

NEW PRODUCTION SYSTEMS: A RESPONSE TO CRITICS AND A RE-EVALUATION

John Mathews

A vigorous debate has arisen in recent years over the sort of industrial system that Australia should be pursuing, as we emerge from the somnolent years of protection and 'riding to prosperity on the sheep's back'. It is a debate that can be traced back at least to the Jackson Report on Manufacturing Industry, representing the high point of the Whitlam government's strategy (and having a shelf life effectively of three days, being issued on 8 November 1975); then after the hiatus of the Fraser years, it picked up again with the Accord, the establishment of such bodies as EPAC and the Australian Manufacturing Council, and with such initiatives as the issuing of a Green Paper on Industrial Democracy, and the development of sectoral interventions such as those covering heavy engineering and the steel industry. Debate reached a high point with the publication of *Australia Reconstructed* (ACTU/TDC 1987) and it then proceeded to engage with the practical tasks of award restructuring, skills formation frameworks, enterprise restructuring and the current issues of the future of employment and the labour market, organisational innovation and workplace reform.

A recurring feature of these debates has been a concern with underlying models of productive efficiency and the effect that these models might have on the formulation of policy options. In regard to award restructuring, for example, there are choices being made that revolve around the issues of skill, participation and management practice. What the AMC (1989) have called a 'new workplace culture' calls for such choices to be made in the direction of responsible autonomy of work

groups, encouragement of multi-skilling, payment for skills acquired, and involvement of unions in the production process. Other choices are clearly possible and are favoured by employers who seek to compete along least cost lines.

My own contribution to these debates has been an attempt to clarify the characteristic features of these choices, in a bid to reveal the assumptions underpinning them. In relation to award restructuring, for example, Richard Curtain and I dubbed the choices being made as falling into two options we called Cost Minimisation and Productivity Enhancement (Curtain & Mathews 1990). Cost minimisation was a strategy we expected to see being pursued in low value-added industrial sectors, with little regard for skill or worker involvement. Productivity enhancement was a strategy that could be expected to emerge in higher value-adding sectors competing along a broader spectrum that encompassed quality, responsiveness and innovativeness as well as cost efficiency. More generally, I have adopted a convention that characterises the choices in terms of a continuation of the principles that worked in the era when mass production was pre-eminent and apparently uncontested (neo-Fordism) as opposed to the option which breaks with those principles in favour of strategies and structures oriented towards non-standardised competitive strategies (post-Fordism)¹.

Surprisingly, given the broad front for both empirical and practical interventions opened up by these kinds of debates, the notions of neo- and post-Fordism have attracted a great deal of criticism in Australia. Since my work has been associated with many of the efforts to provide a coherent theoretical foundation for labour movement interventions in these restructuring debates, I have attracted much of this criticism. For the most part I have refused to be provoked by these attacks, many of which seemed to confuse the ideas of intellectual critique with personal and political abuse. But the time has come when perhaps a restatement of my views is called for, if only to clarify my position for those who

¹ I am referring here to writings published in 1989 and 1990: Mathews 1989a,b,c,d; 1990a,b; as well as Badham and Mathews (1989).

would wish to take a more constructive approach to the development of industry and workplace strategies in Australia.

Much of what I wrote on 'post-Fordism' appeared in 1989, and it reflected experiences that went back to the early and mid-1980s. This body of work therefore spans a decade. It is perhaps timely to go back and see what I think was valuable in those debates, and respond to some of the points made by some of my critics. Besides, the world is moving on and demands constant attention to the conceptual framework we employ for analysing the tendencies at work in industry.

The Critics of Post-Fordism

In this article I intend to deal with the criticisms voiced in Australia by Campbell (1990), Hampson (1991), Wright (1992), Gahan (1991), Bramble (1990) and to some extent, Ewer et al (1991). There may be others, but their criticisms would be reproduced within the group I have selected.

Campbell sees some positive features in the notion of post-Fordism and its underlying critique of Fordist structures and their rigidities. But he is dubious concerning its utility as a basis for the development of labour movement strategies. I don't think his arguments are sound, as I'll explain in a moment, but his objections carry weight; he presents a reasoned counter-position to the one advocated by myself. This is an approach which I see as the stuff of intellectual debate.

A very different approach is taken by Hampson. He contrives to see nothing valid whatsoever in the claims and arguments that I and others have presented. He grounds his critique in a discussion of three intellectual streams that have fed into my work: flexible specialisation (denounced as an historically flawed concept); technoeconomic paradigm shifts (denounced as technologically determinist); and French Regulation theory (applauded as being correct, but very different in its formulation from my alleged exposition). In this paper I shall rebut Hampson's claims, and defend my interpretation of these streams of thought, putting them in the context of current debates on restructuring.

By contrast, Wright has conducted empirical research on the diffusion of Taylorism in Australia that breaks new ground; I consider his work interesting, novel and relevant. It stands on its own merits. Yet he insists on prefacing his 1992 paper with a polemical attack on post-Fordism, and in particular an attack on my use of the term 'Taylorist' as a description of modern work systems. He thereby slants his whole paper as an attack on an imagined post-Fordist opponent, rather than situating it more constructively within current attempts to refashion management legacies in Australia. He charges that authors such as myself have illegitimately taken over the term 'Taylorism' and applied it to work systems which appeared after Taylor's death. One despairs of such pedantry; hasn't Wright heard of organisational metaphor? If we can talk about Fordism as a system that survives Henry Ford, can we not do the same in the case of Taylorism? Nevertheless Wright's is no doubt a defensible point of view, and deserves a reply.

The same cannot be said for the work of Gahan. It is a strange kind of scholarship that systematically misquotes, misrepresents and misconstrues an argument, denounces this false construction, then fails to give any kind of counter-position which would enable the reader to reach a judgment as to the respective merits of the arguments. It is a strange kind of debate when only one side is (mis)presented. Nevertheless the publication of Gahan's work by the *Journal of Industrial Relations* demands an engagement with his critique.

I will not however engage with Bramble. His critique of post-Fordism as utopian patently stems from a political position radically opposed to my own. He finds repugnant any suggestion that unions and managements should find common ground at the enterprise level to cooperate in the achievement of greater levels of productivity and efficiency. He is more concerned to keep the two sides apart to better pursue the class struggle. Whether this is indeed a viable strategy for labour is not one I intend to debate.

The work of Ewer et al, *Politics and the Accord*, is concerned largely with questions of political strategy and with a defence of 'strategic unionism'. Again instead of taking what might be useful from the debates over neo- and post-Fordist strategies, they insist on denouncing them as being, apparently, radically opposed to their version of strategic

unionism. Hampson is a contributor to this book, and many of his previous criticisms are reproduced in it. In this article I will not engage with their broader political concerns (this must wait for another occasion) but will confine my remarks to workplace restructuring issues.

Who's Afraid of Post-Fordism?

I must admit to being rather surprised by the vehemence of some of the attacks on post-Fordism. I was surprised because the notion opens up a new world of workplace reform that one might have assumed would be very attractive to young activists and scholars alike. As I have used the term, post-Fordism stands for something beyond the rigidities and dehumanisation of the Fordist system; for an ending of the power and authority relations of the Fordist and Taylorist systems. It thereby opens up the prospect of the invention of work systems in which people and their skills are valued, and where authoritarian systems of surveillance and control give way to democratised forms of participation and self-management. That these aspirations are *not* utopian (contra Bramble) but are in fact economically and industrially feasible, given the difficulties being encountered by firms which cling to the structures and procedures of the Mass Production System, is the core of the post-Fordist argument.

Firms in Australia, in both the private and public sector, in services and in manufacturing, *are finding* ways of throwing off the organisational shackles that belong to the Mass Production System. They are experimenting with non-authoritarian teamwork structures that dispense with traditional supervisory and surveillance systems. Why are they doing this? Because the new structures are more flexible, responsive, productive and efficient. Many of the firms are grouped in the federal government's current Best Practice Demonstration Program; they include CIG Gas Cylinders, Bendix Mintex, Colonial Mutual Life Assurance, and many others.

At the University of NSW I have been researching these developments, in a series of studies of what I am calling 'organisational innovation' in

Australia (Mathews 1991a; 1991b; 1991c; 1992). The term used is significant; it is broader than workplace reform. This is because the innovations being attempted involve not just changes to the way in which work is done, but complementary changes to the way in which it is managed, and to the way in which production is complemented by new product development, by relations with suppliers, and by relations with customers. All these are systemic elements of the 'new production systems', and they constitute the stuff of world best organisational practices today.

There is no single model of 'best practice' emerging to take the place of Taylor's 'one best way' that he saw as the goal of scientific management. The more I study these issues, the more I am struck by the diversity of forms emerging as the rigidities of the mass production model are dispensed with. The implication is that there is space for creative interventions at the level of the enterprise, for union activists, for young managers, and for scholars documenting the whole process. This is the programme of work that I see being opened up by the notion of post-Fordism.

The concept of post-Fordism itself was the gateway through which unions and firms in Australia were enabled to *come to grips with the inadequacies of their prevailing models of structural efficiency*. These models conceived productive efficiency in terms of division of labour: a fragmentation of jobs down into minute tasks repeated over and over again; a division of authority between various management and engineering groups, and in particular a division between production and quality control; and the necessity for hierarchical structures of authority to give coherence to everything which was being kept separate through this doctrine of division. All these notions make sense only in a particular form of production system, namely one in which everything is standardised and routinised in order to turn out endless quantities of the same kinds of goods or services. They made sense, in other words, only within the construct of the mass production system.

I use the term 'construct' advisedly, because in my writings it stands both for a real, historical system, and for an ideological construct based on the success of that system. The ideological construct is what matters most; it is what informs the writings of 'efficiency experts' and

mainstream administrative science, whether they are talking about mass production proper, or sectors of the economy that have nothing to do with it, such as the administration of health care systems. It is to counter the notions of productive efficiency being peddled in these non-mass production sectors, as well as in industries departing from the mass production norms, that the notion of post-Fordism was developed (at least in my writings).

The practical significance of these issues is profound. Unions that are led to intervene in restructuring issues are forced to present an agenda specifying what they consider to be desirable and undesirable directions for change. The implication is that they will support restructuring efforts in what they consider to be desirable directions, and oppose the others. What criteria are they to use in making such judgments? If an employer is proposing rationalisation of operations, vertical integration and standardisation in order to achieve longer production runs, in the name of economies of scale, in order to compete on cost terms against Third World imports, and asks for union cooperation in such a strategy *in order to preserve jobs*, then what stance should the union take? Clearly there will be pressure from the membership to go along with the employer's proposals. But the union leadership needs to ask itself whether competing *on cost terms alone* is a viable long-term strategy for their industry. This leads them necessarily to question the model of productive efficiency and competitive strategy being pursued by the employer. This leads them, in other words, to consider the competing paradigms of productive efficiency (without necessarily putting the issue in those words).

Let me spend a little time expounding what I see as the main features of these competing paradigms, in both their real historical aspects and their ideological dimensions, before engaging with some of the criticisms that have been levelled. This will also allow me to update work that was published three years ago; since then, the field of scholarship in organisational structures and industrial systems has rapidly moved ahead.

The Mass Production System - Past and Present

Unlike the critics of post-Fordism, I continue to find the concept of the mass production system to be most useful as a benchmark against which to measure restructuring efforts. It is one which finds widespread application in current debates over industrial restructuring around the world²

The term *mass production* describes a system in which product, process and labour are all standardised. The standardisation allows for long production runs, which lowers unit costs, which in turn allows prices to be cut and markets to be extended. Thus, as Adam Smith predicted, the extent of the market becomes the determining influence over the form of production. The original pioneers of mass production, such as Henry Ford, created not only new products, but new markets. Ford's practice of lowering prices for his Model T cars, for example, went against the commercial wisdom of his time (which held, naturally enough, that if you want to increase profits you increase prices)³.

But lowering prices was essential to extending markets, which set the conditions for producers being able to lengthen production runs. The longer the production run of a standardised good, the greater the possibility of recouping costs sunk into design, development and capital investment in assembly facilities. This is the system in which the notion of 'returns to scale' makes formidable economic sense. It was so successful that it drove out of the market its competitors based on craft and batch production.

² There is by now an enormous literature on the kinds of industrial and production systems that are possible once the shackles of mass production rigidities are dispensed with. See for example the discussions given in Dentouzos et al (1989); OECD (1989); Lane (1988); Hirst & Zeitlin (1990); and in Australia, DIR/AMC (1992).

³ Ford of course was not the first to practise this principle. It had been followed in the 1840s by Rowland Hill with the introduction of the penny post, designed explicitly to expand the market for postal services.

Let us first consider the real mass production system (henceforth MPS), which arose as a historical fact in the early years of the 20th century, and became a dominant industrial force throughout the world. While Piore and Sabel (1984) contributed to the literature on the MPS, they drew, like others, on an impressive and still expanding body of scholarship⁴.

This literature documents the origins, rise to dominance and loss of dominance of a system based on standardised production. It has been extended to encompass the impact mass production techniques have had on management practices, in particular on accounting (Johnson & Kaplan 1987), as well as on culture more generally (Harvey 1989). In the recent work of Chandler (1990) and Lazonick (1991) it has been given a definitive comparative dimension, utilising the general categories of a 'competitive managerial capitalism' which arose in the US and a 'cooperative managerial capitalism' in Germany, both superseding the 'personal' or 'proprietary' capitalism of 19th century Britain; managerial capitalism has in turn been succeeded as dominant system by the 'collective capitalism' of Japan and the Far East in the later 20th century.

Briefly, the MPS as a category encompasses some of the common features which emerged in industry at the turn of the century, allowing firms to capture systematically what Chandler (1990) calls economies of scale and of scope. It was put together from three main sources.

First, there was the 'American system' of manufactures, developed in the mid-19th century, which introduced the novelty of interchangeability of parts, replacing the unified nature of craft-produced products. Manufacturers of the new standardised products, such as the Colt revolver, the Singer sewing machine, or the

⁴ The literature on the mass production system as it emerged in the US in the last quarter of the 19th century includes Chandler (1977), Abernathy et al (1981), Hounshell (1984), Piore and Sabel (1984), Chandler and Tedlow (1985), Hughes (1989), Glyn et al (1989), and most recently the contributions of Chandler (1990) and Lazonick (1991).

McCormick harvester, enjoyed considerable economic advantages because of this standardisation.

Secondly there was the standardisation of labour, achieved through the efforts of Frederick Winslow Taylor and his disciples such as Henry Gantt, Harrington Emerson and Frank Gilbreth. Under the banner of scientific management, these pioneers sought to break work tasks down to their basic, elemental components, through time study and motion study, and then resynthesising them as work routines embodying the 'one best way'. Taylor in particular strove to enhance productivity by taking as many of the production decisions as possible out of the hands of workmen, and placing them instead in the activities of a production department made up of engineers and professionals.

Finally there was the standardisation of process, through the development of the moving assembly line, first introduced in manufacturing by Henry Ford at his Highland Park, Michigan, auto plant in 1913. It traced its lineage back to the moving conveyor lines of the Chicago meat works and to the continuous refining methods pioneered in the oil industry by such giants as Standard Oil. Its major accomplishment was to embody the demands of supervision in the technology of the conveyor system, presenting the task to be done repeatedly to the worker, by mechanical means, thereby providing a technical foundation for time and motion study. The world has never been the same since.

It was actually Henry Ford who coined the term 'mass production', in a ghostwritten article he published in the *New York Times* magazine in 1927. The term caught on, and has been with us ever since. It is actually a misnomer, because the essential feature of the system is standardisation; its mass character came from the market opportunities created by this innovation.

Scholars are agreed that the Mass Production System became an economic force during the First World War, particularly in the munitions industry, and then spread its militarisation of production to other sectors of the economy, first in the USA, and then in Europe, through firms becoming multinational (such as Ford), through the activities of consulting firms, and through political developments.

(Taylorism was taken up with greatest enthusiasm in Fascist Italy, Nazi Germany and the Communist Soviet Union). In the post-war period after 1945 it spread, through various national adaptations, to the entire industrialised world, East and West, through the agency of multinationals and the rise of competitive mass producers in Japan and later in Taiwan, Hong Kong and South Korea. The period up to the mid 1970s constituted what has been termed the 'golden age' of mass production and of the Fordist system it spawned (Marglin et al 1989).

The methods of mass production were taken up systematically in sectors unrelated to manufacturing, such as retail food, banking and financial services. The success of McDonalds in the 1970s and 80s, for example, rests on the same principles of standardisation (in this case, of a hamburger product and the process for producing it) and the creation of a novel mass market, which Henry Ford had pioneered 50 years earlier. Schlesinger & Heskett (1991) call this the application of an 'industrial model' to services in both the public and private sectors, and it was undoubtedly competitively very successful.

But the very successes of mass production sowed the seeds for alternatives and competitors which increasingly have made themselves felt in the 1970s and '80s. In manufacturing, low cost competitors emerged in the Far East which could install factories utilising the latest mass production techniques but employ labour at very much lower wages, leading to lower costs of production and lower prices. Their successes were notched up in one field of consumer products after another. At the same time, the mass markets opened up by mass producers created opportunities for new competitors offering greater variety or quality or innovativeness, in ways which contradicted the standardisation principles of mass producers. Thus firms following mass production strategies found themselves caught in a pincer movement, undercut by lower cost producers on the one hand, and bested by producers offering superior products on the other hand. These are the origins of the pressures which drove large firms to look for rationalisation solutions in the 1970s and '80s, which Schlesinger & Heskett (1991) graphically call a 'cycle of failure' afflicting firms in manufacturing as well as in services.

In retrospect we can see how the success of mass production was underpinned by wider social and economic structures, such as Keynesian policies to maintain the strength of purchasing power and wage levels, which one by one came under pressure from the shifts in markets and competitive strategies of the last two decades. The advent of new information technologies such as programmable computerisation and telecommunications, was another factor in the breakdown of the conditions for the supremacy of mass producers. Scholars such as Jaikumar (1986) have documented how Japanese firms employing Computer-Numerically Controlled machine tools were able to exploit their flexibility to a much greater extent than their counterparts in the USA, because of the adherence by the latter to principles of rigid production which no longer made sense with the possibilities of programmability.

Contra Hampson, who seems to think that 'market saturation' is the only issue canvassed by Piore and Sabel and others writing in a post-Fordist vein, there is thus in fact an astonishing range and conjunction of forces that have undone the supremacy of the mass production system, and created the conditions of turbulence faced by firms, unions and governments today as they seek to restructure their operations. In such conditions, organisations inevitably face choices between competing options, and the choices they make carry strategic implications. In our study of the textile industry in Italy and Australia, Linda Weiss and myself characterised these in terms of the strategy being pursued by firms, the structure of the industry in which they compete, and the ramifications of public policy on the choices they are forced to make (Weiss and Mathews 1991).

It is in this context that I have argued that the terms neo-Fordist and post-Fordist are useful in characterising quite different choices in relation to strategy, structure and public policy. It seems to me to be self-evident that choices are being made, and that these choices carry implications for a firm, for its workforce, and for the country in which the firm is located. The thread that runs through all my writings on these topics is that these choices are *negotiable*; they are the product of social, political and industrial negotiations *whose outcome is not determined in advance*. The policy positions and strategies that the

parties take into these negotiations therefore matter; they are not subsumed under the juggernaut of some notion of history rolling on its inexorable way according to some inner logic of its own. That this is the view actually attributed to me by critics such as Gahan shows the depths of misunderstandings and misrepresentation reached in these debates.

Critics of the Notion of a Mass Production Paradigm

In the light of this updated but all too brief discussion, let me turn to the main criticisms voiced against this set of ideas. I intend to show how many of the criticisms of post-Fordism (and in particular, of the significance of the mass production system) either miss the mark, or have in fact been anticipated. Many of the criticisms voiced in Australia reproduce those made in the wider international discussion. In particular, many raise methodological questions concerning the nature of evidence and the nature of argument. I cannot hope to go into all these questions in this paper, and in any case have already dealt with many of the fundamental objections to the existence or reality of a mass production paradigm, in the paper co-authored with Richard Badham (Badham & Mathews 1989).

Selective Evidence

Since Campbell has in my view presented the most reasoned and well-founded criticisms, I shall start by considering his 1990 paper. Campbell has voiced a number of criticisms of the concept of the MPS which lead him to doubt the validity of the notion as underpinning labour movement strategies for intervention in restructuring. He bases his critique on methodological issues such as selectivity of evidence, on questions of interpretation of the evidence presented, and on the nature of broad interpretations of history.

Campbell levels the charge that in 'presenting evidence for the direction of changes at the workplace the (post-Fordist) argument is very selective; it considers only some of the changes taking place and

excludes many others' (p. 14). There is a sense in which this is true, and one in which it is plainly false. The charge is true in the sense that authors such as myself are scanning the Fordist horizon looking for cases of new workplace relations that point to the ending of the dominance of Taylorist ideas and the rise of successful alternatives. These will necessarily appear in fragmentary and elusive fashion. This is the way that all new paradigms make their appearance. If the alternatives were obvious and well-established, there would surely be no need for argument and debate over the significance of their appearance. Authors like Piore and Sabel and myself discern emerging patterns to which we attach great significance because in our view they undermine the rationale of low-cost, repetitive production systems; in my case, I also see them as pointing the labour movement in a direction that enables it to intervene and negotiate over many of its most cherished aspirations and goals, including the democratisation of work.

The charge is false in the sense that it is claimed that I draw evidence only from a few carefully selected industries that depend for their success on a highly skilled (and usually male) workforce. On the contrary, I have been at pains to point to evidence of a new paradigm emerging in competition with the old, across a range of industries and sectors, covering services as well as manufacturing, public as well as private. Case studies on the introduction of self-managing teams in the insurance industry, and technological change in the Australian Taxation Office, both of which are the subject of comprehensive industrial agreements with the relevant unions, provide concrete evidence of the shift in services, where indeed I would claim that changes will be more far-reaching and fundamental than in manufacturing⁵. In areas of manufacturing traditionally dominated by female workforces, such as the clothing industry, there are contradictory tendencies that are again linked with business strategies pursued by firms. In some firms there have been shifts towards new production systems, involving self-managing teams operating U-cells; these display some of the features of the post-Fordist agenda, while some are noticeably absent (such as

⁵ See Mathews 1991a; 1991c; 1992. Similar points are made by Schlesinger & Heskett (1991).

team-based gainsharing). In other firms, particularly those involved in defending their market position against low-cost imports, there are trends towards further rationalisation and surveillance of workers who are already trapped in severely Taylorist systems.

Campbell goes on to point out that discernible changes are contradictory, and even the same organisation might demonstrate a move towards skill-enhancing technology in one section and a move in the opposite direction, towards automation and deskilling in another section. In this he is quite correct. I too point to the same contradictory tendencies, as evidence that they reflect not an underlying technological or organisational determinism, but the outcome of strategic management choices. The fact is that out there in industry, managements are confused, as are many unions, and tack one way and then another in their search for a competitively successful formula. It is small wonder that they frequently end up in contradictions. All this is evidence of upheaval, of tendency and counter-tendency. Some firms will seek to shore up their position by intensifying the Taylorist strategies that have worked for them in the past; these I term neo-Fordist approaches. Others will seek a break, in what I have termed post-Fordist strategies. The competition between firms pursuing these contradictory strategies is intense.

Hampson and Gahan level the same charges, but without Campbell's lightness of touch. For Hampson, the discussion seems to be confined to the 1984 book written by Piore and Sabel, and to my own writings. His critique simply reproduces all the points made by others (eg that of Williams et al 1987) with his own contribution appearing only to be a simplification of the issues to the point of caricature. His discussion of the 'market saturation' thesis, for example, completely misses the point that it is the creation of mass markets which paves the way for new firms offering superior products to make their entry. His discussion of the uptake of 'post-Fordist' forms (ie flexible specialisation) takes no account of the extensive empirical work which has been reported, such as that by Lane (1988) who finds extensive evidence of penetration of flexible specialisation in Germany, but little in the UK, and his

discussion ignores the extensive work done on forms of flexible specialisation that have emerged in industrial districts in Italy⁶.

In the case of Gahan, one is at a loss to know where to begin because of his failure to present any coherent position of his own. A rebuttal of specific claims will have to suffice. He claims repeatedly for example that I am 'decidedly selective' (p 171) in my choice of evidence regarding the appearance of post-Fordist options. In this he merely reproduces the points rehearsed above. He claims that I use case studies drawn almost exclusively from the manufacturing sector. This is contradicted at once by the fact that my 1989 text *Tools of Change* devotes a whole chapter to the services sector and the emergence there of contradictory tendencies. He then misrepresents my statements regarding services that 'these areas are inevitably left to be assumed as future inroads for post-Fordist hegemony'. This in the face of the explicit discussion by myself of neo-Fordist options being pursued by retail and food services sectors - again, pure misrepresentation.

Gahan goes on to claim that my case studies appear to be selective 'in that they (are used to) illustrate different facets of the post-Fordist epoch'. It is far from clear, he tells us, that 'any single case study fits the post-Fordist paradigm per se'. What an extraordinary point to make. Is he really demanding that 'a single case study' illustrate all facets at once of everything that is discussed regarding post-Fordism? Having posed this absurd challenge, he promptly contradicts himself by claiming that to make general statements from the 'specific case study' is an inductive fallacy (p 172). So even if such a heroic all-inclusive case study could be found, Gahan would reject it on methodological grounds.

Gahan's apparent *coup de grace* is his demonstration that 'Mathews is unable to unambiguously specify the neo-Fordist proposition' (p. 167) and to specify more generally 'the array of choices' that firms have. He

⁶ For useful expositions of the empirical evidence regarding small firm vitality in Italy, and for discussions of its significance, see the pathbreaking work by Weiss (1988), and more recently the texts reporting work done on this topic at the International Institute for Labour Studies in Geneva (Pyke, Beccatini and Sengenberger 1990; Pyke and Sengenberger 1992).

takes me to task for allowing some degree of overlap between the strategies pursued by firms, insisting that these be given in categorically distinct terms. One is at a loss to know what kind of categorisation would satisfy him, given that I have devoted a large part of my writing to this very issue. As anyone aware of the world outside of textbooks will know, the real world simply does not present itself in categorically distinct terms; it is always far messier than our concepts and categories allow, where choices overlap and outcomes are unclear. As theorists we attempt to impose some pattern or order on this confusion by the invention of concepts such as neo- and post-Fordism to describe alternative strategies of intervention. It seems to me that the distinction between these concepts is reasonably clear. If Gahan wants to improve on it, let him try - but that will involve him in engaging with the real world, which he will find much more demanding than a simple concept-chopping exercise of 'criticising' other peoples' texts.

My position is this. It is inevitable that the citation of evidence regarding the emergence of new production systems will be fragmentary and 'selective'. Like Kern and Schumann (1989) I do not expect these new systems to emerge throughout the economy, but only in certain sectors, and then not uniformly. I am concerned to document these new concepts where I see them appearing. Thus case studies are a necessary method for the demonstration of something new. But in themselves they offer only limited evidence. Nonetheless they can be used to illustrate trends that have a broader significance. This broader significance is provided by the theoretical framework, which is developed from a reading of history.

Historical Tendencies

Campbell's main charge is that I and other authors such as Piore and Sabel move backwards and forwards between (selected) evidence of change at the workplace and discussion of a new post-Fordist global model or paradigm. This results in what he calls an 'overburdened dualism' that 'inhibits a proper analysis of the current changes at the workplace' (p. 16). This is a difficult charge to deal with, since it

confronts and seeks to invalidate both the discernment of trends and their identification as part of a more comprehensive tendency.

Richard Badham and myself dealt with these issues in our 1989 paper, and I do not wish to repeat all the points here. Suffice to say that critics of the 'overburdened dualism' of the notion of MPS (ie a world divided into pre- and post-mass production eras) miss the point that authors such as Piore and Sabel and myself are using the concept of post-Fordism (or flexible specialisation) to describe a range of options which are not available to mass production firms because of their commitment to division of labour, deskilling, separation of conception from execution and so on. The point is not that we are attributing to firms choosing one option or the other a commitment to a world-historical tendency; clearly, as far as the individual firm is concerned, it is just trying to stay in business and making choices on the run. But I am making the claim that one can discern a pattern in these choices and that this pattern can be given a coherent historical interpretation or significance.

Hampson iterates the same points, while Gahan succeeds in misrepresenting my position to the point of claiming that I state the opposite of what I actually mean. Gahan claims (p 170) in relation to my work as well as that of Kern & Schumann et al, that 'a conceptual problem associated with such theories of change is the inherent ahistorical focus, and hence the logical inevitability of such changes'. Later in the same section (p 171) he states that 'The assumption that change is unidirectional and inevitably leads to post-Fordism moves easily to a conclusion that ...'. From what has been said above it must be clear that this charge is a fabrication. It is a misrepresentation of a line of argument that has patiently teased out its historical dimensions and emphasised at all times the over-riding element of strategic choice that must shape outcomes. No-one engaging honestly with the post-Fordist literature could misunderstand this point. My arguments are put historically in the context of the rise and fall of mass production this century, and the conditions this creates for firms to make choices which were not available to them earlier. The argument is put strategically in the context of outcomes being determined by the choices firms (and other actors, such as unions) will make. This is the very opposite of an

'ahistorical focus' and the very opposite of a view that change is 'unidirectional'.

Gahan's confusions do not stop there. He also succeeds in misquoting and misrepresenting the role of markets and competition in his discussion of historical trends. He complains that I appear to be promoting market forces as vehicles for change; he claims that I see them as positive in some instances and negative in others. He decries my use of case studies of multinationals as evidence of change, claiming that their capacity 'to experiment with alternative production strategies rests on their capacity to exploit market power and act undemocratically' (p. 169). The reader is left befuddled as to what kind of evidence Gahan is seeking in his quest to deny the reality of post-Fordist options. Multinationals are apparently illegitimate as subjects; elsewhere he queries whether unions can develop their 'own' agenda of post-Fordism - so what actors are we left with?

Even market forces are queried as having any legitimacy in restructuring debates. In my work I take markets as institutions to be reckoned with. Gahan apparently views such an approach with suspicion. I defy any reader to make sense of his assertion (p 169), regarding my discussion of market forces, that "In an 'intended garden', they are unwieldy and undemocratic". This is a misquotation and misrepresentation of my claim that market forces can be good servants but bad masters; they need to be husbanded, in the same way that a garden needs to be cultivated⁷.

Again my position can be simply put. The appearance of the mass production system was an historically verifiable event, that has had commercial and industrial repercussions around the world. It has spread through the creation of mass markets. This is a statement of fact; it is not a position that I or any other 'post-Fordist' regard as 'good' or 'bad'. It has come under pressure as these mass markets have been invaded by firms not competing along mass production lines, but along other dimensions of the competitive spectrum. This again is a matter of fact,

⁷ This misquotation was present in Gahan's original Working Paper; it has been uncorrected in the article published subsequently in *JIR*.

and it has to be taken into consideration by firms formulating their strategies in the conditions they face today. As for the charge that I see one historical epoch succeeding another in logical, predestined fashion, this is simply a fabrication.

Skills and Worker Responsibility

Campbell claims that I oversell the skill enhancing tendencies of post-Fordist examples, failing to separate 'shadow from substance', or temporary from likely permanent effects. He is not specific here, and I would like to know what examples he is thinking of. From my perspective, the issue of skill is one of the clearest-cut matters in an otherwise difficult debate. Some technological changes clearly enhance workers' skills and their capacity to deal effectively with customers - such as the use of Information Technology by self-managing teams with a client focus in some insurance companies, as described in my case study of CmlA (1991c); and some clearly deskill workers, further rigidifying their functionally divided tasks - such as telephone-marketing systems being installed in some other insurance companies, where everything is laid down in pre-programmed form, including the script to be followed by operators in answering calls. I claim that it is in the interests of unions to make clear distinctions between these tendencies, offering to support the one and to forcefully oppose the other.

Campbell goes on to argue that post-Fordist authors too readily translate enhanced skill requirements into other desirable job dimensions, such as autonomy and social interaction. I agree that the devolution of responsibility, for example, is a separate issue from that of the enhancement of skill (and said so in Badham & Mathews (1989), where we talked of worker responsibility encompassing both aspects). The point is that they frequently *do* go together, for quite understandable reasons. There aren't many employers who would seek to devolve authority to workers (eg to stop a production line if defective parts are being produced) without at the same time offering them training in quality assurance techniques; those who do attempt such a strategy (thereby intensifying pressures on workers) would quite rightly be

opposed by the unions, and would likely go out of business anyway. The market is a ruthless discriminator when it comes to 'best practice'.

Taylorism

Recognising that much of the discussion of Taylorism in Australia derives from overseas experience, Wright (1992) has done some empirical study of the introduction and take-up of Taylorist work forms by Australian firms and managements. Despite the fact that his work on Taylorism in Australia stands on its own merits, Wright feels compelled to introduce his results, and thereby situate them, in a polemical rejection of 'post-Fordism', arguing that post-Fordist authors such as myself appropriate the term Taylorism and stretch it to cover phenomena never envisaged by the man himself.

Of course I am guilty as charged. When I coin a term like 'Computer-Aided Taylorism' I am using the word in a metaphorical sense, to capture the demeaning and punitive aspects of the early computer systems that were being introduced into industry and particularly into the clerical and finance sector in the late 1970s and early 1980s. In this I am simply following a convention of organisational metaphor widely used in the social sciences⁸.

Of course I am not pretending that these computer systems involved the same manual tasks as studied by Taylor in the 1890s; I would be the first to agree that they are different in kind as well as in degree. My justification is that the systems were designed with apparently the same disregard to human aspirations and skills that characterised the approach of Taylor and his disciples to industrial work. A consistent pattern was evident in the scandalous design of computer systems that were being introduced in the early 1980s, with their shoddy ergonomics, their demeaning job fragmentation into keyboard work kept rigidly separated from any kind of intellectual effort, with their

⁸ On the use of organisational metaphors, see in particular the stimulating work of Morgan (1986).

electronic surveillance and snooping features trumpeted by their commercial proponents, buttressed by incentive pay systems goading operators to key at rates up to and exceeding 12,000 keystrokes per hour, without rest breaks. A terrible toll was exacted by these systems, in terms of worker alienation, ghettoisation of certain operators (eg those working in cheque-clearing bunkers for the banks), and the breaching of physiological limits and consequent appearance of an epidemic of Repetitive Strain Injuries.

It was the unions in Australia who waged a relentless campaign to defeat these systems, and to overcome the toll of RSI by reforming the design of computer-based systems, by outlawing surveillance, by getting rid of electronic-paced work, and by introducing demands for rest breaks. This struggle, to the great credit of the unions in Australia, was successful; these horrendous systems are no more. Now the same problems are appearing in other countries, such as the USA, giving the lie to all the slanderous sneers like 'kangaroo paw' and 'golden arm' that were levelled at RSI sufferers in Australia.

And what was the metaphor that underpinned many of these campaigns? It was the metaphor that dubbed these computer systems as newly-developed versions of the control systems introduced first by Taylor. It was a metaphor, used by myself and others, to fuel a campaign directed at changing workplace reality. And change it we did. The campaigns were successful. The unions learnt to intervene in an area of negotiations, involving technical standards and criteria, where they had rarely ventured before. These successes underpinned the more ambitious campaigns of intervention that have since flourished under the rubric of award restructuring and now enterprise restructuring. In other words, they were strategic interventions that broke the mould of unionism, that allowed it to break out of its Fordist straitjacket. And what is Chris Wright's comment on all this? He complains that the term Taylorism has been misappropriated and should be reserved for manual work being subjected to time and motion study in the 1920s. The academicians in the French Academy rail against Franglais with the same kind of vehemence, and with as little effect.

Mass Production and Technological Determinism

Hampson, while not misrepresenting the substance of my arguments, misconstrues them and fabricates a charge of technological determinism which I have consistently disavowed. He misreads me as claiming that the new information technologies actually dictate the choices that firms make, charging that I present them as choices which are not really choices at all.

To make sense of this issue, consider the case of Computer-Numerically Controlled (CNC) machine tools, where the skill of programming presents itself as an operating feature as well as traditional machining and metallurgical skills. There is a clear choice that firms can make. They can choose to upgrade the skills of their machinists to include programming, or they can employ separate programmers located in a separate programming department. The former choice takes work organisation in the direction of integration and flexibility (allowing operators to optimise programs as they run the machines); the latter choice perpetuates notions of efficiency associated with the division of labour and task specificity. A management that is not blinded by a commitment to Taylorist job division will see this distinction and will ensure that CNC operators are equipped with programming as well as metal-cutting skills. I have made the point that a well-intentioned management will in this case choose to upskill CNC operators. But Hampson misconstrues this as a statement to the effect that the CNC programmability *determines* the work organisation, namely that operators are to have programming skills. That many managements were in practice opposed to taking such an option, and prevented workers from programming the machines (and paid the price in terms of productivity), is a matter of record (Noble 1984).

This matter of choice and its associated opposition to determinism is central to my whole approach to workplace reform. I have observed too many programmes of organisational change go awry because of wrong or inept choices made by both managements and unions. The choices are all too real, whatever Hampson claims.

Hampson's confusion may arise from the fact that I insist that choices in technology and in organisation are linked rather than taken in isolation. One may posit indeed a *co-evolution of technological and organisational forms*. Thus a technological choice constrains the organisational options available, and likewise organisational choices constrain the technological options. This is apparent to anyone who studies real processes of change carefully.

Take the case of the Modernisation programme in the Australian Taxation Office, which I have been studying recently (Mathews 1992). Organisational choices of a fundamental kind have presented themselves at every step of this process of introducing Information Technology into tax administration operations. Should the technology be introduced so as to extend operators' skills, or to centralise skills and boost the capacity for surveillance and control? Should it be designed as an external black box, or through participative work teams? Should it lead to an efficiently lean organisational structure, where functions are dispersed through a network of offices, or to a tightly differentiated organisation where processing tasks are performed separately in 'bunkers' located in regions of high unemployment? This latter is in fact the route being chosen by other public agencies, such as the Australian Securities Commission, with its processing centre in the LaTrobe Valley being kept quite separate from the operating offices of the ASC (Probert 1991). These choices, negotiated at every step with the unions and other stakeholder organisations, are the very stuff of participative technological and organisational change. To twist such a story into a notion of IT 'determining' a single organisational form, is grotesque.

Technoeconomic Paradigm Shifts

Hampson singles me out amongst the 'post-Fordists' for my supposed leaning on technological crutches, which is the basis for his charge that I am a closet technological determinist. In particular he attacks my use of the notion of technoeconomic paradigm shift, which derives from the work of Perez and Freeman and others at Sussex University's Science Policy Research Unit (Perez and Freeman 1988).

Again it is worth spelling out what I find useful and compelling in the work of Perez and Freeman, without ever falling into the trap of technological determinism, and without imagining for a moment that their work is the last word on the subject.

Very briefly, Perez and Freeman have developed an approach to the current upheavals in industry associated with the introduction of Information Technology, that looks for counterparts in similar periods of upheaval in the past. They have identified four previous such shifts, associated sequentially with the rise of mass production and the emergence of oil-based energy systems (4th shift); the rise of large corporations and the development of new materials such as steel and new energy technologies such as electric power systems (3rd); the emergence of steam power and the development of new transport systems (2nd); and the emergence of mechanisation following the invention of the factory organisation of production (1st shift, equated with the Industrial Revolution).

Two issues stand out as of primary concern. The first is the economic mechanisms that underlie diffusion of a new paradigm. Perez and Freeman are at pains to point to the fact that in each of the five shifts, the new technology (and, I would argue, the organisational form) constitutes a range of new 'best practices' that other firms ignore at their peril. Perez and Freeman spell this out in the form of three conditions that must be met by any genuine 'leading edge' technology: 1) it must be capable of being utilised in almost all sectors and affect almost all products and services; 2) it must be cheaper than the technology it is supplanting; and 3) it must be abundant.

These are the conditions governing the economic sources of an 'upswing' in investment driven by the new 'lead' technology in each of the five epochs. It is clear that the conditions are obviously satisfied by microelectronics and IT generally in the current period of restructuring. They were clearly satisfied by oil and mass production in the early decades of this century. With a bit more argument and demonstration, one can show that they were satisfied by steel, electric power systems and integrated firms in the 3rd epoch; by the steam engine, railways and the joint stock company for the second epoch; and by mechanisation and factory organisation at the beginning of the Industrial Revolution.

In each case it is not a question of technological determinism, but of one set of lead technologies and organisational forms ousting another by becoming a 'best practice' that other firms and sectors match, or go out of business.

It is in this sense that I describe emerging organisational forms that can exploit the flexibility of IT, through programmability, as potentially ousting those which cannot exploit these forms of flexibility. Empirical work supports this thesis. There is evidence for example provided by Jaikumar (1986) on the diffusion of CNC-based flexible manufacturing systems in Japan and the USA, highlighting the impediments to their take-up by firms in the US who only understand one way of utilising automated systems.

Other research programmes have latched on to the same idea, without for a moment sharing the intellectual commitment to a fivefold schema of technoeconomic paradigm shifts. Williamson (1985), who is emerging as the leading economic theorist of organisation, deploying a framework based on transactions cost analysis, argues that the multidivisional firm became the major organisational vehicle for mass production systems precisely because it enabled firms to separate their operational management activities from their strategic management; he argues that firms embodying this organisational innovation were 'fitter' and more competitively successful than firms which stuck with the previous functional integration and which found it more and more difficult to cope with complexity in this framework. Thus Williamson is searching for the economic reasons underlying choices of organisational form at the outset of what Perez and Freeman call the 4th technoeconomic paradigm shift.

A second strength of the Perez and Freeman conceptual framework is its focus on the social and institutional adjustments needed to enable a lead technology (and organisational form) to diffuse rapidly throughout the economy. They argue that this is where social and political choices enter the picture. For example, the mass production system could diffuse fairly rapidly in the US because of its prior systems of distribution (rail and mail networks) that facilitated the creation of the first mass markets, its prior organisational innovations in the form of standardisation of product, labour and process, and because of the

abundant supplies of unskilled labour that innovators such as Henry Ford could call on from immigrant and agricultural populations, sweetening his offers with comparatively high wages (the famous 'Five Dollar Day'). State industrial policies in the post-war mass production economies of the Far East have similarly favoured the emergence of mass production systems and their assault on global markets, in the system of close economic relations that Lazonick (1991) has called 'collective capitalism'.

These arguments are deployed in the present phase of upheaval to make the case for social and political investments in factors that will facilitate the diffusion of organisational forms exploiting the potential of IT. For example, social investment in ISDN telecommunications systems, and generalised computer and programming literacy, are seen as necessary complements to the spread of firms developing value-added products embodying IT applications and employing high-skilled and high-paid labour.

These choices are real enough. We see the debates unfolding in Australia over the future form that our training system should take, as one example. A choice in favour of training workers in narrow technical skills (thereby socialising what employers pay for in more successful countries such as Germany) would tip the scales towards the triumph of a low-wage, low-skill, low value-added economy that seeks to compete along mass production lines with low-cost Third World imports. Whereas a choice in favour of a training system that builds on firm-level activities and offers flexible (modularised) high-skill components articulated together so that workers can pursue genuine career paths and higher qualifications, tips the scales towards an economy based on high wages, high skill, high value-added activities seeking to compete in export markets in terms of quality, innovativeness and responsiveness (Carmichael 1992).

Contra Hampson, who seems to have convinced himself that these are phoney choices, they are inescapable and real choices and they carry real implications; there are winners and losers involved.

Regulation theory

Another body of theory I have drawn on, contested by Hampson, is that of French regulation theory. His position here is that the theory is excellent; my sin apparently is that I have utilised it in garbled form. He takes this approach for a quite particular tactical reason; he wants to attack my version of post-Fordism without at the same time having to attack the entire regulationist school.

I have no time or patience to follow Hampson through the minutiae of his discussion of the threefold categorisation deployed by Boyer, Lipietz et al, involving 'mode of production', 'regime of accumulation' and 'mode of regulation'. Well before Hampson picked up these ideas, I have been using this as a useful framework, particularly the distinctions they have made (in regard to the Fordist system) between:

- the technoeconomic base, or mass production system itself;
- the regime of accumulation, embodying various mechanisms for matching production and consumption systems; and
- the mode of regulation, or specific institutional forms within which crises are averted.

When I was introducing this set of ideas to Australian debates (I am not aware of previous authors having done so) it was a lot messier than now; I did not have the benefit, at the time I was writing, of the exposition by Boyer in his text *The Regulation School: A Critical Introduction*, which Hampson relies on for his treatment (Boyer 1988). But in the writings available to me, I found myself in broad agreement with Lipietz and Boyer, particularly in their policy prescriptions. It is therefore somewhat curious to find Hampson praising Lipietz for the breadth of his policy prescriptions, and castigating me for the lack of them. A cursory glance at my *Age of Democracy* will find the same range of topics discussed, in critical agreement with Lipietz.

More to the point, I have sought to use the regulationist threefold framework as a guide to the kind of structures and institutions that would need to be set in place in any system succeeding the Fordist

arrangements. This critical application of the theory seems to have been lost on Hampson. What is striking is that I find myself in close agreement with Boyer in his subsequent intellectual evolution. Hampson makes no mention of Boyer's later work on organisational innovation, as presented for example to a conference of the OECD in Helsinki in December 1989. In this work, Boyer presents twelve points exemplifying the ways in which 'best practice' firms today depart from Fordist principles and practice. Since these matters are central to my arguments, it is worth pausing to see what elements Boyer identifies as constituting an emergent 'new model' of management practices and work organisation. They are:

1. Global optimisation of production flows (as opposed to piecemeal division of labour);
2. Total integration of R&D with production;
3. New, close relations between producers and users;
4. Zero-defect strategies;
5. Fast response to market demands;
6. Decentralisation of production decisions;
7. Networking and joint ventures between producers;
8. Cooperative sub-contracting;
9. Building responsibility for maintenance, quality assurance and coordination into operators' jobs (ie multi-skilling);
10. Emphasis on training to maximise individual and collective competence;
11. Human resources policies to enhance commitment (such as more focused selection and career development policies); and
12. Labour-management cooperation. (Boyer 1990)

Whether this is quite the direction of research that Hampson et al were anticipating remains unknown to me. What I find extraordinarily interesting is the convergence between Boyer's interests and insights

and my own, in seeking to come to grips with restructuring in Australia. His twelve points could be taken as providing a Handbook for 'best practice' restructuring in Australian enterprises. Indeed he is not alone in advocating these measures, since a very similar set form the core of proposals being put forward for the US by the MIT Commission on Industrial Productivity, in their influential text *Made in America* (Dertouzos et al 1989); by the OECD in such texts as *New Technologies for the 1990s* (OECD 1989); and by the Australian Manufacturing Council in the Pappas Carter report (1989) and most recently by its report on *International Best Practice* (DIR/AMC 1992). Similar points have also been made by the MIT International Motor Vehicle Program in their controversial study of the world automotive industry, *The Machine that Changed the World* (Womack et al 1990)⁹.

Post-Fordism and Organisational Innovation

Let me now move from a rebuttal of past criticisms, to address some issues that I suspect underlie these criticisms and account for their vehemence. Four points in particular seem worth making, if only briefly.

First, in advancing propositions couched at the micro level of the firm, the post-Fordist agenda advocated by myself is not at all hostile to policies couched at the macro level of the economy. On the contrary, I have frequently been at pains to point to the macro level strategies that are needed to block the incipient tendencies of a high-wage economy towards polarisation and segmentation, ie towards a 'dual economy' segmented into a core of permanently employed skilled workers and a periphery of casually-employed semi-skilled people. These strategies have to do with building equity into the education and training systems,

⁹ Let me forestall further misunderstanding by acknowledging here that there are differences in the approaches taken by these various authors and institutions, particularly by the IMVP with regard to their notion of the 'lean production system' (Womack et al 1990). However there are striking similarities and it is these that I am concerned with here.

for example, and promoting the establishment of career paths with broad-based entry in industrial awards covering workers traditionally considered 'semi-skilled'. So criticisms such as that of Hampson and Ewer et al to the effect that post-Fordism is necessarily opposed to 'strategic unionism', miss the mark.

Secondly, in advocating job criteria such as high wages, high skill levels and high levels of responsibility, advocates of the post-Fordist agenda are under no illusions that these criteria need apply to all jobs. In fact, in a well-managed economy there should be plentiful supplies of casual, semi-skilled jobs, particularly in service sectors. These are needed to allow certain firms to offer low-cost services, giving a range of such services in the marketplace, and to enable students, young people, homemakers and others to take a job without necessarily committing themselves to a career. In the current debates over the future of the labour market and training systems in Australia, my concern is that the one kind of job should be seen to exclude the other.

Thirdly, in advocating collaboration at workplace level, the post-Fordist school is not blind to the possibilities that some employers will be unwilling or unable to cooperate with their workforce and their union. In these cases, the trade unions would be expected to deploy all the resources at their command to curb such employers' excesses. The recent dispute at the APPM paper mill at Burnie, Tasmania, turned on just this issue. This is not a new point for me, but one which I have emphasised again and again as the proper role of union militancy in the new era when sophisticated competitive strategies require cooperative workplace relations (see for example the chapter on the future of unions in my *Age of Democracy*). This is why I support the continued existence of strong and independent unions, as a bulwark against employer malpractices, and as a vehicle for the democratic participation by their members in organisational restructuring.

Finally, and perhaps most fundamentally, there appears to be some confusion on the part of my critics over my approach to knowledge and theory as underpinning practice. I use concepts such as the 'mass production system', or 'post-Fordism' not as badges of personal identity, making me a 'post-Fordist' or a 'regulationist', but simply as tools of analysis. I apply them to real situations I encounter in order to make

sense of those situations and to develop criteria for intervention on the part of agencies and associations, such as unions, that can change those situations. This approach does not privilege one set of concepts as against another in any absolute sense, but only in the sense of their practical application to any situation. It is for this reason that I called this approach a position of 'epistemological pluralism' in *Age of Democracy*, meaning that we should be comfortable with the coexistence of different theories, and that they should be used with discretion, according to the task at hand.

This brings me to a final point concerning Gahan's attack. He spends a good proportion of his paper making the somewhat far-fetched claim that my position can be equated with that of the 'industrial pluralism' of Kerr, Harbison, Dunlop and Myers, as expounded in their 1960 book *Industrialism and Industrial Man*. Why does he expend so much time and effort in seeking to establish parallels between my work and that of these theorists of social trends in the age of mass production? How in all seriousness could one equate the notion of post-Fordism - which is all about a break with the rigidity and conformism of mass production, and an opening towards diversity - with a view of the industrial system at the end of the 1950s, when the mass production system seemed to many to be impregnable and unassailable, and social scientists were celebrating the 'convergence' between East and West on a single industrial model? It seems that he is driven to make these unlikely comparisons by seizing on my use of the term 'epistemological pluralism', and seeking to equate it with the industrial 'pluralism' of Dunlop et al, thereby bringing it into the same disrepute that attaches to these authors in current industrial relations circles.

Leaving Gahan's attack to one side, I am happy to concur with Campbell that the scope of the term 'post-Fordism' is perhaps too narrowly focused on workplace reform, and that a broader term is needed for the restructuring debates of the 1990s. I myself have been using the term 'organisational innovation' to encompass workplace reform and award restructuring, as well as changes in management processes, networking, shifts in accounting procedures, and other structural features making organisations better able to accommodate change. Unlike my opponents, I am not at all attached to the term 'post-

Fordism' as such, but instead am concerned that the relevant issues be addressed with the appropriate range of concepts and tools for intervention.

Concluding remarks: a programme for research

As in most of my work, I conclude by looking to the future rather than dwelling on the past. I would urge young scholars in the fields of economics, industrial relations and business administration, not to be intimidated by a small group of hostile critics, and to venture to do original and empirically grounded research into the nature and determinants of workplace restructuring in Australia¹⁰.

I will presume to list what I regard as the most outstanding research issues in these fields, awaiting PhD and graduate research work by talented scholars. Such a list would have to include at least the following.

- 1) In what sectors are 'new production systems' emerging, and to what business strategy, economic and industrial factors are they linked? (I would expect a positive finding to emerge only in sectors that have defined genuine 'value-adding' business strategies that call for greater levels of worker input and skill.)
- 2) By contrast, in what sectors are cost-cutting, casualisation, rationalisation and outsourcing strategies predominating, and to what business strategy factors are they linked? (I would expect these features to predominate in sectors attempting only to hold their heads above the tide of imports coming in from producers in Newly Industrialised Countries.)
- 3) What specific forms are new work structures taking in Australia, and how are they related to our industrial relations institutions? (Such work

¹⁰ The work by Greig (1992) provides a model of theoretically grounded empirical work into Australian industry, in this case the textile and clothing sector.

could focus for example on the emergence of new forms of teamwork, and its recognition in restructured awards.)

4) What forms of collaborative linkage are emerging between firms in Australia, and to what business strategy and industrial factors are they linked? (I would expect strategic linkages and networks to emerge in export-focused sectors, and in community-focused non-profit activities.)

5) In concrete detail, how are technological, job design, skill formation and industrial relations factors involved in real programmes of enterprise restructuring in Australia? (Such work could focus on the emergence of 'one stop shops' in the services sector, on cellular manufacturing, and on the emergence of fusion technologies in many sectors.)

6) How are the specifics of enterprise restructuring (ie the points raised above) linked to wider social and industrial issues such as skills formation pathways, career structures, articulation between training and educational streams, combined training and employment arrangements, and participative structures generally? (Such work would take a realistic look at the structural impediments standing in the way of diffusion of new production systems.)

7) Where are workers emerging as the managers and even owners of the businesses in which they work, and what factors promote or retard such democratic developments? (Such work could focus for example on the taxation treatment of employee share ownership schemes in Australia, comparing it with the treatment of equivalent schemes overseas.)

8) What protective mechanisms are in place to ensure that the 'new workplace culture' is available to as many workers as wish to enter it, and what evidence can be marshalled to show that such mechanisms actually enhance social productivity?

9) What forms does social, economic and industrial collaboration take in Australia, and to what extent can this be linked with favourable public policy? (Such work could look at schemes designed to foster innovation and small firm formation, for example, and compare them with counterpart schemes operating in such industrial success stories as Japan, Germany and Italy.)

10) To what extent can forms of social collaboration in real commercial settings be linked with emerging conservationist values? (Such work could focus on worker cooperatives, for example, and look at their attitudes to recycling and use of natural resources.)

It is out of such a research programme that I would expect the elements of a viable and sustainable form of economic organisation to emerge, and to be carried into effect by the appropriate political actors such as trade unions, citizen action groups, and political parties, as well as by firms and enterprises themselves. It is in this spirit that I and others have formulated arguments concerning a post-Fordist successor to the rigidities of the Fordist workplace and industrial system. While I hold no illusions that structural reform at the workplace is sufficient to solve pressing social and economic questions, I do insist that it is a necessary component of successful social adjustment. And workplace reform calls for the development of new models of productive efficiency, models which are liberated from the deadly and constraining forms which dominated the organisation of work until the recent past. Such models can only be created by an unleashing of the political imagination, schooled by empirical inquiry and realistic assessment of prospects. These are what I see as the tasks for research and intervention in the 1990s.

Acknowledgments

I wish to acknowledge the helpful comments of Andrew Griffiths and Linda Weiss on earlier drafts of this paper. The usual disclaimers apply.

References

- Abemathy, W., K. Clark and Kantrow, A. (1981) The New Industrial Competition, *Harvard Business Review*, Sep-Oct 1981, pp. 68-81.
- ACTU/TDC (1987) *Australia Reconstructed*, Trade development Council, AGPS Canberra.
- Badham, R. and Mathews, J. (1989) The 'New Production Systems' Debate, *Labour & Industry*, Vol. 2, No. 2, pp. 194-246.

- Bramble, T. (1990) The Utopian Fantasy of 'Post-Fordism': A Review of John Mathews' Tools of Change, *Socialist Review*, 2, 85-101.
- Boyer, R. (1988) *The Regulation School: A Critical Introduction* (C. Chamey Trans), Columbia University Press, New York.
- Boyer, R. (1990) New Management Practices and Work Organisation, Report to OECD Conference on Industry Structure and Strategy, Helsinki. CEPREMAP, Paris.
- Campbell, I. (1990) The Australian Trade Union Movement and Post-Fordism, *Journal of Australian Political Economy*, 26, 1-26.
- Carmichael, L. (1992) *Australian Vocational Certificate Training System*, Employment and Skills Formation Council, National Board of Employment, Education and Training, Canberra.
- Chandler, A. (1977) *The Visible Hand*, Harvard University Press, Cambridge, MA.
- Chandler, A. (1990) *Scale and Scope: The Dynamics of Industrial Capitalism*, The Belknap Press of Harvard University Press, Cambridge, MA.
- Chandler, A. and Tedlow, R. (1985) *The Coming of Managerial Capitalism: A Casebook on the History of American Economic Institutions*, Irwin, Homewood, Ill.
- Curtain, R. and Mathews, J. (1990) Two Models of Award Restructuring in Australia, *Labour & Industry*, Vol. 3, No. 1, pp. 58-75.
- Dertouzos, M. et al (1989) *Made in America: Regaining the Productive Edge*, MIT Press, Cambridge.
- DIR/AMC (1992) International Best Practice: Report of the Overseas Study Mission, Department of Industrial Relations/Australian Manufacturing Council, Canberra.
- Ewer, P. et al (1991) *Politics and the Accord*, Pluto Press, Sydney.
- Freeman, C. and Perez, C. (1988) Structural Crises of Adjustment: Business Cycles and Investment Behaviour. In G. Dosi et al (Eds) *Technical Change and Economic Theory*, Pinter, London.
- Gaban, P. (1991) Forward to the Past? The Case of 'New Production Concepts', *The Journal of Industrial Relations*, 33, 2, 155-177.
- Greig, A. (1992) Rhetoric and reality in the clothing industry: The case of post-Fordism, *The Australia and New Zealand Journal of Sociology*, Vol. 28, No. 1.
- Hampson, I. (1991) Post-Fordism, the 'French Regulation School', and the work of John Mathews, *Journal of Australian Political Economy*, 28, 92-130.
- Harvey, D. (1989) *The Condition of Post-Modernity: An Enquiry into the Origins of Cultural Change*, Basil Blackwell, Oxford.
- Hirst, P. and Zeitlin, J. (1990) *Reversing Industrial Decline? Industrial Structure and Policy in Britain and her Competitors*, Berg, Oxford.

- Hounshell, D. (1984) *From the American System to Mass Production 1800-1932: The Development of Manufacturing Technology in the United States*, The Johns Hopkins University Press, Baltimore, MA.
- Hughes, T. (1989) *American Genesis: A Century of Invention and Technological Enthusiasm 1870-1970*, Viking, New York.
- Jaikumar, J. (1986) Post-industrial manufacturing, *Harvard Business Review*, Nov-Dec 1986.
- Johnson, H. and Kaplan, R. (1987) *Relevance Lost: The Rise and Fall of Management Accounting*, Harvard Business School Press, Boston, MA.
- Kern, H. and Schumann, M. (1989) New concepts of production in West German plants. In P. Katzenstein (Ed) *The Third West German Republic*, Cornell University Press, Ithaca, NY.
- Kerr, C. et al (1960) *Industrialism and Industrial Man*, Ford Foundation, Michigan.
- Lane, C. (1988) Industrial Change in Europe: The Pursuit of Flexible Specialisation in Britain and West Germany, *Work, Employment and Society*, Vol. 2, No. 2, pp. 141-68.
- Lazonick, W. (1991) *Business Organization and the Myth of the Market Economy*, Cambridge University Press, Cambridge.
- Marglin, S. et al (1989) *The Golden Age of Capitalism*, Oxford University Press, Oxford.
- Mathews, J. (1989a) *Tools of Change: New Technology and the Democratization of Work*, Pluto Press, Sydney.
- Mathews, J. (1989b) *Age of Democracy: The Politics of post-Fordism*, Oxford University Press, Melbourne.
- Mathews, J. (1989c) New Production Concepts, *Prometheus*, Vol. 7, No. 1, pp. 129-48.
- Mathews, J. (1989d) Towards an 'Australian Model' of Wages-Linked Regulated Structural Adjustment, Swedish Centre for Working Life, Stockholm.
- Mathews, J. (1990a) The Fifth Global Technoeconomic Paradigm, Industrial Relations Working Paper, No. 83, School of Industrial Relations and Organisational Behaviour, University of NSW.
- Mathews, J. (1990b) An Australian Model of Industrial Restructuring, Industrial Relations Working Paper, No. 84, School of Industrial Relations and Organisational Behaviour, University of NSW.
- Mathews, J. (1991a) Australia Post: Introduction of Optical Character Recognition Mail Sorting Technology, *UNSW Studies in Organisational Analysis and Innovation*, No. 2, Industrial Relations Research Centre, University of New South Wales, Kensington.
- Mathews, J. (1991b) Ford Australia Plastics Plant: Transition to Teamwork through Quality Enhancement, *UNSW Studies*, No. 3.

- Mathews, J. (1991c) Colonial Mutual Life Australia: Service Quality through Self-Managing Teamwork, *UNSW Studies*, No. 5.
- Mathews, J. (1992) The Australian Taxation Office: Modernisation through People, Structures and Technology, *UNSW Studies*, No. 6.
- Morgan, G. (1986) *Images of Organization*, Sage, London.
- Noble, D. (1984) *Forces of Production: A Social History of Industrial Automation*, Alfred Knopf, New York.
- OECD (1988) *New Technologies in the 1990s: A Socioeconomic Strategy* (Sundqvist Report), Organisation for Economic Cooperation and Development, Paris.
- Piore, M. and Sabel, C. (1984) *The Second Industrial Divide: Prospects for Prosperity*, Basic Books, New York.
- Probert, B. (1991) Remote Office Work and Regional Development: The Australian Securities Commission in the LaTrobe Valley, CIRGIT Policy Research Paper, No. 13, Centre for International Research on Communication and Information Technologies, Melbourne.
- Pyke, F., Becattini, G. and Sengenberger, W. (Eds) (1990) *Industrial Districts and Inter-Firm Cooperation in Italy*, International Institute for Labour Studies, Geneva.
- Pyke, F. and Sengenberger, W. (Eds) (1992) *Industrial Districts and Local Economic Regeneration*, International Institute for Labour Studies, Geneva.
- Schlesinger, L. and Hesken, J. (1991) The Service-Driven Service Company, *Harvard Business Review*, Sep-Oct 1991.
- Weiss, L. (1988) *Creating Capitalism: The State and Small Business Since 1945*, Basil Blackwell, Oxford.
- Weiss, L. and Mathews, J. (1991) *Structure, Strategy and Public Policy: Lessons from the Italian Textile Industry for Australia*, UNSW Studies in Organisational Analysis and Innovation, No. 4, Industrial Relations Research Centre, University of New South Wales, Kensington.
- Williams, K. et al (1987) The end of mass production? *Economy and Class*, Vol. 16, No. 3, pp. 405-39.
- Williamson, O. (1985) *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*, Macmillan, London.
- Womack, J., Jones, D. and Roos, D. (1990) *The Machine that Changed the World*, Maxwell Macmillan International, New York.
- Wright, C. (1992) 'Taylorism Reconsidered: The Impact of Scientific Management within the Australian Workplace', Working Paper No. 90, School of Industrial Relations and Organisational Behaviour, University of New South Wales, Kensington.