lying outside

market relations, it has rarely been treated with the gravity it deserves. This sort of consumer-labour continues to be important, but has come to revolve around consumer durables such as vacuum cleaners, washing machines and cars, and has also been chipped away over time by the penetration of capitalist enterprise into the domain of so many humble activities formerly performed in the home, such as cooking, entertainment and repairs. At the same time, the whole arena of consumption spaces and activities has greatly expanded outside the home, the street or the neighbourhood pub. The vast stretches of residential areas in cities where household life takes place are underpinned by huge quantities of capital and labour dedicated to roadways, utilities, buildings, parks, refuse collection and civic government. Beyond suburbia lie the grand spaces of touristic consumption, from Disneyland to Waikiki, and their supporting cast of workers and infrastructure. And behind all this activity lie the most expansive sectors of all in recent years, those general 'social services' through whose portals virtually everyone passes for some time: the education, healthcare and military/police/justice systems. Enormous divisions of labour in their own right, they are areas of production for social consumption that mostly operate directly on the person rather than generating goods for mass circulation (although they utilize huge quantities of goods, from pharmaceuticals to weapons).

Many social forces contribute to the ever-expanding division of labour, from military rivalry of nation-states to women's liberation from household confinement, but the principal economic logic behind this growth has been that of capitalist profit making and accumulation. Smith and Marx were quite right to see the connection between management rationalization of the labour process and the detailed division of labour in the factory, but the matter does not stop there. New product lines offer new sources of value and surplus value to the enterprising firm. Better marketing and sales effort bring better and quicker returns for the same output. Improved means of credit creation and money handling speed commodities on their way and lighten the investment process. More extensive and efficient financial markets, leasing arrangements and communications systems lower costs of doing business and quicken the turnover of capital and pace of accumulation. More effective administration of large production systems keeps them running smoothly, and so on. The expanding division of labour is thus as central to the development of the forces of production and industrial economies as the machine systems and materials technologies such as steel furnaces, machine tools, refineries and computers that usually occupy centre-stage in histories of industrialization and discussions of the future of modern industry.<sup>7</sup>

### **The challenge of the division of labour**

The shifting of labour into new and different specializations is instantiated in a double movement of division and integration. The term 'division of labour' is rather misleading in so far as it lays emphasis on the side of dividing up labour and masks the necessary counterpoint of 'integration of labour' which makes larger and more elaborate systems of working possible. The progress of industrialization has therefore rendered production more thoroughly 'social', in ways with which Marx and Durkheim, from the left and the right, were grappling. Today's labour systems can only operate with the aid of mechanisms of coordination, vast quantities of information and a level of technical knowledge utterly beyond the mastery of any one individual. Industry requires an intricate and far-reaching matrix of circulation

of goods, money and labour which only functions on the basis of continual social interaction and social investment. Modern divisions of labour are more than sequences of manual labour working on inert materials or component-assembly systems; production in the full sense demands sequential labour of research-development-manufacture, purchasing-manufacture-shipping, planning-financing-learning, process-feedback-reaction, market research-design-advertising, and so forth. Producers can no longer design products and then figure out how to assemble them, nor can they hurl goods on to the market oblivious to the way they are sold and used. There has, therefore, been a deepening integration of complex production systems and social labour processes, of social production and social consumption, by means of intricate webs of finance, towering hierarchies of corporate management, access to mountains of information and knowledge-bases, and carefully nurtured associations among professional and technical cadres, among other things.

The puzzle facing every manager, worker and capitalist is how to bring about the effective integration of the complex divisions of labour inherent in all modern production and industrial life. This means more than pulling together the disparate bits and pieces of social labour systems; it requires what is loosely known as 'coordination'. Integration begins with the physical linkage among workers and work units; materials, components, semi-finished products and labour must be able to move between workstations or factories. Information must flow as well, but information is an accoutrement of integration, not its essence.<sup>8</sup> As production is always a labour process as well as a physical process, it also needs cooperation among workers so that their various actions mesh in a sensible way; it does no good to deliver parts if they are machined to the wrong calibration. A third aspect of integration is correlate scaling of subprocesses, in recognition of economies and diseconomies of scope, eg meshing capacities of machinery so that one segment of production does not outrun the other, allocating sufficient labour to sales to dispose of total output, or sharing technical know-how between related labour processes. A fourth dimension is continuity, or the balancing of flows from one workstation to another, one line to another, or one factory to another; this principle applies, as well, to meshing the pace of work from design to manufacture or between advertising and market research. It improves performance by closing gaps in labour time, reducing idle stockpiles, and keeping machinery working at full tilt.

The problem of integration grows more perplexing as one considers competitive dynamics and the changing make-up of output, qualities and process technologies over time. To begin with, production systems must be effectively regulated according to relative calculations of cost, revenue and profitability. One must keep in line with competitive standards of labour time, turnover time, rate of profit and product quality. Hence products must be tested, materials tracked, labour scrutinized and machines monitored in a constant effort to meet social standards. Yet these standards are in flux as consumption patterns, technologies, national currency fluctuations or business cycles unfold. Regulation thus implies some ability to anticipate and plan for changing circumstances. Continuing production implies the ability to invest and expand or to cut back output and capacity; it means periodic retooling for new product lines and shifting demand; it means innovation in products and processes through research, learning on the job, and interaction with suppliers, buyers and competitors to keep on top of new ideas and solve new

problems in the industry; it means generating new finance at a rate needed to upgrade and expand.

While the goals of integration can be put in the relatively neutral terms of productivity, time and space economies, global competitive standards and sustained growth—which apply with equal force to any modern economy—the specific motives of capitalist enterprise drive industrialization with a special force and velocity. The matter of cost is central—materials cost, wage costs, machine cost, productivity of labour and effective application of machinery. But cost is only a beginning.<sup>9</sup> The creation and realization of value require a commodity that sells, and this means product usefulness due to good design, material capacities or appeal to fashion, and an effective (and cost-efficient) system of distribution and sales. New products also need to be continually introduced, opening up new domains of exploitable labour. The whole process needs to be done in good time, so that profit is returned on capital invested and sustained and expanded so that accumulation of capital proceeds apace: hence the emphasis on ferreting out any idleness in the workers, machinery, inventories, transportation and so forth, and the emphasis on continuity of flow. Competition in the capitalist scheme is, moreover, not simply keeping up to a nominal standard (or 'weak' competition), but the compulsion to get ahead of everyone else to earn extra profit, to gain market share, to destroy one's opponents, to grow rich and to accumulate capital even more rapidly (or 'strong' competition). Finally, the effectiveness of economic integration is measured not only by the economic standard of monetary return, but by the class standard of efficacy of managerial control over workers.<sup>10</sup>

### Overcoming the division of labour: organizational advances

Given the division of labour and the problem of integration of social labour, all industrial systems must perforce be highly organized, including capitalist ones. Mythology has it that capitalist economies are knit together solely by means of markets;<sup>11</sup> but markets—which are themselves socially constructed institutions—are embedded in a rich matrix of other organizational types. The classic dual of the market is the firm, a legal envelope for production and accumulation; Marshallian economic models posit no more than this pair. Yet even in the 19th century such a dualism was patently false. On the one hand, industrialization had been ushered in by means of the factory system, which depended on the integration achieved by bringing large numbers of workers and machines together under one roof and one command. On the other, market networks depended on the key nodal points of the merchant houses and merchant exchanges, which orchestrated markets at the same time as being party to transactions. Industry was also simultaneously embedded in a geographic embrace of local, national and international territories: at the local level, clusters of small firms shared the benefits of associated labour, complementary activities and the 'mysteries' of their craft in industrial districts; at the national level, governments passed and ensured enforcement of the laws of property and trade that sustained market relations, legislated experiments in limited liability and minted currency; and internationally, colonial empires and naval power protected burgeoning trade and investment ties. Industry also relied heavily on social networks beyond the pale of economic reasoning, such as extended families, businessmen's clubs and the old school tie.<sup>12</sup>

As the 20th century went on, however, the free market and networks of small firms appeared to be hemmed in and supplanted by the development of the large

corporation and state intervention and planning. These were seen as the principal rivals to liberal market societies and as the chief bearers of economic progress. State ownership and planning were definitive in the Soviet-model communist economies, but even on the capitalist side one heard declarations of the supersession of market relations by 'state monopoly capitalism' or 'the new industrial state'. While 19th century observers of the advancing forces of capitalism were most struck by the 'satanic mills' and the penetration of commerce into every avenue of social life, 20th century commentators were most taken by the reorganization of factory-based mass production achieved by the Fordist assembly line, the managerial command of multiple circuits of capital from finance through production to marketing by the modern corporation, and the stabilization of macroeconomic growth by means of Keynesian policies by central governments. These three forms of capitalist organization were held up regularly as the highest and best stage of economic civilization. While one could see clearly their superiority over many aspects of organizational techniques of the past, all three evolved and diffused over the course of the century without ever fully dislodging alternative forms of industrial organization such as workshops, small firms, territorial clusters, interfirm trade associations, informal business networks, or even familial ties.

By the late 20th century, moreover, Fordism, corporatism and Keynesianism were all in retreat, for various reasons. To some extent this was due to political attacks, particularly from a right wing motivated by romantic visions of an entrepreneurialism untrammelled by government, corporate or labour union overlords; but it would be a mistake to interpret the neo-liberal age of Thatcher and Reagan as a retreat to the past in complete ignorance of the superior rationality of modern forms of economic management embodied in mid-20th century institutions and accomplishments. The same is true of the hyper-liberal, extreme pro-capitalist politics now at work in the former communist countries, riding on the general sentiment that central planning was an abject failure. Nevertheless, contemporary failure does not mean that the planning system or the assembly line did not chalk up notable accomplishments in the past, despite the eagerness with which revisionist histories of communism or Fordism trace back their pathologies to the moment of birth.

The reason why previous systems of economic organization and management do not work as well as they once did is, in large part, because the nature of both the economic problem and its potential answers has changed. Central to this phenomenon is the continued development of the division of labour and its inverse, the means and methods of organization of social labour. While the story of technological progress in the realm of machinery, energy sources and materials conversion is rather well known, most people do not think of the industrial revolution in terms of organizational advances; yet these, too, have been essential to the overall rise of technological capabilities during the past two centuries of industrial capitalism. Different names have been put on it—eg *The Genesis of Modern Management*, *The Control Revolution*<sup>13</sup>—but the core issue is the ability to integrate systems of production and circulation more effectively over time, and usually at larger scales and involving more complex divisions of labour as time has gone on. The point of such innovation is, of course, competitive advantage and the quickening pace of capital accumulation.

The best known tale of the upward march of organizational technology has been that told by Alfred Chandler<sup>14</sup> about the evolution of the modern corporation, beginning with the operation of extensive railroads, through the invention of

specialized departments such as finance and purchasing, to the emergence of the multidivisional company. The main thread of the story involves organizational charts and management hierarchies, but vital subtexts include improvements in the methods of accounting, marketing, buying, recruitment and bureaucratic rule making. It is easy to draw the wrong lesson from the saga of the large corporations, however, which is that modern management and organization operate wholly within the confines of unified companies, and other modes of organization from the small industrial firm to the merchant-broker can be consigned to the dustbin of history. This triumphalist view of a long-run trend to gigantism among capitalist firms ignores wider developments in the organizational forces of production that affect the functioning of commodity markets and traders, industry associations, alliances and joint ventures, financial markets and bank relations with companies, urban concentrations, national governments and so forth. Corporatism fails, moreover, to account for the unexpected difficulties facing so many large firms in the present era. In the teeth of this evidence many observers have fallen back on a theme of system degeneration, either 'disorganized capitalism' or a shift backward from 'mass production' to a mode of 'flexible specialization' redolent of the craft tradition of the 19th century. A more plausible thesis is one that takes cognizance of the progressive tendencies at work in the field of capitalist organization which have left the large corporation less impregnable to competitors utilizing a phalanx of organizational tricks of the trade.<sup>15</sup>

Contemporary advances in methods of integrating production and circulation systems are legion, and are receiving widespread study in a variety of disciplines. This has led to fierce debates over which form of organization is triumphant in the so-called post-Fordist era,<sup>16</sup> whether it be locally centred industrial districts on the model of Silicon Valley or Japanese companies utilizing just-in-time production systems.<sup>17</sup> Up to this point it is impossible to call the match one way or another: while the Japanese are clearly ascendant in many mass-production industries and as a national economy as a whole, there remain many vigorous systems and places that do not conform to the Japanese model, as well as important countervailing tendencies within Japan. It is not mere eclecticism, therefore, to put forward a more commodious alternative to the warring factions of contemporary industrial theory, one which takes into account the full gamut of developments at work in the present era. Even a brief highlighting of contemporary methods of integrating the division of labour will render evident the scope of innovation afoot. These pertain to all facets of the division of labour, from the factory floor to extensive inter-firm networks:<sup>18</sup>

- pull-through systems at the factory level where components move forward only as needed for final products actually assembled;
- computer-integrated systems of machinery in the factory where computers keep track of production, inventories, downtime and machine maintenance for purposes of balancing output, avoiding power surges and breakdowns, minimizing stock on hand etc;
- systems for integrating current production with systematic upgrades in product and process design—an area where Japanese automobile manufacturers have led the way;
- just-in-time subcontracting networks that link systems of factories and firms into tight systems of short-time production and delivery. There are really two species of such supply networks—true just-in-time on the Japanese model and

- the more widely adopted standards of 'more-on-time' delivery, with better monitoring of quality and reduction of stocks coming in and out of the factory;
- automatic check-out systems of inventory control and reorder in retailing, as used in supermarkets, department stores and chain stores—these may or may not imply just-in-time or orchestrated subcontracting networks;
- highly orchestrated subcontracting networks with short delivery times, as in supermarkets contracting globally for fresh fruit and vegetables or Marks and Spencer stocking its stores from a multitude of London fabricators and distribution houses;
- pull-through systems that link sales outlets directly back to production—these are best known in garments, thanks to such retail chains as Benetton and the Gap, but also can be found linking IBM sales representatives to computer systems assembly, and automobile showrooms to car factories;
- computerized billing and accounting systems for credit cards, utilities, banks etc;
- intra-firm systems of generating innovation by linking R&D with manufacture and both with marketing, utilizing *ad hoc* work teams drawn from various divisions—in Japan these teams are reconstituted gradually (the *sashimi* system) to include more people from the practical end of things as the idea gets closer to fruition;
- inter-firm associations for coordinating production standards and technical improvements, as in the case of Japanese *keiretsu* systems of subcontracting, where lead contractors intervene directly in subcontractors' activities and force top-level subcontractors to form mutual-improvement associations;
- better management of plant closure and employee transfer, as in Japanese steel plants;
- management-labour agreements for systematic upgrading and transformation of workers' skills as markets and technologies change, as in German machine making;
- inter-firm alliances for competition and innovation, both within local districts and over long distances—these are widely prevalent in certain sectors such as electronics and telephony but can also be found in steel, automobiles and wine production;
- close alliances of banks and manufacturing firms for sustained investment to continually expand and improve production, as in Japan and Germany;
- close alliances of industrial firms organized in trade associations, usually working with government planners, for purposes of targetting future technologies and product arenas that required long lead times and high uncertainty, as in Japan or in US defence-related electronics;
- venture capital firms (brokers) who integrate risk-seeking finance with new technology in start-up firms, adding in the necessary management and marketing personnel.

The range of improvements which the above methods of integration represent is astonishing. Indeed, a case can be made for calling the late 20th century a new epoch of industrial revolution—the third or fifth, depending on whether one cleaves to a model of 50-year long waves or 100-year turnings of the industrial century. In any event, the organizational leap of the present period pushes the capitalist system towards a new epoch of growth based on a far more sophisticated orchestration of labour systems and collective effort than ever before.<sup>19</sup>

### Future of non-capitalist industrialization

Industrialization and capitalism have not everywhere been synonymous in the 20th century, yet the collapse of the Soviet Union has brought to an end the experiment in socialist economics begun by Lenin and Stalin. This failure had a great deal to do with the expanding division of labour—or what is usually vaguely designated as the growing 'complexity' of modern economies<sup>20</sup>—and the difficulties this posed for the effective operation of the Soviet planning system. In coming to terms with the systemic disintegration of Soviet communism, we need not drag out for yet another beating the dead horses of Cold War discourse. Central planning proved for many years to be a viable alternative to market exchange as the principal mode of integration for an enormous industrial system; the cynical view that it never worked at all is patent nonsense.<sup>21</sup> The real question concerns the sustained effectiveness of central planning over an extended period of time and its relative efficacy compared to its capitalist rivals.

The first ideological construct of which one should be disabused is the simple notion that the market and central planning stand alone as the only two, opposing forms of economic organization. As we have already seen, capitalism runs on the basis of a wide spectrum of modes of integration in which market exchange is dominant and still the defining characteristic, but is heavily complemented by a web of non-market institutions and relations from the factory to national military planners. Similarly, Soviet communism never functioned on central planning alone, but relied profoundly on methods of negotiation between enterprises and commissariats, bureaucratic rules within ministries, personal networks between enterprises, political manoeuvring by ministries and party officials, military muscle by the armed forces, the mustering of workers to meet monthly targets, the cutting of corners on official plans, barter among individuals and enterprises, and black markets priced in foreign currency, among others.<sup>22</sup> The system was a hodge-podge indeed, and revealed in the end to be much more crudely put together than the ideologues of both sides allowed anyone to believe.

Yet the Soviet planning economy did work rather well for a time, particularly in the Stalinist period of forced-march industrialization from the 1930s to the 1960s.<sup>23</sup> We would do well to recall the general awe in which Soviet achievements were once held around the world, even grudgingly admitted by anti-communist standard bearers such as Walt Rostow and Alexander Gerschenkron.<sup>24</sup> Nonetheless, the central planning system never functioned as advertised: GOSPLAN could never solve the calculation problem posed by the social division of labour; the planners could not possibly stay on top of the gargantuan puzzle of fitting inputs to outputs across a matrix that takes in literally millions of items, from raw materials to final outputs. The dilemma was not merely that an industrial economy is composed of so many parts, but that the planners would have to select among several production methods for any good, many possible inputs for any output, among many goods for any given purpose, and among many desires that might coalesce among the public. More daunting even than making the correct linkages and achieving a minimal level of labour coordination was the problem of regulation of time, effort and quality, and the delivery of products that conformed to consumer demands. Worse yet was the allocation of new investment, the introduction of new products that satisfy an increasingly sophisticated public, and the ability to sustain innovation across the wide front of advancing technologies shaking the foundations of the industrial world. So things went wrong from the start, and the

errors multiplied over time as the economy grew more vast, the industrial base became more sophisticated (or failed to do so), and the people became more demanding customers.

In the end, the Soviet system, both formal planning and the rest of its highly politicized economy, could not keep on top of a furiously moving target. The capitalist economies did a better job. But how much better? Clearly the triumph of capitalism is marred by its own deep fissures—many of which go beyond the pale of this discussion—among which widespread organizational incompetence under the stress of economic evolution and industrial revolution features prominently. A sizeable literature has now been amassed enumerating the failings of Fordism, a shorthand for a collection of industrial practices from the shopfloor to the executive suite that held sway during the mid-20th century.<sup>25</sup> Most of these were pioneered in the USA early in the 1900s, and include an extremely detailed division of labour, the linear assembly line, totally pre-engineered production systems, sharp functional and spatial divisions between R&D and manufacturing, open bidding by component suppliers, and a sharp divide between workers and managers.<sup>26</sup> Corporations still clinging to outmoded methods of industrial production and organization have suffered competitively in the 1970s and 1980s, and the US economy as a whole has declined from its lofty position of a half-century earlier to become a lumbering giant in a race that is being won by sleeker, 'post-Fordist' nations, pre-eminently Japan. Had we attended more closely to the national origins and geographic insinuation of the organizational advances noted in the previous section, we would have found the USA and the UK to be poorly represented in key areas of business practice.

Ironically, the Soviet Union and the USA were closer in many respects of industrial organization than ideologues on either side would like to admit because the early communists adopted many leading practices of the day when the reputations of American Fordism and Sloanism were on the ascendant—hence Lenin's famous (and unsettling) view that Taylorism was the most progressive form of the detailed division of labour.<sup>27</sup> Marx's notion that the joint-stock company of his time was the precursor of socialist industry seems equally premature and even naive, and the same could be said of the many corporatists of the mid-20th century, from A. A. Berle to J. K. Galbraith, who anticipated the convergence of private and social planning, squeezing out the market as the principal mode of economic integration.

Nonetheless, the impulse to extract the seeds of a future from the organizational shell of the present is not to be dismissed lightly, even if one must be forewarned not to freeze history in its tracks and anticipate the 'highest stage of capitalism' before its time—an error to which Chandler was no less prone than Lenin. It would appear that the dynamic nature of the capitalist economies has played tricks on all of us once again, showing the masterful achievements of the early and mid-20th century to have been less perfect than believed at a time when the machine age was triumphant, Henry Ford had become an icon, and the multinational corporations first stretched their limbs across the globe.<sup>28</sup> The question is, then, what might be gleaned from contemporary developments in industrial organization for a non-capitalist alternative?

The answer is by no means obvious; yet some implications cannot be overlooked. One is that the centralization of control within a single entity, factory or corporation, however large, is not sufficient to solve the difficulties of coordination across complex divisions of labour. Indeed, reduction of administrative hierarchies

and downsizing of plants have become commonplace. Another is that market exchange and market institutions continue to be improved, as in basic 'commodity' exchanges and futures markets, and to extend their sway in many domains, from which even the largest country cannot insulate itself. At the same time, the market mechanism is repeatedly and actively compromised by the formation of inter-firm alliances and networks for such diverse purposes as harnessing suppliers, broadening product lines, and concentrating forces on special projects. Of particular importance has been the growing attention of capitalist managers to the critical linkages between retail sales and production, between assemblers and component makers, between product design and development and process engineering, and between current ways of doing things and the path to better methods through continual, often incremental, improvement. While 'flexibility' has become the watchword in regard to solving these kinds of coordination problems, all facets of integration in the broad sense indicated previously are germane here, and the ability to switch quickly from one linkage and one activity to another, as implied by the term flexibility, is quite often less at issue than the ability to tighten up relations between different elements of the division of labour and to systematize the coordinated forward motion of disparate working groups, workplaces and firms in a way that maximizes technical innovation and competitive leadership.

Calls for more democratic input into central planning in any future socialist economy are therefore well taken, not only in the political sense of resisting the concentrated power of party and state functionaries, but also in the economic sense of decentralizing the integrative function to a level that corresponds better with constellations of activities too large to be encompassed within an enterprise and too diverse to fit comfortably as a line of command in an industrial ministry. The long-standing socialist ideal of eliminating the market altogether will continue to be frustrated by the expanding division of labour and the improved performance of many market institutions; therefore, Diane Elson's<sup>29</sup> proposal to 'socialize the market' by seizing the key nodes of brokerage and allocation, ie the classic positions of commercial or merchant capitalists, and operate them under political rules of social interest is well taken; it merely acknowledges that markets are socially constructed, so they can just as well be constructed more socialistically. Yet that alone is not enough, for there must be ways of allowing worker-owned and -managed units of production (factories, workshops, farms, cooperatives, enterprises etc) to associate outside the strict rules of market exchange through voluntary, semi-permanent or temporary agreements akin to inter-firm alliances under capitalism. Moreover, unions, professional associations, industry associations, regional governments and the like have a big role to play, not just in advancing the class, skill-group or local interest in the distribution of social income, but by contributing to the organization of the economy and the management of industrial performance. The distribution of powers towards these collective actors in economic life is the flipside of the democratization and socialization of state and market, and is a principal means of giving substance to the socialist catchphrase 'the associated workers' at the same time as filling in the large gaps between market and plan, enterprise and enterprise, or workplace and workplace in a spatial division of labour.<sup>30</sup>

At the same time, recent capitalist innovations in producer-consumer linkage and in promoting technical change suggest that it is not only the former state socialist systems that leave much to be desired in these realms. Simple cost-effectiveness in production is inadequate as the guiding principle of either capitalist

or socialist economies, however associational, democratic or planned they may be. We are rather far from having universal ideals for socialist retailing (beyond reviving the small shop or the farmers' market) or socialist R&D (beyond excluding the corrupting influences of untrammelled profit seeking and militarism). Elson rightly calls for active consumer input via open manifestations of demand and associations to represent consumer interests; but one could certainly go beyond this to imagine consumer-worker alliances and consumer-technologist link-ups outside the market. Similarly, the pervasive chasm between manual workers and mental workers in the division of labour needs the most serious attention in any alternative society committed to reducing social disparities (beyond curbing the capitalist class) and generating more socially and ecologically responsible industrial technologies.

I do not mean to give the impression that there is some sort of 'middle way' that magically dispels the basic antagonism between market-dominant, capital-driven economies and plan-dominant, state- and party-controlled economies. It is one thing to recognize that the market system remains an ineluctable mechanism for assessing the social value of millions of commodities produced around the globe; that, despite what 'free market' ideologues maintain, planning and regulation are essential to all industrial enterprise; and that a vast middle ground of organizational forms are necessary to the functioning of every industrial system. It is quite another to negotiate the transition from a capitalist to a socialist society when power, principle and huge amounts of money are at stake.

### **Social governance of the division of labour and economic renewal**

One cannot end a discussion of the organization of social labour without mention of the politics behind economic governance. Industrial organization theorists are notorious for relying on a purely technocratic conception of 'management' as a hierarchical and technical function within large corporations; Chandler's otherwise insightful work is deeply flawed by a teleological invocation of the M-form as the apotheosis of modern management and the end of organizational history. In this regard, the shift towards a language of collective 'governance' introduced by Oliver Williamson<sup>31</sup> can only be considered salutary. The field of social action and interaction opened up by the division of labour is in every way a place in need of government in the classic sense. Economic government is more than the formation of networks and institutions that envelop and sustain the naked matrix of markets and firms, but less than the intrusion of the state on every front.<sup>32</sup> Governance is the effective use of power and authority to give shape to collective undertakings and to realize social goals.

There has been a lot written of late about 'trust' across business networks and 'the social embeddedness' of economic systems, and most of it is true.<sup>33</sup> As Karl Polanyi<sup>34</sup> pointed out long ago, the idea of a pure and naked market is a fiction which, if taken literally, threatens the very fabric of social life. But the sociology of economics has to take on board more than social relations cast in an egalitarian vein; it must confront those systems of power and coercion that are the Janus face of government and the essence of politics—and the bane of bourgeois theory. Mainstream political economists and sociologists, from Adam Smith to Max Weber, have always sought to shift the onus of power onto the state and lift it clear of the domain of civil society and the hallowed ground of the market, while radical theorists from socialists and anarchists to feminists have tried to reveal the

underlying structures of power that rule in, around and through the seemingly fair operations of market economies. Karl Marx, in particular, argued for the core relations of class oppression at work in capitalist societies, and his essential insight has never been satisfactorily answered by the system's apologists. The politics of governance are therefore profoundly reliant on the nature of class power in any society.

On the way to uncovering the class nature of the economy, however, Marx jettisoned an early critique of the social division of labour and along with it any equally satisfactory analysis of the way it divides and stratifies workers as surely as any class of capitalists.<sup>35</sup> His vision of communist society's ability to overcome the division of labour through voluntary association of the working class—without the intrusion of power via the need for governance—was no less sanguine than Emile Durkheim's conservative prognosis for the healing powers of social life in the face of the modern division of labour introduced by the commercial and industrial revolutions.<sup>36</sup> This is not to say that class oppression is the same as the quandaries raised by the division of labour, or that the latter are everywhere as severe as the depredations of class, but rather that the division of labour presents humanity with its own puzzles of how to cope with hierarchies of skill, control and command, as well as divisions of interests among disparate groups of workers and enterprises. There has been an endless and frustrating debate for over a century between those who see the primacy of a 'Marxian' social ordering based on class (property ownership and extraction of surplus labour in production) and those who emphasize a 'Weberian' stratification based on occupation and market position, ie on the division of labour. The two sides have talked by each other, instead of recognizing that both systems of hierarchy can be at work at the same time, making the identification and ranking of 'classes' into a muddy business indeed.<sup>37</sup> At a minimum, the division of labour is at work in the widely observed phenomenon of the internal fragmentation of both capitalist and working classes, and in the emergence of a 'middle class' of managers, professionals and technicians with considerable clout in 20th-century economic and political affairs. So when we speak of class, the division of labour is always implicated.

With the perfection of the modern corporation after the deaths of Marx and Durkheim, a new generation of political and institutional economists of various political stripes declared the euthanasia of the capitalist by a new class of managers and engineers. The death notices turned out to be premature, however much capitalism had been transformed by the organizational revolution of the 20th century. The organizational innovations of our own time have prompted similar euphoria about networking, joint ventures, business cooperation, closely knit districts of small and medium-sized firms, and the like. Left-liberal academics Michael Piore and Charles Sabel rediscovered in industrial districts of Italy the egalitarian empire of crafts espoused by Proudhon in the 19th century, while popular consultant and writer Tom Peters has taken a page from the anarchist's book in order to preach 'liberation management' for capitalists struggling to make large firms flexible in the face of difficult times.<sup>38</sup> Once again, power has slipped behind the curtain of wishful thinking or bourgeois indifference to the concerns of working people.

The contemporary organizational revolution cannot be purged of its class dimension. In a capitalist system, innovation in organization, as in all technology, depends on more than the 'automatic' workings of market calculation, competitive pressure and scientific research; new ideas depend heavily for their acceptance on

a degree of open-mindedness towards change among those in power, openness in the class structure to allow bright and enterprising people to rise in the ranks and put their ideas into practice, and political room to manoeuvre for the state. That is, innovation depends to a significant degree on the condition of the ruling class, in business, the state, the universities and so forth. A closed and reactionary elite is not likely to lead the way into a new era, while a measure of class renewal and political change is needed for economies to keep moving forwards. This principle of internal flux operates within capitalist systems, and affects their relative performance over time. Compare, for example, the long-term economic fate of Germany and Japan, which experienced a substantial house cleaning among the governing elite after the débâcle of failed warfare and conquest, with that of the UK and the USA, which emerged from World War II with their social orders intact, their ruling circles saved by national unity campaigns from the working-class upheavals and economic failures of the 1920s and 1930s. It is not accidental, I believe, that the brilliant just-in-time and subcontracting systems of Japan came out of a new company, Toyota, and were invented by Taiichi Ohno, who began as a trade union leader and who expanded and perfected the system as he rose through the ranks of management.<sup>39</sup>

But where will class renewal come from this time? Transformations forged by national defeat in warfare are easier to identify than more subtle transitions through concerted political action by new power blocs, permeable class structures that allow new talent to rise to the top, the capacity of states to assert developmental policies against recalcitrant elements of national elites, or lower-class upheavals that loosen the grip of a conservative ruling class and allow meaningful reform.<sup>40</sup> In the US case, a much-needed political renewal was begun in the 1960s but turned aside by a successful counter-revolution from the right, triumphantly holding state power during the 1980s under Reagan and Bush. Indeed, the legions of the right fought under the ideological banner of a free market shorn of all traces of social governance and state orchestration, leaving the country bereft of industrial policy and any guiding ideas other than the quick buck and the celebration of wealth, however unproductively gained. The sclerosis of the American body politic was underpinned by the Cold War, a military-security state, a moribund labour movement, racial backlash, an ageing populace, and the deadly inertia of past economic glory holding most large corporations in thrall.

It is little appreciated that a shifting division of labour has contributed to many of the unhappy circumstances that delivered the USA into its latter-day malaise. The engorged military-industrial complex swallowed up resources and talent in fighting imaginary wars and generating cost-plus profits without civilian-economic issue.<sup>41</sup> The decline of the heavy industry cut out the heart of organized labour from the 1930s, while fast growing areas of electronics, office work and consumer services were growing up as largely non-unionized. At the same time, the vast majority of workers added to employment rolls over the past 30 years have been women, young people and immigrants, cut off from the centres of ageing white male power, bourgeois and working-class alike. Corporations fattened on years of global dominance larded up their management with layer upon layer of useless functionaries, while talented young people escaped the corporate embrace to work in small firms.<sup>42</sup>

On the bright side, the changing social division of labour created opportunities for up and coming skilled workers and entrepreneurs in new industries and labour segments, not to mention busting up the old order in organized labour and

recruiting millions of new people with new demands. The geographic component of such shifts has been marked, with most of the new industrial base, new firms, new capitalists and new workers appearing in the Sunbelt over the past quarter century, if not longer.<sup>41</sup> Note that six of the last seven US presidents have come from this zone. Yet class renewal has been deeply tainted by the historic legacy of rapacious capitalism and slavery in the US west and south, with Reagan free-marketers from Southern California and Texas oilmen representing the worst strains in regional political economics. Nonetheless, other vital strains comingle with these, and hold enormous portent for national leadership. Silicon Valley, for example, demonstrates the enormous potential of US capitalism when freed of the social and technical weight of the past; it also demonstrates the limits of a model that evades many of the dilemmas of the US political economy rather than providing direct answers—innovation was rife and growth sustained, but political power slight and interest in industrial governance nil, until very recently.<sup>42</sup> Clinton and Carter, the only Democrats to buck the Republican monopoly on the White House, come out of the new south, with its peculiar legacy of measured class and race reforms over the past 50 years. The new politics of the south arrived on the retreating heels of a reactionary agrarian order built on sharecropping cotton, propelled by industrialization and the civil rights movement. Its standard bearers, such as Carter and Clinton, have been plucked from an emergent middle class of bright technocrats, who have presided over a modest but significant regional reform reminiscent of turn-of-the-century progressivism in the north.<sup>43</sup> A common denominator of the western and southern politics of growth, however, is the lack of an organized voice for labour, and a heavy reliance on low wages among a considerable proportion of the workforce, even in wealthy California.

If the contemporary reworking of the capitalist division of labour has contributed to the unhinging of the US political economy, it is equally the case that new forms of industrial organization and of social labour hold out the promise of more effective ways of organizing industrial economies and more intelligent and humane ways of working. The current picture is a mixed one indeed, in which the amazing capacity of, say, Nike to orchestrate a global system of labour contracting to deliver a panorama of shoes to highly diverse consumer markets is to be balanced against the efficiency with which such a network is used to exploit very precisely a rainbow of international labour. Similarly, a company like Apple Computer can combine some of the most freewheeling work for bright young technical workers with quite mean and harmful working conditions for low-level clean-room operatives and assemblers. Nonetheless, in a world which workers held greater power over the conditions of their labour, they would clearly prefer many of the post-Fordist methods of social labour to earlier ones, including building better designed products, eliminating egregious waste, more integrated teamwork, more inter-firm cooperation, and the like—not to mention being able to turn around and purchase better-quality and lower-priced goods. All these depend on improved means of organizing social production, on the shopfloor and far beyond. Without a broader, more representative organization of the working class, however, the long-sought goal of turning the powers of industrial production to the widest good of the most people will remain unfulfilled. To achieve this, working people must make something of the new conditions—a greater international division of labour, new migrations and changing faces, new forms of cooperative work, demassing of collective labour, new webs of connection between workplaces, tighter relation of work to consumption, and the rest. But this sort of cooperation and assertion of

class interest is a tall order due to the flux in working-class constituents in an epoch of profound reconfiguration of the social order along with the organizational matrix of capitalism. Traditional working class institutions, communities, and politics have been ripped asunder, leaving only the various shreds of social movements without a unifying integument.<sup>44</sup> As a result, politics in all the advanced capitalist countries are adrift, rife with right-wing fantasies of national cleansing and recuperation. Pessimism would seem the order of the day, if it were not for the amazing capacity of the capitalist system to transcend its own successes as well as its failures, and to put the contradictions of class and exploitation, of untrammelled accumulation and unfettered competition, back on to the agenda of civil societies.

#### Notes and references

1. For further discussion of this legacy, see eg A. Rattansi, *Marx and the Division of Labour* (London, Macmillan, 1982); M. Perelman, *Classical Political Economy: Primitive Accumulation and the Social Division of Labor* (Totowa, NJ, Rowman and Allenheld, 1983); D. Rueschmeyer, *Power and the Division of Labor* (Stanford, CA, Stanford University Press, 1986).
2. The most conservative economists, such as Coase and Hayek, were more attuned to the problem of the division of labour than mainstream neo-classicals, although they arrived at the same conclusions about the virtues of markets.
3. P. Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York, Pantheon, 1987); M. Porter, *The Competitive Advantage of Nations* (New York, The Free Press, 1990); S. Lash and J. Urry, *The End of Organized Capitalism* (Madison, WI, University of Wisconsin Press, 1987). See also on this theme M. Olson, *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities* (New Haven, CT, Yale University Press, 1982); and H. Overbeek, *Global Capitalism and National Decline* (London, Unwin Hyman, 1990).
4. On flexible specialization see, eg M. Piore and C. Sabel, *The Second Industrial Divide* (New York, Basic Books, 1984); and A. Scott, *New Industrial Spaces* (London, Pion, 1988). On the information age see eg M. Castells, *The Informational City* (Cambridge, MA, Basil Blackwell, 1989); and M. Hopworth, *Geography in the Information Economy* (London, The Guilford Press, 1990). On networks, see, eg C. Freeman, 'Networks of innovators: a synthesis of research issues', *Research Policy*, 20(5), 1991, pages 499–512; and R. Camagni (editor), *Innovation Networks: A Spatial Perspective* (London, Pinter, 1990). I take all these terms with a pinch of salt.
5. The best review of this literature (though still partial) is by K. Kumar, *Prophecy and Progress: The Sociology of Industrial and Post-Industrial Society* (Harmondsworth, Penguin, 1978. Second edition 1986).
6. See R. Walker, 'Regulation and flexible specialization: challengers to Marx and Schumpeter?', in H. Liggett and D. Perry (editors), *Spatial Practices: Markets, Politics and Community Life* (Sage, forthcoming).
7. J. T. Forrester (editor), *The Information Technology Revolution* (Cambridge, MA, MIT Press, 1987); T. Forester (editor), *The Materials Revolution* (Cambridge, MA, MIT Press, 1989); and C. Freeman, *The Economics of Industrial Innovation* (London, Frances Pinter, Second edition, 1982); C. Freeman (editor), *Long Waves in the World Economy* (London, Pinter, 1984).
8. G. Hodgson, *Economics and Institutions* (Philadelphia, PA, University of Pennsylvania Press, 1988).
9. Contrary to both conventional Marxist and neo-classical accounts, where cost minimization is everything.
10. This crucial Marxian point is vividly argued by S. Marglin, 'What do bosses do?', *Review of Radical Political Economy*, 6(2), 1974, pages 60–92; and H. Braverman, *Labour and Monopoly Capital* (New York, Monthly Review Press, 1974), but overplayed to the detriment of a full understanding of the economic logic of capitalism.
11. For a useful debunking of this myth, see Hodgson, *op cit*, reference 8.
12. The domain of more or less formal business organization is, of course, backed up by the entire web of relations and institutions by which every society is knit together and collective effort is mobilized and coordinated. These aspects of human interaction go under such titles as custom, friendship, authority, coercion, and negotiation. C. Lindblom, *Politics and Markets* (New York, Basic Books, 1977). Oddly, however, Lindblom jumps directly to these without noting the intermediate level of formal organization.
13. S. Pollard, *The Genesis of Modern Management* (Harmondsworth, Penguin, 1968); J. Beniger, *The*

- Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA, Harvard University Press, 1986).
14. A. Chandler, *Strategy and Structure* (Cambridge, MA, MIT Press, 1962); and A. Chandler, *The Visible Hand* (Cambridge, MA, Harvard University Press, 1977).
  15. This requires, first, dropping the now debunked idea that the large corporation banished real competition from the world market. Cf P. Auerbach, *Competition* (Oxford, Basil Blackwell, 1988).
  16. Just as accurately called 'post-Sloanist' if we are to give the organizational dimension outside the factory its due.
  17. See, eg, M. Kenney and R. Florida, *Beyond Mass Production: The Japanese System and its Transfer to the US* (New York, Oxford University Press, 1993); and A. Saxenian, *Regional Networks: Industrial Adaptation in Silicon Valley and Route 128* (Tentative title) (Cambridge, MA, Harvard University Press, forthcoming 1994) for sharply opposing views.
  18. The timing and geography of the following list is admittedly a hodge-podge, and would need to be sorted out in a more sustained treatment of what is labelled here as vaguely 'contemporary'. My purpose here is to highlight the organizational dimension of the epoch, and to leave aside advances in machines, materials and the like.
  19. This statement does not mean that several other conditions will not have to be met before sustained growth of the kind observed after World War II is again possible; a fuller accounting of capitalist growth theory is not possible here.
  20. See Robin Blackburn's, 'Fin de siècle: socialism after the crash', *New Left Review*, No 185, 1991, pages 5-67, an otherwise excellent review of the debates over Soviet planning that ends up begging the question of 'complexity'.
  21. A. Nove, *The Economics of Feasible Socialism* (London, George Allen and Unwin, 1983).
  22. P. Rutland, *The Myth of the Plan* (London, Hutchinson, 1985); J. Komai, *Economics of Shortage* (New York, North-Holland, 1980); and M. Burawoy and J. Lukacs, *The Radiant Past: Ideology and Reality in Hungary's Road to Capitalism* (Chicago, IL, University of Chicago Press, 1992).
  23. R. Amman and J. Cooper (editors), *Industrial Innovation in the Soviet Union* (New Haven, CT, Yale University Press, 1982); and R. Amman and J. Cooper (editors), *Technical Progress and Soviet Economic Development* (Cambridge, MA, Basil Blackwell, 1987).
  24. W. Rostow, *The Stages of Economic Growth* (Cambridge, MA, Cambridge University Press, 1961); A. Gerschenkron, *Economic Backwardness in Historical Perspective* (Cambridge, MA, Harvard/Belknap, 1962).
  25. The term was popularized by writers of the 'regulation school', chiefly M. Aglietta, *A Theory of Capitalist Regulation* (London, New Left Books, 1979); and A. Lipietz, *Mirages and Miracles* (London, Verso, 1987). For a review, see M. Dunford, 'Theories of regulation', *Society and Space*, 8(3), 1990, pages 297-322.
  26. The best presentation of the achievements of Fordist production is D. Hounshell, *From the American System to Mass Production* (Baltimore, MD, Johns Hopkins University Press, 1984). For critiques see Aglietta, *op cit*, reference 28; and R. Florida and M. Kenney, *The Breakthrough Illusion* (New York, Basic Books, 1990).
  27. P. Auerbach, M. Desai and A. Shamsavari, 'The transition from actually existing capitalism', *New Left Review*, No 170, 1988, pages 61-79.
  28. Compare, for example, the mid-century triumphalism of S. Gidieon, *Mechanization Takes Command: A Contribution to Anonymous History* (New York, Oxford University Press, 1948), with today's gloomy prognostications.
  29. D. Elson, 'Market socialism or socialization of the market?', *New Left Review*, No 170, 1988, pages 3-45.
  30. R. Selucky, *Marxism, Socialism, Freedom* (London, Macmillan, 1979).
  31. O. Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting* (London, Macmillan, 1985).
  32. Lindblom, *op cit*, reference 14.
  33. Eg D. Gambetta (editor), *Trust: Making and Breaking Cooperative Relations* (New York, Basil Blackwell, 1988); M. Granovetter, 'Economic action and social structure: the problem of embeddedness', *American Journal of Sociology*, 91, 1985, pages 481-510.
  34. K. Polanyi, *The Great Transformation* (New York, Rinehart, 1944).
  35. Rattansi, *op cit*, reference 1.
  36. E. Durkheim, *The Division of Labour in Society* (London, Macmillan, 1893, English translation, 1984). Marx retained a wicked assault on the detail division of labour within the factory, but appears to have seen no comparable problems raised by the social division of labour once private ownership and competition of capitalists had been removed.
  37. F. Wright (editor), *The Debate on Classes* (London, Verso, 1989). To say nothing of what happens when race and gender are introduced, and a number of lesser systems of power and division as well.
  38. Piore and Sabel, *op cit*, reference 6; T. Peters, *Liberation Management: Necessary Disorganization for the Nanosecond Nineties* (New York, Alfred Knopf, 1992).
  39. M. Cusumano, *The Japanese Automobile Industry* (Cambridge, MA, Harvard University Press, 1985). On the importance of post-war labour struggles in forging the Japanese *nenko* system of lifetime employment and company unions in the core factories, see M. Kenney and R. Florida, 'Beyond mass production: production and the labor process in Japan', *Politics and Society*, 16(1), 1988, pages 121-158.
  40. For a most enlightening overview of the relation of developmental states and ruling elites in the Third World, see P. Evans, 'The state as problem and solution: predation, embedded autonomy, and structural change', in S. Haggard and R. Kaufman (editors), *The Politics of Economic Adjustment. International Constraints, Distributive Conflicts, and the State* (Princeton, NJ, Princeton University Press, 1992), pages 139-148.
  41. N. Rosenberg, 'Civilian "spillovers" from military R&D spending: the US experience since world war II', in S. Lakoff and R. Willoughby (editors), *Strategic Defense and the Western Alliance* (Lexington, MA, Lexington Books, 1987), pages 165-188.
  42. Many of the 1960s' generation avoided business altogether, so poor was the opinion of capitalism in general and US business in particular. In the 1980s, on the other hand, far too much talent was wasted on speculative finance and catering to the whimsies of the rich and famous.
  43. M. Storper and R. Walker, *The Capitalist Imperative: Territory, Technology and Industrial Growth* (Cambridge, MA, Blackwell Publishers, 1989).
  44. Saxenian, *op cit*, reference 20; Florida and Kenney, *op cit*, reference 29. Not to mention a model limited by its capitalist, anti-union and industrial base. For a broadside against the valley, see D. Hayes, *Beyond the Silicon Curtain: The Seductions of Work in a Lonely Tra* (Boston, MA, South End Press, 1989).
  45. M. B. Pudup, 'From the war between the states to the war between the states', *Proceedings of the Korea-US Joint Seminar on Scientific Methodology for Regional Environments* (Seoul, Korea, Korea Section of the International Regional Science Association, 1992), pages 107-122.
  46. One should add that the numbers of new capitalists springing up in places like China and Hungary, with the disintegration of communism, is contributing to the class restructuring of the world economy.