TECHNOLOGICAL DETERMINISM AND WORKPLACE REFORM: THE MATHEWS DEBATE AND NEW ZEALAND

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John Mathews' extensive writings on technological change and the organisation of work have been influential in Australia and also within the New Zealand union movement. The article addresses itself to two interrelated questions which arise from his work. First: to what extent can Mathews be seen as a technological determinist in his analysis of workplace change? Second, to what extent can Mathews' explanations of the cause and direction of workplace change be seen as applicable to developments in New Zealand?

We will start by trying to define exactly what is meant by the term 'technological determinism' and by assessing how appropriate such a term is for Mathews' work.

Technological Determinism Unpackaged

There is a strand of (mechanical) Marxism that uses a crude form of determinism to argue that changes in the economic and technological basis of society 'must' lead to certain forms of change in the organisational superstructure. The following remarks by Owen Harvey, a former union secretary who is now New Zealand's leading proponent of workplace reform, fall within that tradition:

> There's no escaping the fact that the forces of production, and the
> way they are unfolding, will force companies eventually to

recognise that they have to find better and fairer ways of dealing
with their people (NetWork News, May 1994).

Despite its assumption that the 'unfolding' of productive forces will
somehow make employers introduce workplace reform, Harvey's
position is a defensible one from a certain Marxist perspective (see
Cohen, 1978). Marx's historical materialism is rooted in the dialectic
between productive forces and production relations. However, there is
some debate over what constitutes these elements, and what constitutes
their dialectic.

In some places, Marx equates 'productive forces' directly with the
material form of the technology and argues that particular technological
advancements revolutionise social relations. Marx's famous line in The
Poverty of Philosophy about how "The handmill will give you a society
with the feudal lord, the steam mill a society with the industrial
capitalist.' (cited in Bottomore, 1961, p.108) expresses a fundamental
'technological determinism'. Lipietz similarly refers to Marx's remark
about how the Indian railways would bring capitalist relations in their
wake as an example of 'technological determinism' but goes on to
characterise that remark as "one of the great prophet's more memorable
howlers!" (Lipietz, 1985, p.10).

We can categorise the form of technological determinism present in the
above remarks of Harvey's and Marx's as a 'hard' form in which it is
alleged that new tools and machines directly determine social forms.
'Hard' determinism as an explanation for workplace change had a vogue
in the 1950's and early 1960's (Thompson & McHugh, 1990). Examples
of that trend are the earlier works of Woodward in which she argued that
organisational change was shaped by prior technical change (Woodward,
1965), and Blauner's classic encounter with Marxism, *Alienation and
Freedom* (1964), in which the worker is portrayed as essentially an
adjunct to conveyor belt technology.

In other places in his work, Marx emphasises that productive forces are
not just the material form of the technology itself, but its genesis,
concept and principles which are the product of the human brain in the

context of social intercourse [1]. Indeed, certain technologies do not have a material form beyond the human brain, and may not require material technological apparatuses to be applied.   For example, changing principles about the division of labour, and production norms, can lead to increases in quality and quantity of output, but may require no fixed capital investment.

From this, latter, approach it is possible to derive a 'soft' determinism by which technology is seen as setting the parameters within which, and limiting the forms in which, production can be organised. Thus, a given material technology does not imply only one possible form of workplace organisation.   Even under the more rigid limits of Taylorist/Fordist technology, it was possible to introduce a range of workplace norms that went beyond the division between 'conception and execution' (Braverman, 1974). In the present environment, it seems even more the case that the new computer technologies are compatible with a range of possible forms of workplace organisation (see Tomaney, 1994, pp. 173-183).

Mathews and His Critics

In *Tools of Change* (1989) Mathews provides his own definition of technological determinism   as   "the notion that the technical base determines, or shapes, the social organisation that grows around it"(p. 2). and goes on to emphasise his opposition to that, 'hard', perspective. Indeed, his opposition to all forms of technological determinism has been repeatedly stated (Mathews, 1992; Mathews, 1993; Mathews, 1994).   This repetition has been in response to critics who have

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[1]   "Man's understanding of nature and his mastery over it by virtue of his presence as a social body . . . appears as the great foundation-stone of production and wealth," so that "general social knowledge becomes a direct force of production," (Marx, Grundrisse, 1973, p.705) However, Marx concedes that it is not "only in the form of knowledge, but also as immediate organs of social practice" that learning becomes force, in other words, as machines: machines are "organs of the human brain, created by the human hand; the power of knowledge, objectified" (p.706). Cited in Lyotard, The Postmodern Condition, p.86.

continued to accuse him of technological determinism despite his denials.

Hampson (1991), for example, accused him of combining a view of a deterministic transition between technological paradigms at the macro level with a technological determinism at the workplace level. Hampson bolsters his argument by reference to phrases *from Tools of Change* such as "Computerisation is the key factor precipitating so many other changes and possibilities in the workplace." (p. 41).

Fieldes and Bramble (1992) accused Mathews of technological determinism on a number of grounds.   For their definition of technological determinism, they took a phrase of Woodward's, cited in Badham and Mathews (1989), that there exists "a particular form of organisation most appropriate to each technical situation"(p. 565). In the article to which Fieldes and Bramble refer, Badham and Mathews make it clear that they see Woodward's position as a managerialist view of the interrelation between technical and organisational *change with which they disagree*.   But this does not prevent Fieldes and Bramble from finding Mathews' and Badham's theorising to be "replete with determinist arguments"(p. 566).

Mathews (1992; 1994) has had little difficulty in rebutting or refuting the cruder arguments against him, but he is open to the charge that, *in Tools of Change* particularly, he identified new technologies as one factor contributing to an emerging 'post-Fordism' in Australia, and that he saw this 'post-Fordism' as holding out the possibility of major gains at the workplace level for Australian workers. Fieldes and Bramble (1992) go to some length to question the empirical basis of any such emergent 'post-Fordism' in Australia. The optimistic vision that Mathews presents in *Tools of Change* needs also to be tempered by reference to Jessop's (1992) warning against "assuming that an inevitable, preordained transition is under way from Fordism to post-Fordism impelled by the changing logic of the productive forces and/or competitive pressures imposed by the strongest capitalist forces" (p.65).

Significantly, in *Catching The Wave* (1994) Mathews largely jettisons the 'post-Fordist' thesis, but this does not prevent him from making statements which are open to a determinist interpretation, as in the

Preface in which he claims that the new, participative production system which he sees as existing in Australia draws on adapting local sociotechnical traditions to "the demands of new technologies and new information systems" (n.p.).

He has also chosen to base much of his recent theorising on a variant of 'soft' determinism with some 'hard' determinist overtones. His starting point for this theorising is his advocacy and interpretation of Perez (1985), and Perez and Freeman's (1988) neo-Schumpeterian thesis that the history of industrialised capitalism has been one of five successive technoeconomic paradigm shifts. The first shift was based on the factory organisation of production, and the current one, it is claimed, is based on information technology (IT).   Each shift involves a 'leading edge' technology, which was relatively cheap, could be widely utilised, and could provide the basis for an upswing in investment and growth.

According to Mathews (1992):

> It is clear that the conditions are obviously satisfied by microelectronics and IT generally in the current period of restructuring. .... 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 (pp. 115-116).

We will put aside any critique of Perez and Freeman's schema itself (see Elam, 1990, pp. 44-47), beyond remarking that to predicate a major socio-historical restructuring on the basis of a single 'leading edge' technology is open to questioning, and instead concentrate on where acceptance of the validity of the concept of technoeconomic paradigm shifts leads Mathews.   It leads him to adopt the notion of techno-organisational co-evolution:

> By this phrase I mean a process in which a given technological change opens up a range of options for organisational change, but excludes certain others; similarly, a given organisational change creates a 'space' for certain technological changes, but excludes others.   Thus technological and organisational change occurs in independent evolutionary streams, in analogy with the biological

> co-evolution of certain insects and flowers whose features are
> adapted for the other (Mathews, 1993, p. 5).

This position at first glance seems compatible with what we have called 'soft' technological determinism. However, the co-evolution argument does not explicitly recognise the forces beyond the workplace which influence technological and organisational choices and outcomes. As Noble (1984) demonstrated clearly, workplace technologies do not evolve but are designed to serve specific capitalist objectives, and Noble's case study of how US firms consciously pursued a policy of machine tool automation as part of a strategy to "reassert managerial prerogatives, centralize control, weaken unions..." (p.248) is an excellent reminder of this.

Further, the concept of 'co-evolution', of technological and organisational change occurring in independent evolutionary streams places such change in a naturalistic rather than a social mode of explanation. The reference to evolution inevitably connotes a Darwinian survival of the fittest. Those enterprises that can best adjust to a changing environment over which they do not necessarily have any control, but to the demands of which they must respond adequately, survive. Those that cannot adapt are doomed to die. That connotation would narrow down actual organisational choice, if not rule it out altogether, and it is reinforced by Mathews' view that if firms do not move to 'best practice' then they will go out of business.

In addition to the metaphor from nature, Mathews is also utilising a base/superstructure metaphor akin to that found in the cruder versions of Marxism. On the one hand the new technologies that are part of the base itself offer opportunities for changes such as group work which cannot be realised under Taylorism. On the other hand it is the Fordist base which cannot respond to opportunities presented by the new production systems of the superstructure. We have a dialectic of base and superstructure in which neither are seen as adequate to the requirements of the present conjuncture. But what is the driving force behind the present conjuncture? It is the base, or as Mathews (1994) puts it: "microelectronics and information technology generally" to which organisational shifts are "complementary" (p.91). In a rather confusing

way, co-evolution must coexist with determination 'in the last instance' by the base.

Mathews is adamant, however, that adoption of the technoeconomic model and co-evolution is not deterministic: "...it is not a question of appealing to some form of technological determinism. Rather, it is a matter of demonstrating how one set of lead technologies and organisational forms oust another by becoming a 'best practice' that other firms and sectors must match, or go out of business." (p. 93) This approach can be seen as a kind of technological determinism to the extent that a 'best practice' is equated with a leading technological paradigm. However, it is also a kind of 'economic determinism' in the sense that competition forces 'best practice'.

Mathews (1994) claims that there is an emerging international consensus on what constitutes 'best practice' and he refers, (pp. 52-53), to a list of characteristics of 'best practice' firms, which includes an emphasis on training and also labour-management co-operation, taken from the French Regulation School theorist Boyer to make his point. But the issue of 'best practice' is perhaps not as consensually settled as Mathews appears to think.   After all, Taylorism itself was accepted as 'best practice' by management for more than half a century. Mathews also underestimates, or ignores, the ability of transnationals (TNCs) to establish high technology 'best practice' plants in cheap labour areas. There are now pools of highly educated young workers and graduates available in nations like India, Korea and Mexico who are capable of operating high technology plants owned by Western TNCs extremely efficiently but at a fraction of the wage costs of the industrialised nations. The implications for workers in nations like Australia and New Zealand are serious and highly threatening if these plants are held up as the benchmarks against which we must reorganise our wage rates and work practices.

Therefore, to suggest, as Mathews does, a naturalistic 'co-evolution' to a workplace of multiskilling, group work, training, task integration, labour-management co-operation, etc., is perhaps to indulge in wishful thinking: as well as determinism. Mathews does recognise the existence of strategic choices, and the existence of multiple tendencies, which characterise the contemporary period (1992, p.117). That the shaping of

the workplace is an outcome of capitalist strategies and of worker resistance to them was a point made forcefully by Rustin (1989) in his analysis of the question of 'New Times' and 'post-Fordism'. He made clear in that article: "It depends on both specific technical conditions and local balance of social forces whether one socio-technical system or another is adopted or preferred." (p.60).

We can, then, read *Tools of Change* as advocating a 'post-Fordist' strategy for the Australian labour movement. However, by the time of *Catching The Wave* Mathews had narrowed the future choice for Australia down to the lean production system or the socio-technical production system. Within that range, co-evolution clearly favours the socio-technical production system as that approximates most closely to what he defines as 'best practice'. In the last instance, there will be a convergence towards a 'best practice' 'post-Fordist' 'socio-technical' production paradigm, which he equates with upskilled, humanised and democratised workplaces arising from the flow-on effects of worker participation, teamworking and the blurring of mental and manual jobs generated by the new flexible computer and semi-automatic technology, combined with changes in production layout, and changes in the structure of line control.

This is the model for the advanced industrial societies and it will lead to "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 " (p. 117). Let us now examine how New Zealand might fit into that scenario.

Workplace Change in New Zealand

Since 1984 the New Zealand economy has been the subject of a "wrenching restructuring" (Yeabsley,1994, p.2) driven by the New Right and which has followed the pattern laid down in IMF 'structural reform' programmes. That is, there has been extensive deregulation of all sectors of the economy; the corporatisation and privatisation of large chunks of the State sector; the dollar now floats on the world market; and international capital controls have been removed (Harper & Malcolm,

1991). Concurrently, for much of that period the economy has suffered a recession characterised by low or negative growth rates and high unemployment, from which it has only recently started to recover.

Against that background, there has been a wave of organisational restructuring as firms and State sector organisations adjusted to the new operating environment. For some private sector firms, particularly smaller ones in the newly deregulated manufacturing sector, the result was bankruptcy and closure. Others moved into a survivalist mode and sought to improve their efficiency and the quality of their product. Still others merged (especially in the speculative boom of 1986-1987) and re-merged in an often confusing pattern of ownership changes, or were wholly or partially taken over by overseas interests. Some of the larger firms, such as Fletcher Challenge and Carter Holt Harvey (a product of the merging/remerging phase) extended the overseas sphere of their operations to become truly transnational enterprises.

The State sector was fundamentally transformed. An extensive programme of privatisation, which is still continuing, saw a raft of State assets and enterprises, including the railways, the national airline, the Bank of New Zealand and New Zealand Steel sold mainly to overseas interests, and the chief executives of the newly privatised firms commenced a series of restructurings which led to mass redundancies. Other sections of the State were corporatised into State Owned Enterprises (SOEs) headed by prominent (male) business leaders of New Right views who also imposed extensive redundancies and also adopted an aggressive, Rambo-like, attitude to unions (Walsh and Wetzel, 1993).

The public health and education sectors were restructured to meet the requirements of maintaining a funder/provider split and of Government attempts to cut spending, and one consequence of this has been that the health sector is now under the regional control of Government appointed executive bodies comprising mainly (white, male) representatives of the business community.

It is very difficult to discern in this radical and extensive set of patterns any trend or tendency to a technological-organisational co-evolution of the type Mathews describes. It is possible, though, to identify different

forces shaping the organisational changes that have occurred and we shall now focus on what we consider to be some of the most significant of those forces.

The New Right Initiative

The New Right restructuring of New Zealand has gone to include both the labour market and the enterprise. From the mid-1980's onwards employers have sought a labour market flexibility, the components of which include wage and contract flexibility, functional and numerical flexibility at the enterprise level, and deunionisation of the workforce. Drawing on a range of ideological sources, including property rights theory, principal/agency theory and neo-classical economics, the New Right has encouraged employers to reconstruct the enterprise as one in which managerial prerogatives are extended and extensive, in which the workforce is employed primarily on individual contracts, and in which unions are marginal or non-existent.

The demand for labour market flexibility was partially contained under the Labour Governments of 1984 to 1990 but was given its head when the National Government passed the 1991 Employment Contracts Act (ECA). The objective of the ECA is to deliver a more efficient labour market, and this has translated in practice into reductions in real wages, the reduction or elimination of overtime and penal time for many workers, a collapse of collective bargaining and the widespread use of individual contracts. There has also been a hastened process of deunionisation: since the ECA came into force union density has fallen by 44% to 23.5% of the workforce and unions have lost 35% of their membership (Harbridge et. al, 1995).

Even before the ECA came into force, the core public service had been restructured to meet the ideological requirements of the New Right. One aspect of this has been the deunionisation of the management strata and the jettisoning of the old career service with its lifetime employment guarantee for faithful employees, and its replacement from management downwards with individualised, performance related, fixed term, contracts of employment. (Boston et. al, 1991). There has also been a

reasserting of managerial prerogative, the fostering of a unitary managerial culture (with some emphasis on the US concept of organisational "excellence"), the codification of work practices and the use of the quantification of individual outputs. These, with fixed production norms for individual workers as well as local offices, are a means of assessing staff performance in areas as diverse as employment services and probation (Public Service Taskforce On Productivity, 1992).

The incorporation of concepts such as "excellence" and corporate culture in the public service restructuring indicates that employers have been prepared to apply not only New Right ideas but also to borrow compatible ideas and practices from what Appelbaum and Batt (1995) refer to as the American Human Resources Model (AHRM) of organising production. A fundamental element of this is a unitary (rather than pluralist) ideology of the firm, in which unions are not seen as having a legitimate role to play. Employers have been especially keen on those aspects of that perspective which emphasise the firm as a hierarchy in which management controls the efforts of individual, non-unionised, workers in order to achieve the organisational goals which management sets.

That is not to say that unions were driven out of the core public service: it remains heavily unionised, as do the public health and education sectors. But the unions have largely been confined to their traditional role of collective bargaining over wages and conditions and have played a minor or no role at all in shaping the process of organisational changes which have occurred - and which have included Telecom centralising, decentralising and then recentralising its operation and in each case using the change to 'flatten' management structures and to make more workers redundant. (Public Service Taskforce On Productivity, 1992).

The combination of New Right and AHRM theories and practices has spread through the private sector since the ECA significantly shifted the balance of workplace power towards management. The major employer organisation, the Employers Federation, is now a leading proponent of a New Right ideology of enterprise and workplace change, whilst the Business Roundtable, representing the CEOs of the largest firms in the country, expends most of its time and energy on popularising that ideology. Given the corporate support for the positions of the New

Right, it is hardly surprising that whole sectors of the economy can now be found, for example in the hotel and restaurants, hospitality and retail industries, in which a combination of authoritarian managerialism, heavily emphasised corporate culture, deunionisation and the employment of low wage, casual and part-time labour, prevails.

In Mathews' schema in *Catching The Wave* he presents us with only three production paradigms: Fordism, Lean Production and Human-Centred (Socio-Technical) Production. This might be an accurate reflection of Australian reality (although we doubt that it is), but in New Zealand there is also a New Right paradigm in operation. As measured by management's goals, it is a successful one and we see no evidence at all that there are contradictions and limitations within it that would cause those who employ it to seek to move to some 'best practice' socio-technical model.

Japanization

As Elger and Smith (1994) point out, the concept of 'Japanization' is a problematic one and is best treated as "a label for a fairly open-ended agenda of investigation..."(p.7). By Japanization in the current New Zealand context, we mean the introduction of selective Japanese management practices and changes in workplace organisation. As the evidence presented below shows, these are *selective* in that only certain aspect of Japanese production have been introduced into New Zealand, such as kanban and continuous improvement, and those have largely been derived from the experience of firms like Toyota and Nissan. Further, they have been modified to suit local conditions. They are also selective in that New Zealand firms and New Zealand branches of Japanese TNCs have not tried to emulate the 'lifetime job guarantee' nor the construction of company unions which have also been part of the practices of those firms.

Japan has an established place in the New Zealand auto industry through firms such as Toyota, Nissan and Honda. More recently Japanese investment has been moving to new areas such as forestry and tourism. Where the Japanese operate overseas branches of their domestic firms

they, naturally, also tend to use their own managers and/or their own management theories and practices. But locally owned firms have also been keen to copy elements of the production systems of firms like Toyota and Nissan, which they see as key factors in improving efficiency and raising the productivity of labour.

In 1992, and following an earlier Australian example which stimulated the idea, a conference on workplace reform was held. At that conference 25 firms and State sector organisations contributed their own experience of workplace change as conference case studies. The first significant point about those case studies is that, of the firms/organisations concerned that reported on the methods of change they were employing, by far the most frequent methods were one form or another of modified Japanization, as Table One below demonstrates.

Table One: Workplace Reform - New Zealand Case Studies

Method/Approach	Frequency of mention
Teamwork	11
Quality/Productivity Improvement Program	10
Employee Participation/Involvement	8
Management/Employee Consultative Committee	7
Upskilling/multiskilling	7
Total Quality Management	6
Total Quality Control	1
Problem-Solving Groups	1
Quality Assurance	1
Quality Circles	1
Quality Development	1
Service Circles	1
Just In Time	1
Value-added Management	1

Source: Derived from: Workplace New Zealand (1992),Quality Through Partnership .

Secondly, the identification of "key players" in the workplace reform process was used by only 15 of the case studies. Of those only 8 included a reference to a union or a union representative in their key

players list. Only 15 of the total case studies mentioned a union at all, and in 10 of the 15 cases the Engineers Union was the only union mentioned (Workplace New Zealand, 1992).

The overall picture was one of the adoption of Japanese inspired changes such as teamwork and a focus on quality, with only minor union input into the forms and directions of change. The Engineers Union figures so prominently because it is the leading union in New Zealand in advocating a strategy of supporting workplace reform. The Union maintains close links with its Australian counterpart and was the first to introduce Australian-derived ideas on award restructuring and workplace reform into New Zealand. The Union has been prepared to co-operate with management in the manufacturing industry to help employers to survive - and thus to preserve its members' jobs. It has also used methods such as opinion polling of its members to ensure that its policies and tactics are in line with membership thinking. .

It is the Japanese car firms Nissan and Toyota which have been implementing a modified form of lean production, in which the Engineers Union has been highly successful in maintaining a union input into the process of change. They have done this through the negotiations of collective contracts with the firms, and through their acceptance of teamwork in place of demarcated individual jobs and their willingness to participate in joint consultative committees with management (Ryan, 1993; George, 1994).

A further set of case studies of workplace reform in New Zealand published in 1995 (Perry, Davidson & Hill, 1995) re-establishes the dominance in much of manufacturing and also in areas of the service sector of what the authors call the JIT-TQM framework of workplace change. Within that framework an accommodation has been made to local conditions, for example Nissan has a plant capacity of 42 cars a day and Toyota assembles around 50 cars a day (Ryan, 1993; Perry, Davidson & Hill, 1995). This leads to a less intense utilisation of labour than in the Japanese parent plants and also means that they differ from the version of the lean production system used by Mathews (1994) which starts from the basis of diversified mass production.

A secondary influence remains that of American managerial ideas but the dominant trend in workplace change identified by Perry, Davidson and Hill (1995) is that of modified lean production, especially in the manufacturing sector in which the deployment of low skilled labour on repetitive assembly line jobs remains the norm. What is missing from the New Zealand workplace, as they also point out, is any evidence whatsoever of more radical changes to workplace organisation of the Swedish or German types, for example the use of semi-autonomous work teams with some control over the pace of production, even though such methods might be more suited to New Zealand's essentially batch production manufacturing than those derived from US and Japanese large-volume manufacturing.

Mathews (1994) argues that lean production, whilst an advance of Fordism, must eventually give way to or be superseded by human-centred production. Once again, we find no evidence that there is any pressure for this to occur in the New Zealand firms which practice modified lean production. On the contrary, they include some of the nation's most successful plants, such as the Nissan plant which is held in high regard by its parent company, and there seems to be no incentive for them to change.

Technology and Workplace Change

Following Mathews' line of argument, we find it legitimate to ask whether there is any evidence that the forces of technological change will create an organisational crisis in New Zealand production to which a socio-technical solution is the only answer?

With reference to manufacturing within New Zealand, Enderwick (1992) has argued that there is little chance of firms opting for a workplace restructuring model in which high levels of technical change and other forms of investment play a dominant role, because of the small average size of New Zealand firms, the low levels of output they achieve and the high levels of capital cost involved. This would seem to rule out the use of a technology strategy combined with work organisation strategy as a

means to raise productivity, on the lines that German auto industry producers have apparently followed (Jürgens, Dohse, & Malsch, 1986).

Interestingly, in light of Mathews' view of the workplace organisation potential of technologies such as CNC machine tools, New Zealand has had a low rate of utilisation of such technologies, with microelectronics being used more for the control of individual machines (Bowie & Bollard, 1987). A more recent survey of manufacturers (Hyde, Basnett & Foulds, 1994) presents an interesting picture: few of them had even heard of, let alone used, cellular manufacturing, few used computer-aided manufacturing or robotics, but a majority of them were employing JIT and worker-centred quality control methods.

The use of robotics and computer-aided manufacturing systems is constrained by the high cost of importing such items of capital equipment.   The dairy industry, which has become an exporter of a range of quality processed products, is one of the few industries which has made a major investment in capital goods in recent years.   This has coincided with a concentration of the processing industry into the hands of a few, large scale, co-operative companies and the shedding of thousands of jobs.

Technological change has driven workplace change in the processing side of the industry as the remaining workforce has been transformed from assembly line workers into machine minders for the high technology processing equipment.   This has resulted in a dramaic increase in labour productivity.   Management and the union have co-operated in trying to devise and to implement a skill based pay system with a career path for the workers (Perry, Davidson & Hill, 1995).   But the fact remains that machine minding is now the lot of those workers and the technological changes have not led to any perceived need for fundamental reorganisation of the workforce on human-centred production lines.

The capital-intensive rationalisation strategy of the industry has enabled it to keep a competitive edge in export markets, on which it is dependent for its survival: a problem not faced by the car-producers and those other manufacturers which compete only in the domestic market and which in part explains their lower uptake of new production technologies.

Technology is not, after all, a necessary condition for raising productivity and reducing costs. Many employers have, especially since the Employment Contracts Act came into force, preferred to use traditional methods of achieving those goals, such as reducing real wages and using the threat of redundancy/dismissal to increase the intensity of labour.

New technologies seem to be compatible with a range of forms of workplace organisation and these seem to be shaped more by product and labour market conditions than by any technological imperatives. In the supermarket segment of the retail trade, for example, Point of Sale technology is used in a neo-Fordist way both to speed up the throughput of goods and to exercise disciplinary surveillance of check-out operators. It is used in conjunction with a predominantly youth labour force that has been casualised and subjected to an intensification of labour (Brosnan, 1991).

In the fast food industry McDonald's uses new technology to produce a narrow range of products made according to a rigid and highly Taylorised formula. It employs a very similar labour force to that of supermarket, and it subjects it to its own version of AHRM in its re-identification of workers as 'crew members' and the strong emphasis on a unifying corporate culture. What is this hybrid system of McDonald's if not the global best practice way of producing hamburgers and, *pace* Mathews, what possible reason could the operators of McDonald's franchises have for moving to a more unionised and democratised mode of producing their hamburgers?

There are other modes of organising work and production in practice in New Zealand which we have not the space to deal with here, although we can note that none of them to our knowledge suggest any evolution towards a humanistic, socio-technically based, paradigm of workplace change. What seems to be occurring in New Zealand as a whole is the emergence of a number of methods and forms of organising production and the labour process. These are largely hybrids. They combine elements derived from ideological positions on the enterprise and the relative roles of management and unions with pragmatic responses to the contingencies of product, capital and labour markets. They also mix and modify, according to local conditions, aspects of those methods of

increasing productivity and efficiency which employers see as the key to the success of leading Japanese and US firms.

Thus we cannot categorise developments in New Zealand as showing evidence of an emerging struggle between lean production and socio-technical production systems.   Nor can we identify the workings of a technoeconomic paradigm shift in the form of a co-evolution towards the dominance of a socio-technical paradigm of production underpinned by the workings of global best practice.

Conclusion

Mathews' text could be read as an attempt to construct for and sell to the trade union movement a set of feasible strategic goals about the micro-foundations of a viable and favourable future class compromise. We should not underestimate the magnitude of the goal Mathews has set himself. It is to clear a space for the Australian trade union movement to develop and implement a strategy that will enable it to take a proactive role in shaping workplace change in Australia in a direction which benefits labour as well as capital.

We believe that in pursuit of this goal Mathews has interpreted events and adjusted theory to point to the inevitable triumph of his desired outcome. In the process he does not follow technological determinism in a crude sense.   He does not posit an immediate or direct causality between 'technology' and 'workplace reform'. Mathews' position is a more sophisticated 'techno-economic determinism'. The notions of 'co-evolution' and 'best practice' within the context of competition serve the purpose of producing a one best technology-organisational mix in the last instance.

Our analysis of the New Zealand experience of workplace change in the last decade does not find evidence of either technological change creating a space for organisational change, nor of any co-evolution of technological and organisational change.   Rather we find a number of causes of change to be present and that the direction of change to be largely a product of imported theories and practices modified in a way that reflects local operating conditions.   These include practices derived

from the application of New Right ideas - ideas which have been advocated and translated into policy by successive Governments since 1984 and which are now fervently endorsed by employer organisations, and from the adoption and adaptation of selected US and, particularly, Japanese management strategies and forms of workplace organisation.

Of any emerging socio-technical paradigm we can find no evidence at all. Neither the technological changes nor the organisational changes that have occurred seem to be leading to the adoption of such a paradigm. The majority of employers are a long way from having the slightest interest in the democratised and humanised workplace, with union involvement in managing change, of which Mathews' dreams.

References

Appelbaum E, and R. Batt (1994) *The New American Workplace* Ithaca NY: ILR Press.

Badham, R and J Mathews (1989) "The New Production Systems Debate", *Labour and Industry*, Vol 2, No 2, pp. 194-246.

Blauner, R (1964) *Alienation and Freedom* Chicago and London: The University of Chicago Press.

Boston, J (1991) *Reshaping the State : New Zealand's Bureaucratic Revolution*

Auckland: Oxford University Press.

Bottomore, T B and M Rubel, M (1961) *Karl Marx: Selected Writings in Sociology and Social Philosophy* Harmondsworth: Penguin.

Bowie, R. & Bollard, A. (1987). *The Diffusion of Microelectronics through New Zealand Manufacturing*. Wellington: NZ Institute of Economic Research.

Braverman, H (1974) *Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century* London and New York: Monthly Review Press.

Brosnan, P (1991) "Labour market flexibility and the quality of work: a case study of the retail industry", *New Zealand Journal of Industrial Relations*, Vol 16, No 1, pp. 13-36.

Cohen, G A (1978) *Karl Marx's Theory of History: A Defence* Princeton: Princeton University Press.

Elam, M (1990) "Puzzling out the Post-Fordist Debate: Technology, Markets and Institutions", *Economic and Industrial Democracy*, Vol 11, No.1, pp. 9-37.

Elger, T. & Smith, C. (1994). 'Introduction'. In T. Elger & C. Smith, (eds) *Global Japanization?* (pp.1-24). London and New York: Routledge.

Enderwick, P (1992) "Workplace Reform and International Competitiveness: the Case of New Zealand", *New Zealand Journal of Industrial Relations*, Vol 17, No 2, pp. 185-206.

Fieldes, D and T Bramble (1992) "Post-Fordism: Historical Break or Utopian Fantasy?" The Journal of Industrial Relations, Vol 34, No. 4, pp. 562-579. -

Freeman, C and C Perez (1988) "Structural Crises of Adjustment, Business Cycles and Investment Behaviour", in G. Dosi et al, (eds) *Technical Change and Economic Theory* (pp. 38-66). London: Pinter.

Gahan, P (1993) "Mathews And The New Production Concepts Debate", *Journal of Australian Political Economy*, No. 31, (June), pp. 74-88.

George, R B (1994) *Workplace Change At Toyota Thames: The Politics Of Production* Unpublished Master's thesis, Hamilton, New Zealand: University of Waikato.

Hampson, I (1991) "Post-Fordism, The 'French Regulation School', And The Work Of John Mathews" *Journal of Australian Political Economy*, No.28, (September), pp. 92-130.

Harbridge, R, K Hince, and A Honeybone (1995) *Unions and Union Membership in New Zealand: Annual Review for 1994* Wellington: Victoria University.

Harper, D and G Malcolm (1991) *Surviving The Change: How Firms Adjusted To The New Environment* Wellington: NZ Institute of Economic Research.

Hyde A, C Basnet and L R Foulds (1994) *Achievement of World Class Manufacturing in New Zealand: Current Status and Future Prospects*, Hamilton: University of Waikato.

Jessop, R. (1992). Fordism And Post-Fordism. A critical reformulation. In M. Storper & A. J. Scott, (eds) *Pathways To Industrialization And Regional Development* (pp. 46-69). London and New York: Routledge.

Jürgens, U, K Dohse, and T Malsch (1986) "New Production Concepts in West German Car Plants" in S. Tolliday & J. Zeitlin (eds) *The Automobile Industry and its Workers* (pp. 258-282). Cambridge: Polity Press.

Lipietz, A (1985) *Mirages and Miracles*, London, Verso.

Lyotard, J-F (1984)*The postmodern condition : a report on knowledge* Minnesota:University of Minnesota Press.

Marx, K (1973) *Grundrisse*, Harmondsworth: Penguin.

Mathews, J (1989) *Tools of Change* Sydney:Pluto Press.

Mathews, J (1992) "New Production Systems: A Response To Critics And A Re-Evaluation", *Journal of Australian Political Economy*, Vol 30, (December), pp. 91-128.

Mathews, J (1993)*Technology, Work and Organisation: Case Studies* Kensington: University of New South Wales.

Mathews, J (1994) *Catching The Wave* St. Leonards NSW: Allen & Unwin.

Noble, D. F. (1984) *Forces Of Production*. New York: A. A. Knopf.

Perez, C (1985) "Microelectronics, long waves and world structural changes: new perspectives for developing countries", *World Development* Vol 13, No 3, pp. 441-463.

Perry, M, C Davidson, and R Hill (1995) *Reform At Work* Auckland: Longman Paul

Public Service Taskforce On Productivity (1992) *Doing it Better, Doing it Right*

Wellington: Public Service Taskforce On Productivity

Rustin, M. (1989) The Politics of Post-Fordism: or, The Trouble with 'New Times', *New Left Review, 175*, 54-77.

Ryan, R (1993) *"Japanisation" or a "New Zealand Way"?: Five Years on at Nissan New Zealand* Wellington: Victoria University of Wellington.

Ryan, R (1995) *Workplace Reform in New Zealand-The State of Play* Wellington: Workplace New Zealand.

Streeck, W. (1991) "On the Institutional Conditions of Diversified Quality Production", in E. Matzner and W. Streeck (eds) *Beyond Keynsianism* (pp.21-61). Aldershot: Elgar.

Thompson, P and D McHugh (1990) *Work Organisations* London: Macmillan.

Tomaney, J. (1994) "A New Paradigm of Work Organization and Technology?", in A. Amin, *Post Fordism: A Reader* (pp.157-194). Oxford, Blackwell.

"Unions must intervene says US reform critic", (1994, April/May) *Network News*, p. 2.

Walsh, P and K Wetzel (1993) "Preparing for Privatization: Corporate Strategy and Industrial Relations in New Zealand's State-owned Enterprises", *British Journal of Industrial Relations*, Vol 31, No 1, pp. 57-74.

Woodward, J (1965) *Industrial Organization:Theory and Practice*, Oxford: Oxford University Press.

Workplace New Zealand (1992) *Quality Through Partnership* Wellington: Workplace New Zealand. * See note below.

Yeabsly, J (1994) *The Long Run: New Zealand As A High Performing System* Wellington: NZ Institute of Economic Research.

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*   Workplace New Zealand publishes its own journal NetWork News, which is available at PO Box 9548, Wellington, New Zealand.

RESPONSE TO HARRIS AND NEILSON

John Mathews

By now readers of the *Journal of Australian Political Economy* must surely be wearied by the so-called 'Mathews debate'. I say 'so-called' because it has been not so much a debate as a continuing attempt at intellectual assassination. There has never been the slightest pretence at fair and considered assessment of my ideas, and the posing of genuine alternatives to them. There has simply been denunciation and misrepresentation, by academics apparently terrified of new thinking - or by young scholars looking for an easy road to publication. By intellectual assassination, I mean a studied attempt to silence with contempt and ridicule someone whose views are unwelcome. How galling for my many opponents that the victim of these attempts still lives - and stronger than ever!

Now Harris and Neilson add their own chapter to this sorry saga. Surely Harris and Neilson can make their contribution, such as it is, to debates over trends in workplace developments, without dragging in an attack on Mathews' supposed 'determinism'. Let them develop a thesis on the directions of industrial and workplace developments in New Zealand, and test it by reference to the evidence. As scholars they might be expected to do no less. If in passing they wish to make a comment that their interpretation is at odds with the possibilities sketched by myself, then fair enough, they could do so - in a paragraph or a footnote. But to twist their meagre results into an all-out attack on my supposed 'determinism' - this is too much.

Let me, for positively the final time, clarify the issues involved here. The context for these debates is as follows. In the early to mid-1980's I, along with many others, was involved in working with unions in

Australia to broaden the agenda on which they engaged in workplace negotiations. At the time, unions saw the industrial agenda largely in terms of wage campaigns and collective, industry-wide bargaining over employment conditions. Concern with job design and quality of worklife issues was minimal. Attempts to introduce 'industrial democracy' had been made through the 1970s, but with little success, and again with minimal union support. The broadened agenda in the 1980s was triggered by new concerns with technological change, and with issues such as occupational health and safety. New workplace agreements negotiated at that time called for joint determination of these, more concrete issues. Consultative committees were established to jointly evaluate technological options, that then broadened into projects of workplace and job redesign.

The setting for all these initiatives was a major political shift, under the umbrella of the ACTU-ALP Accord, which provided opportunities for 'political exchange' to be carried through at national and sectoral levels. An example was the project to introduce new Optical Character Recognition mail sorting technology at Australia Post. Decades of zero-sum stalemate over mechanisation of mail sorting were overcome with a new 'development agreement' between Australia Post management and unions, to introduce OCR technology in a joint consultative fashion, giving Australia Post greater opportunities for enhanced productivity and quality of sorting, and workers at mail-sorting centres greater say over their working conditions and input into their work environment. The project was well managed by Australia Post and the unions, bringing in a new culture of 'industrial participation', and through the 'political exchange' achieving some industry policy initiatives as well, ensuring that the new OCR technology was manufactured in Australia.

I, along with many others, was involved in this broadening of the industrial agenda, which we saw as bringing unions into the mainstream of workplace reform negotiations, and establishing thereby the preconditions for some serious efforts to achieve 'industrial democracy' as a negotiated outcome. In the latter half of the 1980s I worked to provide a more secure theoretical foundation for these kinds of interventions, utilising the conceptual frameworks available at the time - namely the debates over the supercession of 'Fordist' industry structures

to encompass 'neo-Fordist' or 'post-Fordist' tendencies. I published two books on these questions, one directed to the technological issues involved, and the other to the political questions, at the end of the 1980s. I expected that this would lead to further scholarship and reflection, backed by the evidence gathered through practical experience in negotiated workplace change and the introduction of new organisational architectures, such as teamwork, that held out the promise of overcoming decades-long conditions of worker alienation associated with the extremes of mass production.

Well, this is not how this work was greeted in Australia. In place of a reasoned debate and some empirical inquiry and 'action research' into the possibilities of redesigning industrial work, there was instead an hysterical denunciation. The very thought of unions leading the way towards organisational development and industrial democracy, in a political coalition with progressive managements, made the blood run cold in people who were apparently comfortable only with a view of unions as agents of class struggle and workers as cannon fodder in this struggle. I was apparently singled out as the author whose ideas were most dangerous. Attack after attack appeared, each one more ludicrous than the last in misrepresenting my position. [1]

Without wearying readers with the details, let me mention just one aspect, which is the issue of 'determinism' raised once again by Harris and Neilson. I have suggested many times, that the new computer-based technologies offer unprecedented opportunities for worker involvement and joint determination of workplace and job design. Computer-aided design and manufacturing systems, for example, can be utilised to enable skilled machinists to intervene to optimise programs and make changes in work processes. They can do so only if they have access to the programs. They can shape their own work processes provided there is agreement that they can do so. It is not that the CAD technology 'determines' such an outcome - such a suggestion is ludicrous - but that it creates an opportunity that was not there before. Computer-aided machine tools (CNC systems) can be grouped together to form manufacturing cells, which can be operated by self-managing teams of

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1   I responded to these attacks in *JAPE*, Vol 30 (Dec 1992), pp. 91-128.

workers who can take charge of the operations of the cell if they are given access to the programs involved. The technological innovation of CNC machine tools creates an organisational 'space' for the innovation of team-based cellular manufacturing which can evolve into genuine worker self-management. This is a potential - and no more than that. Whether the potential is realised or not depends on the attitudes of the parties involved - the workers themselves, their unions, the management, and third parties such as government promotional bodies and public sector research institutes, all of which seek to affect the outcome. This is the social process that I sought to capture pithily in the phrase *techno-organisational co-evolution*. Readers may judge whether Harris and Neilson do this idea justice in their attack.

The point is that if unions are to become involved in these issues of workplace reform, extending the evolution of organisations and technologies through interaction with each other, in a quest to bring their members into joint control and determination over their working conditions, then they need far more sophisticated resources than if they continue in the time-honoured trench warfare of the class struggle. To pursue such a strategy effectively, unions needed to be able to avail themselves of technical resources, to act as support and advice for their workplace representatives who would take over responsibility for negotiating the details of the workplace arrangements. This would entail a shift away from broad, industry-wide collective outcomes, towards enterprise negotiations. It would place unions in the position of supporting their members who were seeking to make their workplaces more productive and efficient, rather than leading them in endless wage confrontations that were based on political campaigns to 'undermine capitalism'. It would entail unions entering into coalitions with progressive managements to make their companies, and industries, more efficient and flexible and better able to survive in international competition. These were implications that were not lost on the academics who weighed in so vehemently against the 'post-Fordist' agenda, trying to bury it beneath ridicule and contempt.

But in the end, what is the alternative being offered by these shrill supporters of the industrial status quo? Consider this paper by Harris and Neilson. They look at the kinds of Mcjobs being created today in

New Zealand, and almost seem to celebrate the fact that they are not rewarding and fulfilling. How pleased they seem to be that these jobs are far from the challenging experiences 'predicted' by Mathews. Yet anyone who is prepared to approach these issues dispassionately can see that I never 'predicted' anything. I pointed to possibilities and potentials, and elaborated a strategy which unions and progressive managements could follow to turn these possibilities into actuality. That they have not done so to any great degree in New Zealand is cause for commiseration and regret. If New Zealand unions wish to leave the field of job design negotiations, in pursuit of macroeconomic wage claims, and ignore the potential for more fulfilling jobs to be created for their members, then so be it. It is they, and their members, who will suffer. But at least I offered them an alternative. What have Harris and Neilson offered - other than more of the same? To ask the question is to answer it.

This is positively the last response I shall make to the 'Mathews debate'. My interests since the publication of *Tools of Change* and *Age of Democracy* have moved on. I have been concerned since 1990 with documenting some of the cases where unions and progressive managements have indeed succeeded in jointly changing their organisational and workplace conditions. These cases are reported, with an update on the issues involved, in my 1994 book *Catching the Wave*. My interests now encompass questions to do with the total enterprise and its coherence, integrity and manageability, drawing most of my innovative examples from the emerging regions of East Asia. I am concerned with how firms interact and collaborate to create new and efficient industries. These are not questions which seem to concern critics of the 'post-Fordist' agenda. But they are the issues which will determine economic and industrial success - for companies, countries and labour movements - in the 21st century.