

# Sociotechnical Interventions and Teams in Australia: 1970s–1990s

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## Abstract

*This paper sets out to highlight some of the major sociotechnical and team interventions in Australia from the seventies through to the nineties. The review notes that teamwork interventions have changed over the last two decades and argues that this may be attributed partly to the popularity and influence of Japanese management approaches during the eighties along with changes to the industrial relations institutions. Team interventions associated with earlier sociotechnical and participant design approaches, undertaken in the seventies, concentrated on changing work and jobs as a way to address quality of work life concerns. In contrast, many Australian organisations which are presently implementing teams are linking them to broader organisational design issues, taking into account product flows, customer and supplier focus, product innovation and support systems. It is noted that later-style team interventions are linked closer to an organisation's strategic goals.*

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## 1. Introduction

'Australia is probably the only Western developed country where the advances made in behavioural science knowledge in the last fifty years had no real impact on managerial theory and practice. This is nowhere more evident than in the confused and muddled thinking that goes on in this country around the issues of productivity' (Dunphy and Ford 1971, 6).

Australian industry was a late adopter of many of the behavioural and social science interventions used in other countries to address organisational problems and modify managerial practices. For most Australian managers practices associated with the Human Relations school were foreign, while the ideas found in sociotechnical thinking relating to team work and worker autonomy were regarded with hostility and treated with suspicion. Many Australian managers in the late sixties and early seventies were working in an industry climate which reinforced authoritarian attitudes and promoted hierarchical distinctions between managers and the managed, the leaders and the led. Yet despite this initial hesitancy of managers to accept and use the social sciences in solving industrial problems, by the early seventies there was an emerging interest on behalf of managers, employees and scholars in pursuing and implementing organisational changes. A groundswell of interest was developing as publications were being produced and more innovative organisations were attempting to implement changes to work systems.

The concepts associated with job redesign, work structuring and team-work were influenced by competing change movements and their associated theories. In Australia, early debates over the appropriate change strategy took place between the American inspired Organisational Development movement and the European influenced Sociotechnical school of thought. The changes made in organisations varied in extent and intent, as much dependent on the role of the change agent as on the movement that they were associated with. Some interventions were aimed solely at management, along the lines of traditional OD interventions (better people equated with better organisations), whilst others, notably sociotechnical and participant design reforms, involved job redesign, job enrichment and the application of team-based work.

In the early seventies in Australia, systematically planned programmes of organisational change were rare and mainly confined to a few organisations, most of which were Australian subsidiaries of large multinational organisations. This paper sets out to highlight some of the major sociotechnical and team interventions in Australia from the seventies through to the

nineties. This cannot hope to be a comprehensive list of all sociotechnical and team interventions in Australia during this time; rather attention is focused on high-profile manufacturing examples. The review notes that teamwork interventions have changed over the last two decades and argues that this may be attributed partly to the popularity and influence of Japanese management approaches during the eighties along with changes to the industrial relations institutions. Team interventions associated with earlier sociotechnical and participant design approaches, undertaken in the seventies, concentrated on changing work and jobs as a way to address Quality of Work Life concerns. In contrast, many Australian organisations which are presently implementing teams are linking them to broader organisational design issues, taking into account product flow, customer and supplier focus, product innovation and support systems. In effect, later team interventions have been more closely aligned with an organisation's strategic goals.

Whilst it is noted that participative design in Australia is one of the landmarks of sociotechnical thinking, this paper also seeks to clarify some confused ideas relating to participant design. Firstly, while participative design had much success in overcoming diffusion problems in the seventies (Emery 1993), evidence indicates that like most team work interventions that took place during this time, teams based on participant design methods lacked robustness. That is, they were generally short-lived experiments. Secondly, this paper cautions against the use of participative design as a label to describe the 'Australian experience' of sociotechnical thinking and subsequent team designs (Eijnatten 1993). It is suggested that reference to national variations simplifies the complexity and variety of types of teams and the intervention strategies used to promote teams in organisations over this period of time. This paper will demonstrate that while participative design was a major force for the introduction of democratic structures and teams in organisations during the seventies, team interventions in the eighties were inspired more by Japanese approaches. More recent approaches have relied on an eclectic mix of team design approaches and practices.

In the first section of the paper, a brief historical account is given of the major sociotechnical and team interventions that have taken place in Australia over the last two decades. It is noted that the trend towards industrial democracy and the democratisation of work stalled during the eighties, as Japanese and Americanised versions of the quality movement became increasingly influential. The next section of the paper explores the present developments, relating them to the most common form of sociotechnical intervention, that of the team-based organisational structure. Current evi-

dence from Australian organisations suggests that great diversity exists in the types of outcomes that are being achieved at the organisational level with respect to teamwork. The paper concludes by making some comparative observations on team strategies over the past two decades.

## 2. The Emergence of Participative Design and Teams in Australia

Australia has a rich history of teamwork, with experiments dating back to the early seventies when organisations such as Alcan, Luv Pet Foods, ICI, Australia Post and Philips Industries used sociotechnical and participative design methods of analysis to introduce semi-autonomous work groups. Few Australian organisations and their managers were familiar with the application of behavioural science and social science research to address industry problems. It was into this void of knowledge and practice that Fred Emery stepped on his arrival back in Australia in 1969.<sup>1</sup> Emery set himself the ambitious task of democratising work in Australia. His first interventions in Australia, at Luv Pet Foods and Shell, involved the use of sociotechnical methods of analysis but the difficulties he encountered using this method led quickly to the formulation of the approach known as *participative design*. Many of the organisations that Fred Emery initially worked with were Australian subsidiaries of larger multinationals and they were familiar with the work that had taken place at the Tavistock Institute. These organisations were concerned with raising employee morale and addressing issues relating to the quality of work life – issues that were perceived by the management of these organisations to be impacting on the productivity and efficiency of their operations. The use of teams on the shop floor appeared to be one possible solution to these problems.

The methods and theories associated with the sociotechnical school of thought were developed in the UK and tested in the Norwegian Industrial Democracy Project. They appeared compatible with these companies' desires to address Quality of Work Life and productivity problems. Sociotechnical system interventions were influenced by the notion that people were not mere appendages to machines but had a worth and dignity of their own. According to sociotechnical theorising, humans are ideal seeking systems. Therefore sociotechnical redesigns were directed at replacing mechanistic and hierarchical systems based on what Emery termed the 'redundancy of parts'. He advocated a more holistic and organic approach to work based on the 'redundancy of functions' (Emery 1974, 51-52). As a result of the application of the second design principle to organisational

settings, silo formations and hierarchical work systems were dismantled, with layers of supervisors and managers being removed, and teams implemented in their place. It was felt that teams would enhance the internal flexibility of organisations by increasing the firms' ability to adapt to changes in their environment.

Fred Emery encountered numerous problems in trying to democratise work in Australian organisations. Firstly, there were not enough experienced researchers to assist Emery with the proliferation of companies that were interested in introducing sociotechnical redesigns. Secondly, the method of analysis and implementation used in sociotechnical approaches was expert-centred and cultivated a dependency on the consultant/research team. This was the opposite to the democratic process that Emery was trying to achieve. It was in response to these problems that participative design emerged as a process to democratise work relations.

In a revision of the work of herself and Fred Emery, Marilyn Emery (1993) identified the invention of participant design as a major conceptual breakthrough in approaches to changing organisations democratically. Participant design emerged in Australia in the early 1970s as a methodological response to the slow diffusion of concepts in Norway and also as a means of making job redesign research more broadly accessible. Participant design is influenced by the basic assumption that the most adequate and effective designs come from those whose jobs are under review (Emery 1993, 14). The most important learning experience to emerge from Norway was the inhibition of diffusion. This led sociotechnical researchers to conclude that the process of diffusion was more effective when the learning comes from an experience that integrates theory and practice (Emery 1993, 111). With these ideas in mind, a format for the participative design workshop was created. The central focus was the heightened importance placed on understanding the design principles before undertaking the process of job redesign.

One of the major reasons for the Emerys abandoning sociotechnical methods of analysis and redesign was that they considered it a 'hangover from an experimental past' (Emery 1993, 147). They describe it as an inefficient and expensive method with a propensity to fail to diffuse effectively because participants were not educated in the fundamental design principles. They argue that STS analysis, as used in Norway, was expert-centred and it was this reliance on outsiders that hindered the self-sustaining learning process. As Marilyn Emery put it:

'The role played by the social scientists in these seminars today is much more congruent with the philosophy and ideals of democracy than was the earlier role. This is brought out most clearly by the ways in which

analysis is handled, the involvement of relevant workers in the process itself and the resource role of the external agent' (Emery, M. 1974, 8).

### **3. The Australian Teamwork Experience in the Seventies**

The Emery's argued that the sociotechnical approach to change was 'clumsy' and that participant design was a more effective way to move an organisation from bureaucracy to democracy. However, sociotechnical and other approaches still remained popular methods of intervention. This review of team strategies in the seventies sets out to show that implementation and design strategies were based on one of three approaches: a sociotechnical approach; an eclectic mix of organisation development strategies; and finally, Emery-inspired participative design. While participative design was widely diffused in Australia, this review demonstrates that many of its team interventions did not have long life spans and were often swamped by the larger organisational systems of which they were part.

One of the earliest sociotechnical interventions undertaken in Australia occurred in a privately owned pet food company—Luv Pet Foods in 1970/71. At this site, the traditional hierarchical way of working was replaced by the introduction of semi-autonomous work groups. This had dramatic effects on labour turnover and resulted in productivity improvements in excess of 20 per cent. The teams were multi-skilled and team members assumed responsibility for their own quality control (Nicklin 1974, 9). The changes, which had been in place for almost two years, were shut down when the plant was bought by an American multinational. Management from the American company insisted that supervisors be reintroduced on the shop floor and that the managerial prerogative be reinstated. Thus ended one of the first sociotechnical redesign experiments conducted in an Australian organisation.

A similar classical sociotechnical redesign was undertaken at ICI Welvic. The Welvic plant at ICI's Deer Park complex in Melbourne had one of the longest running team organisations during the seventies. Teams were running at the Welvic site from 1973 to 1978. The Welvic plant was a greenfield site designed along sociotechnical principles. Work was designed so that there were no supervisors. The supervisors' roles and responsibilities were removed and located with the employees. Operators arranged for their own maintenance work to be done and coordinated their actions directly with staff functions. The shift teams organised their own work schedules and in the early stages, productivity was double to that of similar ICI plants (Andreatta 1974, 13). By 1976, the plant had expanded so that

operators had divided themselves into four teams working a continuous three shift roster. The researchers noted that the team structures were working well. It was on the occasion of a later visit that it was found that changes in management along with changes in technology and organisation had altered the original teaming concept quite significantly. Team members felt that the new changes had significantly reduced their autonomy. It was under these conditions that teaming at Welvic slowly declined (Gibbons and McCarroll 1978, 26).

In contrast to the traditional sociotechnical redesigns, team interventions at Philips Industries in Australia used a mixture of sociotechnical, organisation development and Dutch inspired work-structuring methods. Philips during this time was already busy developing its own variant of sociotechnical systems through its work structuring programmes in Europe.<sup>2</sup> At the two plants in Victoria, the intervention required the use of teams, job rotation, job enrichment, job enlargement, consultation and a reduction in managerial hierarchies. The team work concept was applied with favourable results. Teams were created along product lines usually made up of ten to twelve operators who were working in the early equivalent of cellular manufacturing structures. As Dunphy et al (1976) stated:

‘The reorganisation had, however, changed the work organisation from basically an assembly line operation, with individuals working in isolation to a team activity’ (Dunphy, Andreatta and Timms 1976, 5).

The redesign lasted from 1972-1975 and showed that in the Radio and Telecommunications Division that there had been a 60 per cent increase in efficiency, while in the Consumer Products division, efficiency had increased to 122 per cent. As the authors concluded:

‘The Philips case presented here represents a significant attempt to redesign industrial work organisation in ways appropriate to Australian conditions. The results indicated increased production, efficiency, an improved work environment and increased variety and responsibility for shop floor employees’ (Dunphy, Andreatta and Timms 1976, 11).

Unfortunately, the Philips factories closed because of macro economic factors which made production in Australia unsustainable. These factors included the reduction in tariff barriers and the movement of electronics manufacturing to low wage, low cost Asian countries.

Just as the other team experiments encountered mixed results, so too did those undertaken using participative design methods. In Australia, the Royal Australian Air Force and SAMCOR (South Australian Meat Corporation) were the first organisations to implement teams via the use of participative design. Little evidence exists as to how successful or extensive diffusion

was in these organisations. ICI Botany also experimented with participative design but in contrast to the success encountered at the ICI Welvic plant, the team interventions were far from successful. Attempts to democratise work at ICI Botany were swamped by plant closures and management and union conflict. It would be another fifteen years before ICI Botany would attempt workplace change. It was to become, at this later date, one of the leading examples of participative change in Australia.<sup>3</sup>

Despite the difficulties associated with the ICI Botany experience, the period from 1970 to 1978 saw the rapid diffusion and use of the participative design methods. For instance, between May 1970 and September 1976, the Centre for Continuing Education in Canberra, where Emery was located, held 20 publicly advertised, Development of Human Resource Workshops. Some of the companies that attended these workshops included: ICI, SAMCOR, Shell, Alcan, CSR, Leylands, Alcoa, Control Data and the Government Departments of Overseas Trade, Customs, Social Security, Australian Taxation Office and the State Electricity Commission of Victoria.<sup>4</sup>

Generally, it appears that initial success in pursuing teams was dependent on several factors. Firstly, the enthusiasm of individual managers who promoted and supported teams. When they left, often the experiments lapsed, failing to take hold in the organisations that initially supported them. Secondly, it also appears that team experiments failed where larger corporate-wide strategies failed to support the changes. Finally, changes in the macro economic environment also 'killed off' many of the teamwork experiments.

### *From Bureaucracy to Democracy?*

The participative design approach developed by Emery and others was also used as the basis for Australia's first Governmental Unit responsible for the Quality of Work Life which was established in South Australia in 1974. This Unit was intended to encourage the spread and diffusion of the democratisation of work at both a theoretical and practical level. But the success of the Unit was short lived, and with it the application and development of the Emery participative design approach to work democratisation. The union movement held for the most part an alternative view of industrial democracy, based on works councils, and sought to muzzle the Unit's influence. Critics from the union movement argued that the Emery participative design approach would result in small groups of workers negotiating individual pay increases in return for output. Central to their opposition to participative design was the belief that it would result in the establishment of rival 'democratic structures to unions and as a result would



reduce the collective strength of the workers and diminish the influence of the unions' (Robson 1978, 27).

Similarly, others who were involved in the Industrial Democracy Unit in South Australia, argued that the Emery line was utopian and that the report which led to the establishment of the Unit for Quality of Work Life had '...no basis of fact, ignoring all evidence to the contrary' (Anderson 1976, 161). Nonetheless, by early 1974, the Unit had become involved in worker participation activities in up to thirty different organisations. This sudden onslaught of activity worried the unions who lobbied successfully for the curtailment of the Unit's activities and its change in direction from the Emery inspired participant design approach to structural changes based on the idea of 'works councils'.<sup>5</sup> As Anderson notes:

'The technique of the participative design workshop has been used in a variety of situations with some success. However, my experience with the workshops conducted in Adelaide leads me to the conclusion that they had shortcomings. Primarily they do not adequately come to grips with the aspects of the job that exist outside of psychological criteria. Wages and conditions, technology and job demarcations, to name only a few, obviously have an important bearing on the job and satisfaction that can be derived from it. In the Australian context, demarcation virtually determines the extent to which jobs can be redesigned. Equally, the need to fully utilise capital equipment will be a prime factor in the freedom allowed within a manufacturing process' (Anderson 1976, 165).

Anderson concluded that:

'Because theoretical solutions might be devised, participants often left with a too simple view of how these problems might be overcome... The workshops tended to present an unreal view of the nature of the problems and the strength of the opposition and the participants were usually overwhelmed when they returned to the reality of their factories and offices' ... 'But more importantly, the Unit came in for criticism because the workshops tended to leave it with the reputation that it was merely revamping old techniques with glossier wrappings' (Anderson 1976, 165-166).

These criticisms of the Unit for Quality of Work Life had their effect and subsequent lobbying by the unions saw the Unit's agenda change from work democratisation (and team work) to the formation of works councils as the expression of employee participation.

### *In Defence of Participant Design*

Crombie (1978), in a little-cited monograph, made a spirited defence of participant design methods and the use of teams as an alternative to bureaucratic work structures. He argued that the Centre for Continuing Education had given itself the prime purpose of improving the quality of working life throughout society through the democratisation of work. As he states:

‘From the Centre for Continuing Education’s abiding commitment to have the introduction of self managing groups, some commentators have inferred elements of dogmatism in the Centre’s conduct of participative design workshops. It has been argued that participative job redesign has been presented as a closed system, in which the actual possibilities for members to produce their own designs is illusionary, because the end result has to be a self managing group... Part of the response to such criticism must be that we do in fact hold the belief that self-managing work groups represent the best known alternative to conventional bureaucratic designs... Also, there is inevitably a great amount of design freedom in any shift away from a bureaucratic structure to a self managing group. There is usually some degree of openness even with respect to such basic matters such as the group boundaries and definition of the group tasks, as well as secondary matters as task allocation, selection of leadership etc...’

As Crombie states, one of the most important points to have emerged from the work of the Centre for Continuing Education’s work on participative design:

‘...has been towards the demystification of the democratisation process, putting the theory into the vernacular and putting control of the process into the hands of those who have to live with its consequences’ (Crombie 1978: 5).

From this review of teaming and sociotechnical principles in the seventies, it appears that while the Emery’s set out to ‘solve’ the diffusion problem, the results were often quite disappointing and frustrating. The criticisms levelled at participative design relating to job demarcations and technology often also affected the success of other team intervention strategies. In few, if any, of these organisations were the concepts of participative design and sociotechnical systems robust enough to continue for periods greater than two to three years before they decayed, disappeared or were eliminated by the decisions of senior executives or union resistance. Finally, the results suggest that the broader systems of industrial relations

and management philosophy did not adequately support or indeed actively frustrated these interventions.

### *A Complex Picture of Team Approaches*

The adoption of teams through sociotechnical and participant design interventions is a complex tapestry of great variation. Initial attempts to introduce teamwork, conducted along classical sociotechnical lines and/or pragmatic organisation development interventions, were often expert-centred and tended to be conducted in pilot sites. These interventions were fragile, and were swamped within months or years by dominant organisational cultures which were static and hierarchical in nature. Similarly, the rapid diffusion and popularity of participant design from the early to late seventies, while providing a democratic alternative for the introduction of the democratisation of work, still suffered many of the same handicaps of the expert-led approach. Changes to team-based work were insufficiently robust and where changes did result in productivity improvements, it was not long before these innovations gave way to more traditional work systems compatible with the dominant management mindsets. As Hollis Peter asked and answered:

‘Why then has it (teams, job redesign) not swept throughout industry, here or abroad? There are many reasons. Barriers to successful job redesign applications are often found in the organisational climate; managerial or union attitudes, practices and philosophy; the organisation structure or its technology. Lack of professional guidance may also add to the risk of bridging the gap between theory and practice’ (Peter 1976, 5).

Missing from this list is the lack of institutional support, given to early change programmes, through the system of industrial relations. Most early change programmes characterised by team interventions did not attempt to change industrial relations practices. Team interventions instead concentrated on workforce issues with little attention being paid to broader issues of organisational design and the systems which needed to be put in place to support team production. It is not until teamwork moves beyond the work group level and industrial relations reforms enable broader changes to be made within a cooperative framework that meaningful, long term teamwork initiatives could take place in Australian organisations. The adoption of team-based reforms in Australia thus followed various models that were modified in complex ways by the country’s institutional settings and management traditions.

## **4. The Eighties and the Rise of Japanese Management Methods**

During the late seventies and early eighties, many teamwork initiatives, along with other workplace reforms, were either abandoned or scaled down dramatically in the face of worsening economic conditions. The decline in Australia's economic performance was a critical factor that assisted the shift in focus in teams away from Quality of Work Life initiatives to that of efficiency and productivity. It was during this time that sociotechnical and participant design initiatives lost their momentum. Teamwork interventions fell out of favour within manufacturing industries. But for many Australian manufacturers, a new trend emerged. This was the movement and drive towards quality circles and techniques of management associated with Japanese inspired practices of Just In Time; Value Added Management and Total Quality Management (TQM). These practices, along with quality circles and employee involvement schemes, differed quite significantly from the sociotechnical and participant design team based approaches experimented with earlier.

Quality circles were popular with management because they were based on voluntary team meetings to discuss quality problems relating to either product or process improvements. These team meetings were normally led by a supervisor or engineering expert and were conducted within set time limits. The members of the circles were taught very basic statistical techniques and methods for problem solving. As Cole (1989) states:

'The circles concentrate on solving job related quality problems... The circle solutions are presented to management for action, with the circle members having no authority to implement the solutions on their own' (Cole 1989, 19).

In contrast, semi-autonomous work groups rely on workers making decisions with regard to such matters as work allocation, planning, production, quality, maintenance and budgeting. In some cases these decisions are negotiated with management. These employees work together in production teams, as opposed to coming together from different units for weekly meetings to discuss particular quality issues. The implementation of team production has significant impacts on organisations. For a start, teamwork often results in the delegation of authority away from management to employees, creating a degree of power and information sharing. Many managers and supervisors felt threatened by these moves and opted to pursue 'voluntary' quality teams instead.

### *Quality Circles and TQM in Practice*

The trend towards the adoption and use of quality-inspired teams continued through much of the eighties in the manufacturing sector. While successes were achieved in many organisations, evidence from several case examples suggests that quality circle inspired approaches also encountered many difficulties. Firstly, many of the manufacturing firms that introduced quality circles found that the approach initially was very successful at raising 'problems' and arriving at 'solutions'. However this very success created problems for the engineering and maintenance staff who had to make the required changes to eliminate the technical problems. These maintenance groups often found themselves swamped with problems and found it difficult to muster resources to address them. Secondly, the introduction of quality circles required that time be found for employees to participate in these circles and that training in basic statistical or problem solving methods be undertaken by those employees in the circles. This resulted in increased costs associated with training and time spent away from production. Finally, many of the quality circles and employee involvement programmes lost momentum as the enthusiasm of shop floor employees waned and suggestions were not translated into tangible outcomes. While many managers and consultants talked of quality circles and employee involvement groups as being empowering, the reality was that most of the decision making responsibilities did not belong to the groups. It was in this climate that many of these quality circle programmes either collapsed or were seen by employees as management fads.

Companies such as Bendix Mintex, CIG Gas Cylinders and Ford all experimented with quality control programmes during the eighties. At the centre of these programmes was the voluntary formation of quality circle teams to identify problems and help find solutions. Bendix Mintex management aimed to improve the company's competitive position through the application of continuous improvement. In 1987 over 140 staff had been introduced to the concepts of TQC and been through training sessions. During this time, the first TQC teams were established in specific areas in the plant. These teams were cross functional and consisted of representatives from management, engineering services and the shopfloor. In 1988 management appointed a TQC development officer and the number of teams proliferated. By late 1989 the number of teams peaked at 40. There were many significant process improvement programmes introduced and quality problems rectified. However TQC activity declined dramatically during 1990 as team numbers were scaled down to 17. A month later the TQC awareness workshops were halted altogether. Enthusiasm had waned as teams struggled to marshal the technical resources to solve the problems

they identified. While it was recognised by management that a number of the teams had made considerable progress, the quality teams generally experienced an inability to accomplish results (Mathews, Griffiths and Watson 1993, 8-11).<sup>6</sup>

CIG Gas Cylinders also pursued a TQC programme during the mid eighties based on shop floor participation. The programme had some success but it was seen to be limited in its appeal and approach. While it focussed company attention on the importance of quality, the quality circle approach failed to integrate with other company practices (Mathews and Griffiths 1993, 8). A more successful application of quality teams can be found in Ford's Employee Involvement programmes which were voluntary and started in the early eighties. In these teams employees were encouraged to participate in problem solving activities. By the end of 1988 there was a total of 310 Employee Involvement (EI) groups in Ford covering more than 28 per cent of the workforce or 3,500 workforce members (Mathews 1991, 10). By the end of the eighties these EI groups were being scaled down as the Ford Q1 programme was being introduced. The new Q1 programme signified a shift at Ford from employee participation to a more direct concern with quality and productivity improvement (Mathews 1991, 12).

These cases point to a rather more complex picture of team approaches in Australia. While Ford had experienced much success with its EI and Q1 programmes, other manufacturing companies had not encountered similar rewards. But the application of quality circles and other Japanese inspired change initiatives left behind a residue which was to transform many organisations' approaches to manufacturing. These took the form of concerns about product quality and customer focus along with production flows and relations with suppliers. By the late eighties and early nineties support for teaming based solely on quality circles was also waning.<sup>7</sup> Many of the leading manufacturing firms felt that they needed to move beyond addressing quality alone in order to improve performance. These organisations also set about shifting the climate of industrial relations from one of conflict to cooperation. It was recognised by many of these organisations that survival and future competitiveness required not only changes to the functional and hierarchical work structures, but also depended on fostering partnerships with employees and unions in an effort to introduce these changes. Therefore, by the end of the eighties several organisations were willing to make comprehensive changes to their organisational designs and were using the evolving decentralised system of industrial relations to facilitate this movement.

## **5. The Nineties: The Reemergence of Teams**

While the eighties were dominated by the introduction of quality based off-line teams, in contrast, the nineties has seen the reemergence of on-line production teams in a few leading organisations. Despite the sudden plethora of workplace change initiatives, organisations introducing teams are still in a minority. The teaming strategies being employed differ in complexity and outcomes, with some organisations introducing teams along traditional sociotechnical redesigns, while others have used a more eclectic mix of practices. For some of these organisations, the new wave of reforms has seen a mixing of sociotechnical approaches with those of Japanese-inspired management practices.

In Australia, the recent drive for the adoption of teamwork structures has been assisted by the deregulation of the Australian economy and the reduction in tariff barriers, along with the impact of new technologies which have exposed many firms to increased competitive pressures. In response to these pressures many manufacturing organisations have sought to gain competitive advantages by reorganising their production systems, flattening management levels and breaking down barriers between functional silos. As this has occurred, there has been a tendency for some organisations to devolve authority down the line and use production teams to increase the internal adaptability of the organisation. This has meant that teams are not only taking on duties associated with lower levels of management but are also being used to integrate support departments into the production process (Bryant, Farhy and Griffiths 1994, 2).

Recent studies undertaken by Mathews (1994) in Australia, and Appelbaum and Batt (1994) in the United States, suggest firstly, that there is no longer a 'one best way' to achieving performance results and secondly, that high performance organisations using team based structures still constitute a minority of firms. Appelbaum and Batt (1994) have identified a difference between high performance organisations which are following production systems characterised by either Lean Production or Team Production. Mathews (1994) refers to these as Lean Production Systems and Sociotechnical Production Systems respectively. While both production system interventions can result in dramatic improvements in performance outcomes for the organisations which adopt them, the two approaches have differing outcomes for employees.

These authors argue that their research looking at high performance organisations in the United States and Australia shows that team based or sociotechnical production systems provide greater scope for employee involvement and participation characterised by a redistribution of authority and power in the workplace. In contrast, the lean production model allows

for less discretion and their quality teams are reliant on key members of the workforce who are trained to participate in problem solving activities (Appelbaum and Batt 1994, 127). Not all employees get to participate in these quality improvement teams. The results from the case study evidence presented in both studies demonstrates that firms pursuing team-based production strategies require high trust environments and cooperative industrial relations practices. This allows these firms to make long term investments in productive capital and associated work organisation practices and thus sets in motion a process of value creation and resource utilisation which can be translated into sustained competitive advantage (Lazonick 1990, 308).

### *Differences in Team Structures: Recent Evidence from Australian Case Studies*

In Australia, significant differences have emerged not only in the types of team strategies adopted but also in the methods used to design them. In many Australian examples of high-performance organisations, team interventions have resulted in significant changes not only to shop floor jobs but also to broader organisational structures and practices. This section will explore these differences in further detail. Recent case study evidence suggests that team strategies appear to fall into three categories. The first category is quality inspired teams, often found in lean production environments associated with the electronics and automotive industries. The second is production teams which are self managed. The third category consists of supervisor-led teams. Several of these team based organisational structures were achieved by using methods of change based on sociotechnical approaches (CIG Gas Cylinders; Bendix Mintex; ICI Botany) while others such as those found at Kelloggs, BTR and Ford Plastics relied on a more eclectic approach to team based work.

Whilst participant design is still used as a change method, it is not clear how extensive its diffusion currently is or how successful or robust the latter day team formations based on this method have been. What is emerging though, is that in some of these organisations the movement to team-based structures is having a wider impact on the organisation than earlier team based interventions did. For instance, at Bendix Mintex the movement to team structures resulted in the transformation of production from functionally based production areas to cellular manufacturing. The manufacturing cell consists of a small team of operators working a group of machines and producing a well-defined set of products or components. The teams are responsible for planning their operations whilst ensuring the quality of their



output. Flow production through the cell has made it ideal for JIT manufacturing and quick response to customers' orders. The installation of cellular teams has also had a significant impact on the traditional functional roles of maintenance and corresponding support systems of accounting, logistics and a redefinition of managerial roles and responsibilities (Mathews, Griffiths and Watson 1993). Similar developments have also occurred at ICI Botany in the Steam and Power plant, and at CIG Gas Cylinders (Mealor (1992); Mathews and Griffiths (1993)). In both these organisations, the introduction of teamwork has been accompanied by changes to industrial relations practices and changes to the broader organisational support systems. In these organisations, the adoption of team work has been based on self managed teams. Teams assume responsibility for their own quality, production, selection and maintenance and negotiate their boundaries of control and areas of responsibility with management.

However, not all organisations that have introduced teams have designed them to have high levels of responsibility and autonomy. At Kelloggs and BTR Engineering the teaming strategy is based on the use of supervisor-led teams. In these teams the planning and coordination of activities continues to be done largely by the team leader in consultation with the team. While some decisions may be delegated, the overwhelming responsibility for decisions remains largely centralised in the role of the team leader (Bryant, Farhy and Griffiths 1994, xv).

'Overall, therefore, this model of team self-management seems to emphasise empowering the team leader and modifying a traditional authoritarian or directive style towards a more consultative style so that team members are more involved in decision making. However, the traditional attitudes and behaviours of experienced supervisors may limit the degree of involvement of team members' (Bryant, Farhy and Griffiths 1994, 43).

Therefore autonomy, as defined by a team's external boundaries and internal responsibilities, will be a moving measure dependent as much on management's willingness to let go of traditional areas of responsibility as on a team's ability to take control of these functions. Some organisations pursuing the supervisor-led strategy have indicated that they regard it as a transitional strategy which allows the team to develop its skills and competencies. Merrilyn Emery (1993) has labelled this the concept of TLC – Trainer, Leader, Coach. She is critical of this approach, arguing that it has two major deficiencies. Firstly, the roles of trainers, leaders and coaches are very different and to place all these roles in the one person amounts to confusion over what role the person actually plays. Secondly, the introduction of this concept into teams creates a crisis of responsibility, where teams

will be unwilling to take on more responsibility if they have team leaders (Emery 1993, 149-150). In Australia at least, the jury still appears to be out as to whether this strategy is effective. It appears that it is a popular approach used by those organisations which do not wish to delegate significant supervisory responsibilities to their employees.

This review of team work in the nineties has shown that, although team based production has become an increasingly popular form of organisational intervention, the team strategies being pursued result in very different outcomes for employees. Those organisations that are pursuing quality teams delegate very little responsibility and autonomy to employees in contrast to those organisations introducing production teams. This review has also suggested that there are significant differences even in the use of production teams. Self-managing teams are characterised by the delegation of increased tasks and responsibilities to all team members, while supervisor led teams have more control and responsibility vested in the team leader role.

Teams have also been implemented using a variety of approaches. While we do not have enough information on the diffusion and use of participative design approaches in the nineties, other approaches, particularly based on an eclectic mixture of sociotechnical and Japanese management methods, when coupled with cooperative industrial relations practices, have resulted in successful team strategies. In these organisations, teamwork has had a significant impact not only on the way that work is done but also on the functional and managerial roles that support effective work practices. Therefore for some organisations, such as Bendix Mintex, CIG Gas Cylinders and ICI Botany, the adoption of team based work has had wider impact on the overall organisational design.

## **Conclusion**

This paper has covered three decades of teamwork in Australian manufacturing organisations, paying particular attention to those firms which employed sociotechnical and participative design methods of implementation. The resulting picture is one of complexity. The team interventions in the seventies were characterised by participative design, sociotechnical and organisation development approaches. Each approach met with mixed success. These early team interventions focused exclusively on shop floor job redesign, often with little thought given to the structures needed to support them. Team interventions in the eighties were mostly inspired not by sociotechnical approaches but by the popularity of Japanese management

methods. Once again, many of these innovations utilising quality teams resulted in failure. But a residue of useful practices were left behind, particularly in areas such as relations with suppliers and customers, flow of products and the quality of products and processes. Team interventions in the nineties have resulted in a diverse range of outcomes. In some organisations, these changes have relied on an eclectic mix of practices ranging from sociotechnical to Japanese inspired management methods. In high performance organisations, the use of teams has had a wider impact on organisational design than that of earlier interventions. Finally, the types of teams used resulted in a range of different outcomes for employees.

Case studies of team interventions introduced in the nineties conducted by Mathews and myself demonstrate that industrial relations can make or break programmes of organisational change. These case studies reveal that cooperative approaches to industrial relations can be used to facilitate the process of organisational renewal. This is achieved by providing a negotiated and agreed framework within which the details of work organisation, skill formation and technology can be discussed and changed. Firms adopting self-managed teams in Australia have gone furthest down this path of award negotiation. The approach of ensuring that appropriate changes are made in the overall design of the organisation, to support teamwork, represents a more robust approach that is likely to see teams persist and diffuse more widely than in the past.

## Notes

1. It is interesting to note that two other influential change agents/ academics also arrived in Australia at the same time. They were Hollis Peter and Dexter Dunphy. They were influenced by and familiar with the ideas associated with the American organisation development movement. Together these two academics, along with Fred Emery, formed the basis of Australia's emerging organisational change movement.
2. For a summary of the Philips experiments see: Philips (1969) *Work-structuring: A Summary of Experiments at Philips 1963 to 1968*, Publication of the Personnel and Industrial Relations Division and the Technical Efficiency and Organisation Department, Eindhoven; and Committee on Participation (1974) *Participation: Various Ways of Involving People in their Work and Work Organisation*, Personnel and Industrial Relations, Eindhoven.
3. For more information on ICI Botany and its more recent change attempts see Mealor, T. (1992) *ICI Australia: The Botany Experience*, UNSW Studies in Organisational Analysis and Innovation, Industrial Relations Research Centre, UNSW.
4. These workshops were attended by 136 individuals from 72 organisations. After this early period 1970 to 1976, a change in format saw the next 15 workshops attended by 341 participants representing 50 organisations (Crombie 1978: 35).

5. To date an examination of the South Australia Industrial Democracy Unit has not demonstrated that the structural changes associated with works councils were any more successful than the early Emery inspired reforms. Emery, in personal correspondence, pointed out that democratisation of work differed significantly to industrial democracy as later practised in South Australia and had different outcomes for those undertaking work.
6. By the time of the project's completion, over 10,000 hours in staff training had been conducted and over 500 people exposed to some form of TQC awareness (Mathews, Griffiths and Watson 1993: 11).
7. While I am not aware of any surveys in Australia which have looked at the success or failure rate of TQC/ TQM initiatives, other data from the United States by Schafter and Thomson (1992, 81) reports that up to 63 per cent of companies involved in total quality programmes had failed to improve defects by even as much as 10 per cent.

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