Compaine's eight-page final chapter concludes that "information technology is becoming so cheap and easy to use that it lends itself to greater dispersion and, conversely, to greater difficulty for control for whatever ends" (p.293), and that "the information-technology world has not been, and does not seem to be becoming, as terrifying a place as Orwell [*et al*] would have us believe" (p.300).

Harvard's Program on Information Resources Policy is funded by contributors rather than on a project basis, and the approach of the papers is consistently descriptive and interpretive, identifying the 'dimensions' of 'issues' confronting 'stakeholders', rather than pursuing an argument or taking a position. At times this commendable neutrality approaches 'neuter-ality' and removes almost all of the excitement which normally accompanies such topics. The authors are unashamedly, but also unquestioningly, of the school which asserts that this is an 'information age', and that a great deal of economic activity must be re-conceived to fit that convention. The topics are scattered rather than arranged in a coherent line of development, and the scope of most of the papers is limited to the USA. The book is generally well presented, and contains author and subject indices, but also has more than its share of grammatical and proof-reading errors.

I found the book somewhat disappointing, but it belongs on the bookshelf of every organisation and individual with an active interest in the media industry.

REFERENCE

1. B.M. Compaine (ed)., *Understanding New Media: Trends and Issues in Electronic Distribution of Information,* Ballinger, Cambridge MA, 1984.

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Tools of Change: New Technology and the Democratisation of Work *by John Mathews*
(Pluto Press, Sydney, 1989) $14.95, ISBN 0 949 13822 3

The introduction of new technologies in the workplace and the associated effects upon work organisation, work practices, employee skills development and utilisation, employee career prospects, workplace industrial relations, workplace *social* relations and the quality of working life generally are the result of human decision making shaped by social, cultural, political and economic values. Technological change within an organisation can be used to give workers greater autonomy, opportunity, responsibility and authority. Technological change can also be used to fragment tasks, to centralise control of policy and operations, and to reduce skills and labour requirements. New technologies and associated work practices can be developed and implemented in close consultation with unions and the (affected) workers, or the technologies can be exploited to undermine and divide trade union influence and loyalties. Unions themselves must take a more forward-looking role in preparing for, and dealing with, technological change in order to maintain their relevance for members; managements must encourage initiative and creativity in their workforce in order to use new technologies to their full capability.

There are compelling arguments to suggest that the most productive use of new technology occurs when it is introduced with full and open co-operation between management and labour and in a way designed to report the needs and aspirations of all partners in the labour process. The hierarchical, inflexible practices of Taylorism are inappropriate — in fact, counter-productive — for obtaining either, in the short term, the best return on organisational investment in new technologies or, in the longer term, the structural adjustment necessary to enable competitiveness in national and world markets. A new, more positive and more democratic approach to work organisation and to industrial relations generally is called for.

So far so good. *Tools of Change* is an exposition of the arguments outlined so simplistically above. The arguments themselves are not new, as Mathews readily admits; in principle — although not, of course, in practice — they receive general lip service from most industry players. *Tools of Change* owes much to those practitioners acknowledged in the text, and it is obligatory to single out for special mention the contributions of Bill Ford (over the last ten to fifteen years) in establishing the centrality of industrial democracy, new forms of work organisation and skills development to the successful introduction of technological change.

Mathews, however, has performed a very valuable service by drawing together the debate in this area, placing the issues in their historical and political context in a comprehensive, systematic and highly readable way, complete with case studies and some very useful references. He intends this book as "a handbook or manual...to be of practical assistance" (p.4) in helping workers, their unions and sympathetic managements achieve informed and constructive participation in the introduction of new technologies. In particular, Mathews aims to encourage and empower unions to become protagonists in the process of technological change; unions who fail to take on this role are also failing to meet their responsibilities to their members.

Tools of Change is divided into four parts: an historical and theoretical analysis of the system of mass industrial production ('Fordism); an examination of the 'new tools' of production; a description and analysis of (potential) new production relations; and strategies for workplace democratisation.

The first section serves as a quick introduction to the development of Fordism (Henry not Bill); the challenges to this production system arising from the decline of stable markets for mass-produced goods (attributable to a number of political, cultural and economic factors, including the increased productive capacity of formerly non-industrialised countries); and the variety of responses to these challenges (or 'crises in the system') which have been adopted. The section ends with a few brief examples of 'Post-Fordist' strategies, most of which rely on a skilled, co-operative and committed workforce, and are based on a more flexible use of technology, a much increased emphasis on product quality and a human-centred (as opposed to machine-centred) approach to design and use of manufacturing technologies. Mathews calls for union policies which will favour a post-Fordist strategy of flexible specialisation, to replace the Fordist structures and processes currently existing (p.39), and which will consist of a 'strategic accommodation' of the interests of labour and capital.

In the section 'New productive tools', Mathews provides a useful review of the better known (or more established) computer-based technologies in the manufacturing and service sectors. The potential to use the same basic technology to skill or to deskill an operator, reflecting management philosophies rather than

technical limitations, is expected. Examples are given of the positive results (in terms of increased productivity, quality of end product, greater workforce satisfaction and commitment) of involving workers in designing and developing the systems they will operate. Equally, the negative effects of imposing Fordist design practices are emphasised.

This section also discusses some of the new management techniques which have accompanied workplace technological change,such as just in time, value added management and total quality control. It highlights the potential benefits of these techniques to workers and the almost equal potential for worker exploitation. The message for unions throughout is the need for labour to take an active role both in developing the specifications of workplace technologies (a task in which it must, in turn, involve its members in order to make full use of their experience and expertise) and in negotiating systems of work organisation which ensure benefits for their members equal to those enjoyed by management and which protect, and where possible enhance, the role of the union.

In the third section, Mathews examines the changes in work organisations, skills formation and industrial relations which are necessary if new technologies are to be introduced successfully and if technological change is going to take place in a way which allows equitable distribution of its benefits. He describes the various achievements of 'work humanisation' and employee participation endeavours, but focuses on the central question — where does control over the technology process lie? Many of the early employee participation initiatives were barely disguised paternalism. Changes in work practices to enable more efficient use of new technologies should bring in their train a shift in power from the centralised control of specialist or technical expert to the worker on the shop or factory floor. Some of the implications for traditional forms of work organisation are summarised and the prnciples of post-Fordist work organisations are enumerated.

This section also discusses the more responsible approach to skills formation which must underpin technological change, followed by a detailed chapter on the need for an evolution in industrial relations practice — from confrontation to co-operation. The successful challenges to the concept of 'managerial prerogative' over the past few years and the importance of expanding the perceived legitimate sphere of union influence still further are well covered. The potential to use technological change to achieve goals, such as equal employment opportunity and equal pay, is raised, but perhaps the more fundamental issue of how to remedy the systemic discrimination reflected, for example, by workforce segmentation in the finance sector, is unfortunately not addressed in this context. A post-Fordist industrial relations agenda — ranging from union support for technological change on the basis of job security, full information disclosure and consultation, through support for multi-skilling and group skilling, to enhancement of workers' collective rights — is provided.

The final section consists of two chapters; 'Strategies of transformation' and 'The politics of work'. The former examines in further detail the application of industrial democracy principles in the introduction of technological change, the role of unions, the resources unions will need to participate as equal partners in industrial democracy processes, and the initiatives unions might pursue. The last chapter is slightly disappointing. It provides an all-too-brief discussion on the position of work within the wider social and economic framework, raising issues which are fundamental to understanding the way we currently experience and value work and to considering how this may change in the future, but without

pursuing these to any satisfactory conclusion. For example, the Lucas Aerospace initiative is well known, but is particularly exciting because it was an example of workers developing their own alternatives for change with proposals for products which were both technically innovative and socially responsible. It is not enough to say, "ten years on one would hope that a similar request would be met with a more receptive response' (p.179) because it is very doubtful that this would be the case! As Mathews points out, there should be greater co-operation "between the trade unionists and technical experts if a social perspective is to be imposed on the process of technological change", but a bit more discussion on the means of achieving this would have been very welcome.

In summary, *Tools of Change* is an essential and an inevitably political document. It is about ownership and control of capital; it is about power and the challenge to traditional power holders implicit in the concept of 'power sharing' (however, placatory the language, the challenge is conveyed); it is about individuals having far greater opportunity and responsibility than they have ever had before for self determination within the work context; and, as Mathews makes quite clear, it is ultimately about changes required in national, economic, industrial and education policy to achieve a greater level of democracy.

The only major criticism of this book probably unduly reflects personal concerns. *Tools of Change* addresses matters which have revolutionary implications for work; the activity in which we spend most of our (adult) time and energy and by which we largely define ourselves. But it does this within the framework of existing work systems and structures and the values associated with these. Why should these endure? Surely technology-related developments in the workplace will bring with them a reassessment of attitudes and behaviours? To enter the realms of pure speculation, if standard working hours could be halved by a combination of increased (technology-related) efficiency and job sharing, how would this affect the thesis of this book? How would it alter unions' responsibilities to members? Telecommuting (from home or from neighbourhood centres) is technically already possible, and ISDN and broadband technologies will increase possibilities in this area. Telecommuting could relieve pressures on over-stretched urban infrastructures and reduce the pollution associated with physical commuting. Should future work practices, facilitated by new technologies, be more closely tied to environmental policies? The potential to use information technologies to the detriment of labour is rightly identified, but possible positive uses should also receive attention. Mathew cites and dismisses Jones' conjectures on the evolution of new social and industrial practices related to technological change, but offers no alternatives. The issues raised in 'Strategies of transformation' might well have been expanded upon and have been introduced earlier in the book.

There are also a few omissions which do not detract seriously from *Tools of Change,* but which would have added to the discussion. The use of knowledge-based and expert systems in the work environment challenges preconceptions of how decision making should occur, what constitutes a skill, and what training is necessary to attain expertise in this skill. What are the implications for devolution of responsibility to *human* workers if the machine can be programmed to generate solutions to relatively complex problems?

Similarly, it would have been interesting to see more discussion on the potential to use information and telecommunications technologies to export jobs, either to benefit from skills which are unavailable or under supplied in Australia (thereby reducing the pressures to train our own workers in these skills), or to

exploit cheap labour rates. It might also have been interesting to consider the problems of achieving democratic change in multinational organisations and the necessity of developing international union co-operation in this context and in relation to the points raised above. Certainly, it is time we acknowledged that not only do we operate in a global market, but that we are doing so with an increasingly global workforce.

Whether it is accurate to describe this book as a 'manual' or a 'handbook' is debatable. For this reviewer, at least, a manual is a text one can refer to for practical immediate, 'how to' advice. *Tools of Change* offers a framework within which arguments can be developed, options identified and alternatives proposed, but despite its logical and easy-to-follow structure, it requires dedicated reading and discussion rather than the 'dipping into' that a handbook allows. It is questionable whether already overloaded union officials and managers will have the time to do more than put it on their reading list.

However, *Tools of Change* deserves wide circulation as an important reference. It contains information spanning many disciplines, it draws together a wealth of issues and information, and it is enjoyable to read. it should be required reading in secondary and tertiary courses dealing with the impact of technological change on social, organisational and industrial practice.

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Management Information Systems: Planning, Evolution and Implementation
edited by John S. Chandler and Peter H. Holzer
(Basil Blackwell, Oxford, 1988), pp.viii + 181, cloth $79.00, ISBN 063 116 295 X

This book marks a watershed in the development of management information systems (MIS) and the application of information technology to business strategy. It contains the papers presented at a conference sponsored by the Office of Information Management at the University of Illinois. The object was to illustrate through a diversity of case studies how US corporations are planning their information systems in the face of increasing uncertainty brought about by organisational, competitive and technological change. The book does this very well, commencing with an analysis of the many facets of business strategy of textbook precision and moving through several case studies, each very different from the others, to two academic considerations of MIS, its planning, control and relationship to strategic management.

Dissatisfaction with performance and unease with returns from investment in information systems and technology have featured strongly in a number of surveys in recent times, especially in Britain. In the evolution of MIS, the Data Processing Department assumed a powerful position. Linked to Finance or Acounts, using a technology no one else understood and one which reinforced centralisation in hierarchical organisations, it determined what was produced and how it was presented, even to the point where often only the DP Department could interpret the output. Furthermore, computerisation is a highly formalised process and can lead to the information and the technology and its systems dominating, to the point of exclusion, all the nuances of experience, intuition and all that comes from the informal flows of information. The technology, the nature of competition and what was the make-up of an IT professional have, however, continued in a process of dynamic change.Distributed processing