CHANGE PROCESSES AND TEAM IMPLEMENTATION: STRATEGIC AND OPERATIONAL ISSUES

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Thesis submitted to the Institute of Work Psychology, University of Sheffield for the Degree of Doctor of Philosophy

May 2001

SUMMARY

This is a study of the organisational change to self-managed team working in UK-based manufacturing organisations. There are few models to guide research into the organisational change to team working and this study focuses on the under-researched area of the implementation process. Descriptions of team development models imply a smooth, linear change process. Yet this strategic change involves major restructuring at an operational level and in reality is a complex and political transition process that unfolds in unpredictable directions. This research proposes a processual framework to explore team development and to increase understanding of the ways in which this transition is shaped at critical junctures.

This research was based on case study data collected over periods of up to five years in four brownfield, manufacturing organisations. This data provided detailed illustrations of the major challenges facing organisations in the transition to self-management. Specifically, the research findings indicated that the change to self-managed team working was an unfolding, non-linear process and that its success was shaped not only by the congruence between team design and production setting, but also by the congruence between new work structures and supporting organisational arrangements. Senior management commitment was pivotal to the success of the change process, as were clear definitions of operational roles and required actions and behaviours. Finally, the research indicated the importance of key players adopting appropriate change-driver roles and of paying attention to political tensions and perceived threats associated with changes to traditional role demarcations.

This research increases understanding of the implementation and development of self-managed work teams at an operational level and the results may be of considerable practical use for organisations in determining their strategies for organisational change and development.

ACKNOWLEDGEMENTS

This thesis is the result of the many debts I owe to others. I am particularly grateful to my supervisor, Professor Paul Jackson, for his constant and invaluable guidance, patience and enthusiasm. He encouraged my acquisition of academic skills, was always accessible and unselfishly shared with me his extensive knowledge and experience.

I am indebted to all the participants in this research who gave their time and energy to involve me in their organisations and enabled me to observe the change process to team working and chart its progress through many time-consuming interviews. Without their co-operation, this thesis would not have been completed.

My friends and colleagues at the University of Buckingham have been a source of constant support and encouragement, not least because the University provided the funding for this research and gave me the time to develop sound working relationships with the organisations. In particular, I am grateful to Dr. James Rafferty for being a great mentor and friend and for providing me with support and inspiration throughout this research.

My thanks must also go to Linda Milner for her patient assistance with the final presentation of this thesis.

Last, but by no means least, I would like to thank my family for their moral and practical support. Chris, Hannah and my parents have been a constant source of encouragement and I am extremely grateful for their unwavering support. Their help has always been provided without complaint or hesitation.

This thesis is dedicated to my daughter Hannah.

PUBLICATION ARISING

Rafferty, J. and Tapsell, J. (2001). Self-managed work teams and manufacturing strategies: Cultural influences in the search for team effectiveness and competitive advantage, Human Factors and Ergonomics in Manufacturing, Vol. 11 (1) 19-34.

CONFERENCE PRESENTATION

Tapsell, J. Self-managed work teams and manufacturing strategies: Cultural influences in the search for team effectiveness and competitive advantage. International Work Psychology Conference, University of Sheffield, July, 1998.

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CHAPTER ONE

Team-Working: Background Factors and Contemporary Issues

"The road to success is always under construction."

(Jim Miller, economist and politician, cited in Williams, 1998)

1.1 Introduction

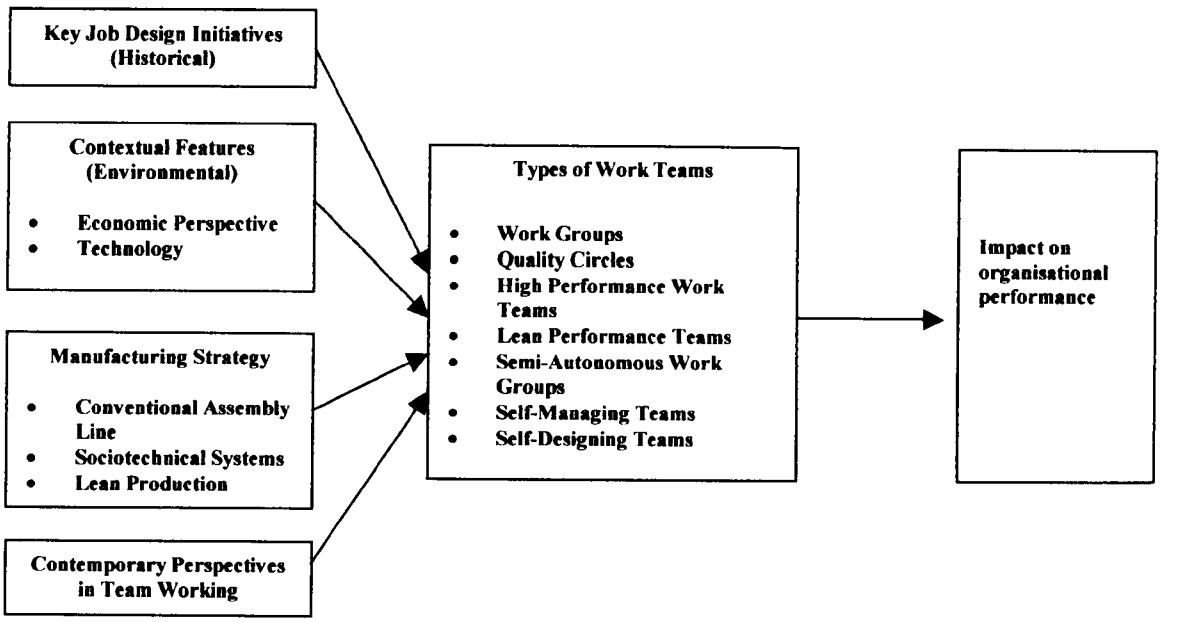
The focus of this research is the implementation and development of self-managing teams in brownfield manufacturing settings with particular emphasis on the process of the organisational change to team working. At a broad level, researchers (e.g. Parker and Jackson, 1994) have noted that there seems to be a general lack of research attention given to forms of high-involvement management in brownfield sites. This research has been designed as a detailed and practical investigation of the transition to team working in four organisations with a view to increasing our understanding of some of the key issues in this context.

To provide a firm foundation for this applied research and to identify some of the key research and methodological issues, this chapter addresses some of the theoretical and conceptual ideas underpinning the implementation and development of teams in UK-based manufacturing settings. In most organisations, there does not appear to be one single factor driving the interest in team working in manufacturing industries. Rather, most organisations seem to be developing team working for a number of reasons.

As well as the focus on why organisations are developing and implementing team-working in the current climate and the factors driving this change, this chapter also considers how widely team working is employed in organisations and the benefits and problems attributed to this work design. The link between team working and performance is also considered, and reference made to theoretical inputs in this area.

In an effort to provide a structure to the wealth of information available on the background and key contemporary issues in team working, the contents of this chapter will be organised around the following framework.

Figure 1.1 Background factors and contemporary issues in the development of team working initiatives



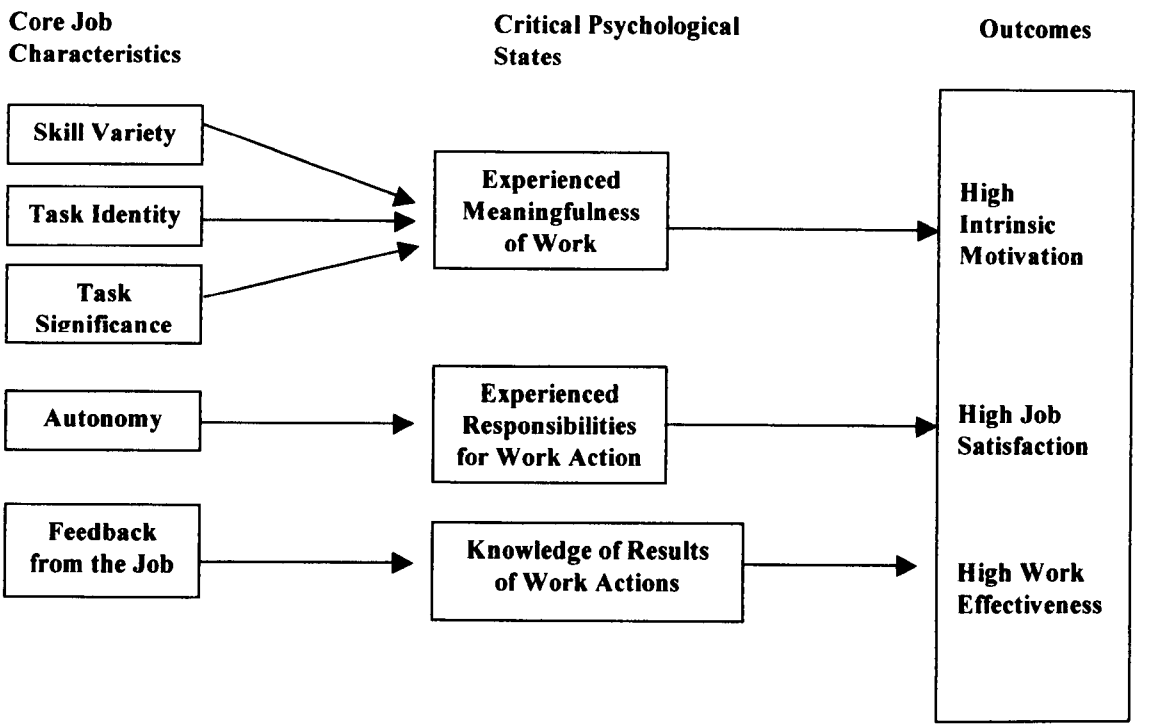
1.2 Job Design Initiatives (Historical)

1.2.1 Job Characteristics Model

In the past thirty years there has been a substantial increase in interest in the area of job design. Work in the late 1960s and early 1970s (e.g. Hackman and Lawler, 1971) influenced the development of a conceptual framework proposed by Hackman and Oldham (1980) which has served as the impetus for much of this research.

Essentially, their Job Characteristics Model argues that enriched or complex jobs are associated with increased job satisfaction, motivation and work performance. More specifically, they proposed that five core job characteristics (i.e. skill variety, task identity, task significance, autonomy and feedback from job) influence three critical psychological states (i.e. experienced meaningfulness of the work, experienced responsibility for outcomes of the work and knowledge of the actual results of the work activities). In turn, these affect work outcomes (i.e. internal work motivation, growth satisfaction, overall job satisfaction, work effectiveness and absenteeism). Additionally, they proposed three factors (i.e. knowledge and skill growth, need strength and context satisfaction) as moderators of both the job characteristics-critical psychological states relationship and the critical psychological states-work outcomes relationship. This model is shown below in Figure 1.2.

Figure 1.2 Hackman and Oldham's (1976) Job Characteristics Model



This model has been discussed widely in the literature and there have been both criticisms (e.g. Roberts and Glick, 1981) and also support for the model. For example, Fried and Ferris (1987) carried out a meta-analysis of 76 studies in this area and concluded that there is a meaningful and consistent relationship between job characteristics and both psychological and behavioural outcomes. Their study also implied that different organisational goals could be operationalised through the development of specific task dimensions.

In order to improve work performance the organisation might choose to allocate resources for the development of task identity and job feedback. Absenteeism may be reduced through the development of skill variety, autonomy and job feedback. Attitudinal or psychological outcomes could be improved by focusing primarily on skill variety, task significance, autonomy and job feedback. Furthermore, because job feedback is associated with all of the psychological and behavioural measures investigated, the development of this task dimension potentially could benefit the organisation more than the development of any one of the remaining task dimensions.

Fried and Ferris' (1987) findings also indicated that organisational decisions to enrich jobs should be contingent upon whether contextual factors, such as the reward system or

management policy, support such an intervention. Internal contextual factors such as these will be considered in the next chapter.

Hackman (1977) suggests several specific strategies for increasing the levels of the five core dimensions: combining tasks, forming natural work units, establishing client relationships, vertical loading, and opening feedback channels. Vertical loading is one of the implementing concepts that typically plays a critical role in any job redesign project and is of particular interest in the context of the development of team working. The essence of vertical loading is to increase the potential for employee self-regulation. For example, Hackman (1977) considers that vertical loading involves giving employees, as part of their jobs, responsibilities which formerly belonged to managers. Several specific procedures are typically used with a vertical loading strategy including: deciding on work methods, freedom in time management, training less experienced workers, assignment of work priorities, handling crises, and material scheduling.

Although the original ideas behind the Job Characteristics Model were very much focused on the job at the individual level, there are clear parallels in group working and implications for the development of teams. For example, Cutcher-Gershenfeld et al (1994) comment that sociotechnical systems interventions have tended to emphasise one primary social system that centres on autonomous work teams as the primary vehicle to address what are assumed to be core needs for influence and autonomy. Indeed, the five core factors of the Job Characteristics Model have resurfaced, albeit in the group context, as team working has gained momentum in the UK in response to the economic and technological changes of the 1990s.

1.3 Contextual Features of Team-Working (Environmental)

1.3.1 The Economic Perspective

The recent resurgence of interest in job design initiatives may in part be related to changes in the world economic climate and the focus on competitive advantage. In the past, increasing competitiveness in industrial capitalism meant driving down the cost of production by increasing volume and velocity of production for a standardised product and a given market. The organisation of this production manifested itself in the principles of Taylorism. In recent decades, industrial competitors have sought advantage through leadership in product differentiation and market segmentation. This evolution from standardisation to what is

known as the new competition (Best, 1990) represents a strategic change in both the process and organisation of industrial capitalism. In the latter case, emphasis is less on absolute advantage of minimum costs and more on relative advantage of the right product for the right market.

At a theoretical level, the organisational paradigm of the new competition replaced first, profit maximisation with the pursuit of competitive advantage as a motivating force to explain enterprise and organisational behaviour, second, competition as an equilibrium resting point with competition as a historical process and, third, firms that compete with unidentified rivals over prices of a standardised product to those firms that compete against strategically reflexive rivals that are also capable of developing a range of non-price competitive strategies.

Whereas in the economic textbook world firms are basically passive to an external market, actions of firms in the new competition affect the notions of competitors and thereby shape the environment and the constitution of the market itself (Piore and Sabel, 1984). Because of this dynamic interaction between an enterprise's action and other enterprises in the sector, an organisation's structure and the processes which inform it are never final. Instead, firms must adapt and re-adapt organisational processes to an evolving and shapeable environment.

1.3.2 Technology

Increasingly, manufacturing companies are introducing organisation-wide changes in order to compete in terms of cost, quality, responsiveness to customers and lead-time (e.g. Lawler, 1992). The focus has been on both the introduction of new programmable technology (e.g. Advanced Manufacturing Technology) to manufacture customised products at close to mass production cost and the introduction of new production practices, such as just-in-time and total quality management, associated with the visibly-successful Japanese companies (Dean and Snell, 1991). These practices allow more flexible production. They also promote and require changes in shop-floor work organisation and it is argued that this new manufacturing environment requires high-performing shop-floor employees (e.g. Buchanan and McCalman, 1989).

Indeed, it is increasingly being recognised that the competitiveness of manufacturing organisations can be enhanced by, and is perhaps dependent on, a higher level of human

performance (Wall et al., 1990). As such, it makes sense to arrange production on a team work basis. Individual problems become group problems since each operation is interdependent, and a high degree of worker flexibility is essential to function effectively (Lawler, 1992). In this new manufacturing environment, complex problems occur and the need for a co-ordinated effort means a more skilled and integrated workforce is required. Essentially, operators need to do more than the standard job whilst relying less on direction from supervisors. Narrowly defined jobs based on Tayloristic principles are inappropriate in such an environment; there is a need for more complex jobs with greater autonomy which enable employees to cope directly with the increased information processing demands and variability that integrated manufacturing entails (Lawler, 1992).

The emphasis is on a culture based on commitment or high-involvement in which employees are encouraged to work in a more self-managed way. The key to the success of initiatives, such as advanced manufacturing technology, just-in-time and total quality management, is likely to lie in an organisation's orientation to its human resources. According to Lawler (1992), shortcomings do not lie with the technology itself but with the choices made about the associated work organisation.

These changes in the economic, market and technological conditions have led to a resurgence of interest in team working. The popularity of work teams stems from the idea that by identifying and solving work-related problems teams can contribute to improved performance. Indeed, in recent years, more companies have been moving from individuals to teams as the organisational units accountable for performance (see figures later in the chapter). The traditional approaches of work specialisation and centralised decision-making have resulted in unskilled, repetitive work with low employee involvement and little job satisfaction and have been considered to be counter-productive in the current industrial environment. Research (e.g. Buchanan, 1994) indicates that the traditional approach has not only led to problems of high absenteeism and turnover, but also to lack of flexibility in people and machine utilisation, poor quality, high work in progress and low productivity.

The switch in emphasis to work teams reflects a change in operating philosophy with flatter organisational structures, a multi-skilled workforce and increased responsibility at shop-floor level (Grey and Corlett, 1989). Words like "self-management" and employee "empowerment" are key, reflecting the shift in emphasis from a focus on management

control of employees to a decentralisation of power and the provision of opportunity for workers at all levels to exercise increasing influence over their work environment.

In attempting to use their human resources more fully, many organisations have moved beyond the mentality that managers make decisions and employees simply do what they are told. The ideas behind team working and self-management imply an increasing reliance on workers' creative, intellectual and interpersonal skills and capabilities, not just their physical labour (Grey and Corlett, 1989).

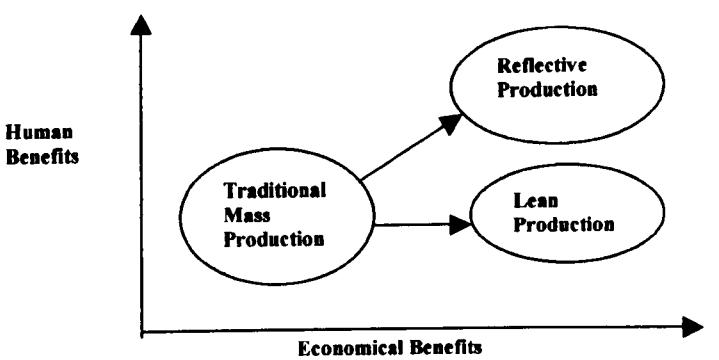
These contextual variables are key to an understanding of the current focus on team working settings. Another factor important to this understanding is the manufacturing strategy, and this is a key determinant of the nature of the team design and team development.

1.4 Work Teams and Manufacturing Strategy

As noted in the previous section, changes in manufacturing technology and production practices promote and require changes in shop-floor organisation. Different manufacturing systems are concerned with many different aspects of the firm and encompass many facets e.g. techniques and methods like simultaneous engineering, kanban, just-in-time, total quality control, total productivity maintenance and statistical process control.

In this section, the focus is on the role of the worker and the role of the team in three different types of manufacturing environment: the conventional assembly line, the sociotechnical systems production environment and the lean production setting. Ellegard et al (1992) propose the following figure to show the impact of different production forms.

Fig 1.3 The impact of traditional mass production, lean production and reflective production



These authors believe that these different forms are based "on a particular mode of exploitation of human potential and technical facilities" (p. 132). If these technical and human resources are used efficiently, they will result in economic benefits e.g. high productivity, high product quality and high capital turnover, as well as human benefits e.g. high autonomy, adequate ergonomics and broad work content.

These different manufacturing strategies will be explored below in an attempt to highlight the key differences in the roles of the individuals and teams in these environments. Understanding the impact of the different manufacturing strategies provides an essential underpinning to understanding different team-based work designs in organisations.

1.4.1 The Conventional Assembly Line

The starting point for this discussion is the most traditional form of working in manufacturing environments, the conventional assembly line. In conventional forms of assembly organisation, the jobs of assembly operators are based on Tayloristic principles of job design:

a) task cycles are of short length. Direct production tasks are specialised and highly standardised and designed for "foolproof" execution. Therefore, the amount of discretion that operators have regarding how they execute their tasks, termed "work method autonomy" by Breaugh (1985), is low.
b) jobs consist of the repetitive execution of a limited range of such routine tasks; that is, jobs are specialised. There is a strict separation between direct and indirect production tasks. Operators are responsible only for direct tasks and indirect tasks, such as quality control, machine set-up, and routine maintenance, are performed by specialist engineers and craftsmen. Operators do not plan or organise their own work. The extent of control which operators have over how their activities are co-ordinated (scheduled, sequenced, timed), termed "work schedule autonomy" by Breaugh (1985), is low. Instead, operational activities are co-ordinated by supervisors and managers, who are also responsible for assessing the performance of the operators. Therefore, the third and final element of work autonomy identified by Breaugh (1985), termed "work criteria autonomy", is also low.
c) the jobs of operators are highly specialised and so a vertical form of co-ordination of operational activities is needed. In practice, there are likely to be many organisational

layers between operators on the shopfloor and top management.

d) the specialised nature of the jobs, the need to work at a fixed, typically demanding pace, and the low level of work autonomy may, in combination and according to the job design parameters described earlier, be expected to lead to a very low level of job satisfaction for operators.

There have been many attempts, spanning a wide geographical area covering Western Europe, the USA and Japan to move away from conventional forms of assembly organisation. On the basis of the structural characteristics of the modern forms of assembly organisation and the primary objectives being pursued by management, these attempts can be divided into two broad classes, sociotechnical system and lean production teams.

The following table summarises some of the key differences between sociotechnical system and lean production teams.

Table 1.1 A comparison of team types

	Sociotechnical Systems Teams	**Lean Production Teams**
Origins:	England (coal mines, 1940's) and Scandinavia (Volvo Kalmar, 1970's)	Japan (Toyota Pull System, 1960's)
System Optimises:	Mix of social and technical sub-systems	Continuous improvement in work operations
Expected Yield:	Increased worker commitment and targeted gains in quality and safety	Systematic gains in quality and productivity
System Constrainers Would Be:	High levels of team interdependence; limited resources for technical redesign	High expectations of team autonomy; low labour/management support for continuous improvement
Typically Found In:	Continuous production operations (high autonomy among teams)	Assembly operations (high interdependency among teams)
Leadership:	Depends on self-managing group	Depends on strong team leader; groups work with a defined structure.
Membership:	Common work area	Common work area
Organisation Structure:	Core building block	Core building block
Links to Other Teams:	Tightly linked across shifts; loosely linked with other teams	Tightly linked to internal customers and suppliers

(adapted from Cutcher-Gershenfeldet al, 1994)

There are important conceptual and practical differences between sociotechnical systems and lean production teams. These are summarised in the table and will now be explored in more detail.

1.4.2 Sociotechnical Systems

Sociotechnical system teams have been promoted in Europe for more than 30 years because of their beneficial effects on organisational effectiveness and the quality of working life. Early researchers in this field suggested that socially ineffective structures could be a major factor in preventing harmonisation (Trist and Bamforth, 1951) and creating alienation (Emery, 1959).

The sociotechnical system emphasises the satisfaction of the needs of employees and obtaining challenging work. As such, the focus is on work content and job redesign. This is illustrated by the attention paid to such elements as regulatory tasks, autonomy and wholeness of work. In Western countries, personal growth needs are important; there is a need for autonomy and so attention in sociotechnical systems is paid to work content.

Sociotechnical systems clearly view people as a resource to be developed and a production structure is favoured which decouples the production process into parallel units and which gives maximum autonomy to them. According to sociotechnical system theory, the work system should balance the needs of the organisation for efficiency and the psychosocial needs of the worker and self-managing groups are promoted as ways to increase productivity and human satisfaction. In sociotechnical systems, workers have autonomy over their movements and to a certain extent can set their own working pace. The workers are comparatively free to decide in which way results are achieved and to make their own working arrangements. The standardisation of skills is an important co-ordination mechanism. Interdependence is reciprocal, with all workers sharing responsibility and most working closely together (Niepce and Molleman, 1996).

Self-management is seen as a substitute for leadership. The role of supervisors and leaders of self-managing work groups is more that of a facilitator and coach. There is an aspect of job enrichment, with regulatory tasks (administrative and other duties) becoming an integrated part of the job. Workers are given autonomy over work pace and work methods (an example of Hackman's (1977) so-called vertical loading referred to earlier, in this

instance in a group context).

Another important design parameter in sociotechnical system theory refers to the autonomy of production units. Sociotechnical system theory, in line with the principles of group technology, composes groups that with respect to their machine and human capacities are able to produce whole products or parts. By paralleling work processes, the need for co-ordination that exceeds the task group is minimised and the autonomy of the group is maximised. Boundaries are important as they delineate groups and provide workers with a sense of identity. The groups have a closed nature and both the boundaries between groups and the autonomy of teams are strongly emphasised.

In sociotechnical systems, a multifunctional worker is able to perform several tasks that are assigned to the group and job enlargement is limited to the boundaries of the group. Sociotechnical systems emphasise the integration of sequential and related tasks in the jobs of individual team members, enlarging the cycle time. This is to enable workers to get a better insight into the way different processing steps influence each other and the worker will be able to observe and correct deviations at an earlier stage, which will improve performance.

1.4.3 Lean Production Systems

With lean production systems, the basic purpose is to increase profits by reducing costs through completely eliminating waste such as excessive stocks or work force. Increasing workers' morale is a subgoal to achieve the primary goal of cost reduction. Womack, Jones and Roos (1990) assigned teams a crucial role in the lean production process, considering them to be "the heart of the lean factory" (p.9). Lean production systems clearly view people as a resource to be developed and acknowledge their importance in the labour process. Lean production differs from classical mass production in minimising buffers, as exemplified by just-in-time which is characterised by flow production and a large interdependence. Minimising buffers not only serves the direct purpose of eliminating inefficiencies, but also provides valuable information which can be used for increasing productivity and efficiency.

In lean production, the leading co-ordination principle is the standardisation of work processes. Time-and-motion studies develop exact standards for each process and lean

production tries to achieve a perfectly balanced production system. This can lead to a mechanical system where everyone is working at the same pace. Typical of the generated standards, mainly caused by the attempt to create an unbuffered flow, is a situation in which workers are physically and, in an ergonomical sense, bound to their workplace and have hardly any freedom of movement. Each worker is expected to deliver a certain amount of work within an appointed timespan and the team as such has no influence on working pace. Interdependence is sequential, with workers only able to start the execution of their tasks if the workers prior to them have performed their tasks properly.

In terms of the distribution of control within the team, supervisors are traditional-style leaders who derive their authority from their hierarchical position and their knowledge base. Lean production stresses the importance of first-line supervisors. Teams are not autonomous from management but are built around the supervisor. The supervisor is the strong hierarchical leader who commands the team. Lean production systems do not give workers autonomy over work pace and work methods as sociotechnical systems do, opting instead for a fixed pace and standardised working processes.

The product being manufactured defines the production structure and stipulates the particular sequence in which activities have to be performed. This means that tasks which are product-technically closely related are not always connected at the operational level. There is no need to locate people who work on the same part of the product in close proximity to one another. It is common for non-related activities to be performed in succession (Niepce and Molleman, 1996). This results in a low level of task identity. In lean production, group boundaries are not clearly defined and are more open systems than in sociotechnical system groups.

In terms of multifunctionality of workers, lean production strives for job enlargement by job rotation, with the expectation that workers will be capable of carrying out a wide range of narrow tasks. Employees are rotated not only within teams but also between teams and even between different departments. Job rotation does not increase the cycle time.

With regard to human values, lean production does not emphasise the redesign of jobs to make them more appealing. Lean production has been successful in Japan, and the values and norms towards Quality of Working Life are different in Japan than in the West (Niepce

and Molleman, 1996). For example in Japan, the need for social relations is more intense than the need for personal achievement and independence. Lean production relies heavily on social relationships to satisfy the needs of workers and this is a different way of motivating workers and influencing organisational behaviour than that underpinning sociotechnical systems.

This discussion outlines the key differences between sociotechnical system and lean production teams and distinguishes different forms of team-based work systems. This increases our understanding and helps to explain the diversity of team systems found in manufacturing environments and to derive insights into the general nature of team-based work systems. This discussion also pinpoints some of the issues regarding compatibility between manufacturing setting and team design.

The central message from Womack, Jones and Roos (1990) was that the performance gap between Japanese and Western car producers needed to be closed by the latter adopting lean production. In Europe this concept seems to have functioned as a catalyst for the diffusion of team work (van Amelsvoort and Benders, 1996). As a result, in adopting team-working there seems to have been a mix of Eastern and Western influences. There are however, significant differences between sociotechnical system and lean production teams, both in terms of philosophy and practical application and this may explain why some manufacturing firms have experienced difficulties in the implementation of teams (Cutcher-Gershenfeld et al, 1994). Research by these authors suggests for example, that some assembly operations are simultaneously attempting to encourage the formation of self-managing teams while reducing buffers through reduced in-process inventory and just-in-time delivery. The resulting tension between team autonomy and team interdependence can be managed through strong leadership, but this does not fit the traditional view of teams as being self-directed or autonomous.

The choice of team design is complicated, with type of product, technology, physical layout and organisational structure and culture being amongst the most important considerations in the matching of a team system to a company (Cutcher-Gershenfeld et al, 1994). A lean production system optimises flow-through manufacturing but reduces the amount of worker autonomy. A sociotechnical system achieves worker autonomy by optimising the balance between social and technical sub-systems, but may do so at the expense of efficiency or

operating costs. Firms must pick the system that will maximise the strengths of the firm's production technology and employees. Teams can be utilised in a variety of production contexts. A tightly linked assembly operation will favour lean production teams and constrain sociotechnical system teams, while a continuous production system will favour sociotechnical system teams. An understanding of these differences is essential in any organisational change to team working.

1.5 Contemporary Perspectives on Team Working

As the earlier discussion on the contextual factors driving team working highlighted, work design in the 1990s is not as concerned with combating absenteeism, labour turnover and the monotony associated with segmented repetitive tasks as previous eras of work design research. Rather, an increasingly competitive business environment has forced organisations to rethink their work design in an effort to promote quality, flexibility and greater customer responsiveness. High performance work systems that put autonomous team working in centre stage are seen as an effective way of achieving these goals and these team designs draw from concepts and ideas from previous initiatives in this area (Buchanan, 1994).

Early adherents of sociotechnical systems theory and the quality of working life movement emphasised the creation of a more humanistic approach to work design in order to provide a more fulfilling work experience for employees. The present emphasis on self-management focuses on "hard" business realities and contemporary applications are based on strategic, rather than operational considerations, with the ultimate aim of securing competitive advantage through greater flexibility and adaptability (see Figure 1.4 below).

Figure 1.4 Contrast between sociotechnical systems in the 1970s and high performance team designs in the 1990s

QWL in the 1970s	High-performance in the 1990s
❖ Aimed to reduce costs of absenteeism and labour turnover and increase productivity.	❖ Aimed to improve organisational flexibility and product quality or competitive advantage.
❖ Based on the argument that increased autonomy improves quality of work experience and employee job satisfaction.	❖ Based on the argument that increased autonomy improved skills, decision-making, adaptability and use of new technology.
❖ Had little impact on management function beyond first-line management.	❖ Involves change in organisation's culture and redefinition of management function at all levels.
❖ "Quick fix" applied to isolated and problematic work groups	❖ Could take two or three years to change attitudes and behaviour throughout the organisation
❖ Personnel administration technique.	❖ Human resource management strategy

(Source: Buchanan, 1994)

In addition to the factors mentioned above, the increasing interest in employee autonomy has been fuelled by strategies, such as business process re-engineering, which have produced flatter organisational structures by removing layers of management. In manufacturing industries, new technologies and production methods, for example just-in-time inventory control, total quality management and cellular production, require greater employee involvement and less direct supervisory control (Parker and Wall, 1996).

As a result, the clear distinctions and operational constraints between the different team types in different manufacturing settings described earlier have become blurred in the drive to implement work design initiatives to improve business performance. So-called high performance work design has emerged over the past decade. Applebaum and Batt (1994) suggest that two distinct high-performance work design models are being pursued in the United States. First, there is an American variant of the Japanese lean production system pioneered by Toyota, which found influential support in the United States. Second, there is the American team production model, which "combines the principles of Swedish sociotechnical systems and self-directed work with those of quality engineering" (Applebaum and Batt, 1994: 125). These authors go on to describe this model in the following terms: "The American model of team-based high performance begins with sociotechnical job design and the use of self-directed teams, but incorporates an eclectic set

of ideas from other sources: just-in-time inventories from the Japanese, total quality and statistical process control from Deming via Japan, incentive and compensation structures developed in the American human resources model, and a uniquely American form of labour-management partnership that emerged out of the American experience of collective bargaining and joint quality of life activities. The American team-based model leads to a real distribution of power and authority in the workplace" (p.126).

Whereas the United States lean production model includes some limited employee involvement through employee participation in problem-solving groups, the American team production approach provides far greater opportunities for all staff to become fully involved in organisational activities and, importantly, to take an active part in the decision-making process (Applebaum and Batt, 1994). Core features of sociotechnical systems are essential to this model. Sociotechnical systems involve integrating the social and technical aspects of a job, and because workers have intimate knowledge of what a task entails they are best placed to organise work and optimise the potential of the technologies they are using. Moreover, workers are also best placed to identify process improvements. This is most likely to happen if employees work in teams, enabling them to view the whole process rather than focusing on a segmented individualised task. Crucially, these teams must be given the authority and incentive to pursue continuous improvement.

However, it is recognised that while self-management is at the heart of the team-based high performance work system the degree of autonomy given to the teams varies. This variation tends to be between self-managed teams that have control over all aspects of work, including human resource issues and the freedom to liaise with supporting functions, and those whose autonomy is confined to determining how work is performed to meet their targets (Applebaum and Batt, 1994).

In some senses, integration of practices and techniques from different models of team working (e.g. sociotechnical system and lean production teams) seems viable at the philosophical and strategic level. This is especially the case as the current imperative driving both types of team working initiatives is to improve business performance. However, this integration may not prove as viable at an operational and practical level. The earlier discussion of the philosophy and practices of sociotechnical system and lean production teams demonstrates this. The strategic goals of the different work designs may be similar

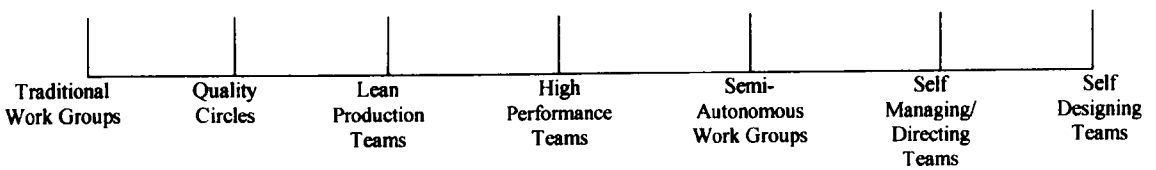
but the expectations and realities are completely different at an operational level. This research will explore in some detail the strategic and operational issues surrounding the development of different team designs in manufacturing settings.

1.6 Types of Work Groups and Teams

Within this context, companies seeking to establish team-based work systems find that there is a huge diversity of meanings for the term "team". Workplaces are not only filled with lean production teams, sociotechnical systems teams, but also off-line teams, training teams, task force teams, sales teams etc. In much of the literature there is often no distinction made among the alternative types of team systems and yet each has important advantages and limitations in different situations. For the implementation and development of team working, there must be congruence between the different systems and strategies that exist within the organisation.

At this point, it is useful to introduce the Team Autonomy Continuum presented by Banker, Field, Schroeder and Sinha (1996). These authors classify teams on a continuum with those on the far right having the most autonomy, and those on the far left having the least autonomy.

Figure 1.5 Team Autonomy Continuum



(adapted from Banker, Field, Schroeder and Sinha, 1996)

These different types of teams are defined by Banker et al (1996) in the following way:

Traditional work groups - in which workers perform core production activities and other groups are responsible for support activities, such as quality control and maintenance. Workers have no management responsibility or control. The first line manager controls planning, organising, directing, staffing and monitoring.

Quality circles - in which membership is voluntary. Members are drawn from a particular work group or department. The group has the responsibility for making suggestions but

does not have the authority to make decisions. The problem-solving domain is limited to quality- and productivity-related issues and cost reduction. Typically, the group is not provided with systematic information on the firm's performance or strategic matters.

Lean production teams – in which teams work collectively to standardised work processes and there is some limited employee involvement through employee participation in problem-solving groups.

High performance work teams – provide the opportunity for all staff to become involved in organisational activities and, importantly, to take an active part in the decision-making process. This approach incorporates ideas from sociotechnical systems job design, self-managing teams, just-in-time, total quality, statistical process control and American human resources policies.

Semi-autonomous work groups - in which workers manage and execute major production activities. Other groups perform support activities, such as quality control and maintenance, which are related to, but outside the scope of, major production activities.

Self-managing/directing teams - these are groups of workers who can self-regulate work on their interdependent tasks. Group members have control over the management and execution of an entire set of tasks, from the acquisition of raw materials through the transformation process to shipping. This includes all the support activities, such as quality control and maintenance, required to produce a definable product or to carry out a definable part of a production process.

Self-designing teams - these groups have all the characteristics of self-managing teams and they also have control over the design of the teams themselves and decide such issues as what tasks should be done and who should belong to the teams.

The distinctions between the different types of teams are not always made clear in the literature or by organisations when describing their team-based systems. Yet it would seem that these distinctions are relevant and important when discussing the change to team working and its development and implementation in any organisation in order to ensure congruence between team design parameters and operational realities.

1.7 The Trend to Team Working

So far this chapter has considered the context of team working and the variety of types of teams that currently operate in manufacturing settings. The focus now shifts to the prevalence of team working, its logic in the current economic climate and its associated benefits and problems.

As already noted, the idea of team working is not a recent phenomenon. The following is a list of American companies that have implemented some type of team working system during the last two decades (the start dates for these teams are in brackets): Boeing (1987), Digital Equipment (1982), General Electric (1985), Cummins Engine (1973), Procter and Gamble (1962), Tektronix (1983). Among UK-based companies, Trebor Bassett first began using self-managed teams at its greenfield site in Colchester in 1980 (IDS Study, 1984).

However, as far as the majority of businesses are concerned, the strategic drive to implement self-management is a phenomenon of the 1990s. One American survey (by Development Dimensions International, quoted in Caudron, 1993) found that most of the respondents had two years or less of experience of self-management. Osterman (1994) estimated that more than half of major US corporations were exploring some form of team-based work system, although in companies implementing self-management not all workers were in such teams.

The concept of self-managed team working began in the 1950s in the UK with the Tavistock consultants. However, examples of successful and sustained self-managed teams in UK-based organisations have tended to be isolated and most observers would agree that self-managed teams were a relatively rarity in this country before the 1990s. This is changing, as indicated by a survey conducted by the Industrial Society in 1995. Indeed, just over 60% of managers surveyed reported that their organisations were operating at least some self-managed teams. However, only 10% of the managers said that most teams were self-managed, whereas twice that proportion said that there were only a few self-managed teams. Nearly 75% forecast that they would be using self-managed teams to some extent within two to three years and more than 25% thought that most of their teams would be self-managing by then. The survey also revealed that most self-managed teams were recent. Approximately 30% had been introduced within the past year, while another 30% dated from 2-3 years ago. 9% began 3-4 years ago and only 15% were over 4 years old.

The survey authors suggested that self-managed teams were moving from "leading edge status to mainstream" (Industrial Society, 1995: 2) and many well-known companies were quoted as starting to experiment with self-managed teams at that time, including AT&T Global Information Solutions, British Steel, Body Shop, Bonas Machine Company, Aston Martin Lagonda, Western Provident Association and the Inland Revenue.

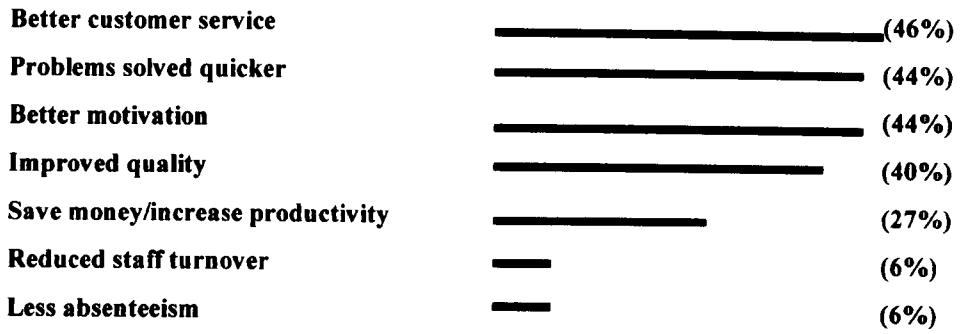
As such, it seems that while the concepts and ideas supporting self-management have been discussed extensively in the literature during the last thirty years, the actual practice of implementing self-managing teams has really only started in organisations within the last few years with the changes in the economic and technological context of organisations. Ever-increasing pressures affecting both private and public sector organisations have made any approach to work design that produces demonstrable improvements in productivity, quality, cost reduction and innovation likely to attract attention. Some businesses that have implemented self-managing teams report substantial improvements in these areas (e.g. Manz and Sims, 1993). For many organisations, the transition to team working has become a matter of necessity as they seek competitive advantage.

1.8 The Logic of Team Working: Impact on Performance

Indeed, better customer service, problems solved quicker, more motivated staff and better quality of output were the four top reasons for the introduction of self-managed teams according to the Industrial Society survey in 1995. This survey also confirmed that many employers now felt that successful self-managed teams created among other things: faster reaction to changing business conditions; greater business flexibility; lower staff turnover; and higher staff commitment, involvement and motivation. The main motive for the introduction of teams was competitive pressure and the need to make the best, most intensive use of resources, especially people resources. According to this survey, organisations believed that they were gaining significant benefits from self-managed teams.

This is illustrated in the figure below.

Figure 1.6 Principal benefits of self-managed teams



(Source: Industrial Society, 1995)

In the following sections, the conceptual links between self-management and these aspects of manufacturing performance will be explored.

1.8.1 Customer Service

Customer service has emerged as a key factor in the fight to secure a competitive edge in manufacturing industry. Eccles (1991) suggests that customer satisfaction is the logical next step in the development of quality measures. Quality focuses on getting it right first time, every time; customer satisfaction is concerned with making sure that the product or service is what the customer wants and is delivered in a way that will help build a lasting relationship.

Employees play a critical role in the type of service that a customer receives. This is increasingly true of shopfloor employees. Not only have internal customer-supplier systems which operate in the same way as external customer relationships been introduced in many manufacturing organisations, but more shopfloor staff are coming into contact with external customers. Self-managed teams give employees the authority to satisfy customer demands and expectations.

1.8.2 Quality

Self-management and quality fit neatly together because self-managed teams can be seen as an extension of, or a vehicle for, the continuous improvement process (Piczak and Hauser, 1996). A continuous improvement strategy involves every part of the organisation in the search for small incremental improvements in products and processes. The reasoning is that

if an organisation has quality systems, processes and methods, it will produce quality products and services. If it continuously improves its systems, processes and methods then by implication the quality of its products and services will also improve continuously (IRS Management Review, 1997).

An effective continuous improvement strategy relies on employees identifying where changes can be made, and the notion that employees are best placed to identify and initiate improvements is something that the sociotechnical systems school has argued for many years. Also, encouraging staff to search for possible improvements involves giving them the authority to be innovative and creative and to implement change without fear of recrimination. This is in contrast to the traditional hierarchical work structure that places innovation entirely in the realm of management.

Continuous improvement systems utilise the mental skills of workers as well as their manual abilities in the search for perfection. One of the skills that is considered a prerequisite for effective continuous improvement is problem-solving. The development of problem-solving skills is usually an important part of the training for self-managing work teams. Teams are also responsible for maintaining quality standards throughout the group. Peer pressure, which is a feature of self-managed teams, has proved to be an effective tool for controlling and maintaining quality standards. The positive connection between quality systems and self-managed teams has been shown in Xerox where they attribute their success in quality initiatives to employee involvement (Applebaum and Batt, 1994).

1.8.3 Reducing Costs

The leaner, fitter and flatter organisation has emerged as businesses have restructured, re-engineered and de-layered. An IRS Management Review survey (1996) found that more than three-quarters of respondent organisations had become flatter since 1991.

The rationale behind de-layering is to reduce costs and to make organisations less bureaucratic and more responsive to customer requirements. As managerial structures have become condensed, greater emphasis has been placed on team working. Flatter enterprises have entailed the devolution of responsibility and accountability to lower levels in the organisation. In this context, self-managing teams are seen as an ideal way of establishing employee control over many of the functions that were previously assigned to supervisors

and managers.

Also with the aim of cost reduction and closely linked to self-managing team working is cellular manufacturing, in which production is organised into a number of standalone units operating rather like mini-factories within a factory. A survey of cellular manufacturing systems by Ingersoll Engineers (1990) cited in the IRS Management Review (1997) reported that 65% of respondents said there had been a reduction in indirect staff; 37% had reduced the number of direct employees; 37% said that fewer support staff were needed and 49% had cut the number of supervisors.

1.8.4 Productivity

Mohrman and Novelli (1985) suggested two models to relate participation in quality circles to improved productivity. Whilst their models specifically focused on quality circles, the principles derived are also relevant to self-managed team working. The first model suggested that participation in quality circles led to idea generation, which led to idea implementation, which in turn led to improved productivity. It was the implementation of the ideas themselves and the degree to which these ideas related to productivity that contributed to productivity improvement. In the second model, participation in quality circles led to favourable individual outcomes that improved job satisfaction, motivation and task performance, and led to productivity improvement. This model incorporated many of the elements of Hackman and Oldham's (1980) Job Characteristics Model.

Reviewing the empirical literature from economics, industrial relations and organisational behaviour on the effects of participation on performance, Levine and Tyson (1990) concluded that participation was more likely to have a positive impact on performance "when it involved decisions that extended to the shopfloor and when it involved substantive rather than consultative arrangements" (p.204). Participation is a central principle of self-managed teams.

1.8.5 Job Satisfaction

In an empirical study of factors associated with job redesign, mental strain and job dissatisfaction, Karasek (1979) found that it was the combination of low decision latitude and heavy job demands that were associated with mental strain and job dissatisfaction. Karasek went on to distinguish between two important elements of the work environment at

the individual level: (1) the job demands placed on the worker and (2) the discretion permitted the worker in deciding how to meet these demands.

The results of this study are significant in this context, although the focus was on the analysis of job content at the individual level and did not address the undeniably important effects of work group and organisational processes except as they affect individual jobs. Karasek's (1979) measures were similar to two central components of Hackman and Oldham's (1975) Motivating Potential Score: autonomy in task organisation decisions and variety in skill use. Constraints on decision-making, not decision-making per se, were the major problem, and this problem affected workers in low status jobs with little freedom for decision e.g. jobs with high levels of demands and low levels of decision latitude traditionally included assembly line workers. The working individual with few opportunities to make decisions in the face of output pressure was most subject to job strain and job dissatisfaction.

Karasek (1979) concluded that job satisfaction could be improved by increasing decision latitude independently of changes in workload demands if changes were made to improve the workers' abilities to make significant decisions about their task structure, increase their influence on organisational decisions and allow them discretion over the use of their existing and potential skills. Again, these factors are essential features of self-management.

Across a range of areas, therefore there are logical connections between the goals of organisations in introducing team working and the principles of self-management.

1.9 Work Teams and Manufacturing Performance

1.9.1 The Benefits of Team Working

The logic of team working notwithstanding, evidence as to the extent to which employee autonomy has actually produced tangible benefits for organisations is mixed. Many of the reports in the popular journals that cite positive benefits from the introduction of self-managed team working, including substantial increases in productivity and improved quality, are of an anecdotal nature and are not supported by robust research designs. For example, Hoerr (1989) cites productivity gains that exceed 30% in some cases. He quotes one company, a General Electric Co. plant in Salisbury, N.C. as having "increased productivity by a remarkable 250% ..... combining teamwork with flexible automation and other

computerised systems" (p. 38). Schilder (1992) states that "Team direction is one of the best techniques for realising a payback in quality and customer service. It's the ultimate productivity tool" (p.68).

Schilder (1992) cites results that suggest that new facilities that adopt team direction from day one are 30-50% better than results from traditional management structures. Results are more difficult to tabulate for redesigned facilities. However, Schilder (1992) goes on to document the changes at Northern Telecom's Morrisville repair facility where business was not expected to increase. Telecommunications equipment repair historically had been a money-losing business. However, it is stated that revenue went up 63% after implementing self-managing teams in 1988; sales went up by 26% and earnings by 46%. Productivity per employee increased more than 60% and scrap (materials unusable as a result of manufacturing processes, such as human or machine error, or new product testing) decreased by 63%. Quality results increased by 50%, and the number of quality inspectors dropped by 40%.

Dumaine (1993) cites results from Johnson Wax with examples such as one team of workers figuring how to switch a line from liquid floor wax to a stain remover in thirteen minutes instead of three days. In another plant productivity increased by 30% in eight years while the number of middle managers was reduced from 140 to 37. In an earlier article, Dumaine (1990) provided more examples of the success of teams, quoting results which show that a team of Federal Express clerks solved a billing problem that was costing the company $2.1 million a year and an insurance company reduced the ratio of middle managers to workers from 1 to 7 to 1 to 30 whilst improving customer service. Dumaine (1990) also reports that a production team came up with a method for making forged wheels for vans that increased output by five per cent and cut scrap in half.

Most of these studies reported short-term gains, but the organsations certainly believed they received considerable benefit from the introduction of teams. However, as noted earlier, many of these findings are of a somewhat anecdotal nature and there are not many well-designed studies which evaluate the impact of self-managing groups.

The well-designed research that does exist on self-managing teams presents rather more ambiguous results. Amongst the earliest experiments in this area were those completed at

Volvo's Kalmar and Uddevalla plants. Kalmar was established in 1974 and was the first purpose-built factory designed to accommodate the assembly of cars by autonomous work groups. Teams of 15 to 20 members (although some were as small as two) were responsible for their own quality of work and also had the authority to rotate jobs and vary the pace of work (Buchanan, 1994). Volvo extended this approach further when the Uddevalla plant began production in 1988. Autonomous teams of eight to ten employees were responsible for building a complete car. Teams were responsible for training, maintenance, planning, selection and tooling. The role of group spokesperson who allocated work, completed reports and helped to solve individual and team problems was rotated (Wickens, 1993).

Krepchin (1990), reporting on Swedish auto makers emphasis on ergonomics, teamwork and automation, stated that the early developments in Volvo's Kalmar plant in Sweden in terms of allowing workers to control the pace of their efforts and focus on teamwork had many benefits. These included: a 25% reduction in assembly completion time, a 57% reduction in inventory turnover time, a 5% reduction in employee turnover and a 4% reduction in absenteeism. The newer Volvo plant at Uddevalla reported similar findings. However, both Kalmar and Uddevalla closed in 1993, despite the above findings and studies showing that Kalmar was Volvo's lowest-cost assembly plant and that Uddevalla's productivity had risen strikingly. It took 120 hours to assemble a car in 1990, 50 hours in 1991 and 32 hours in 1992 (Applebaum and Batt, 1994).

These closures were due in part to the changing car market, which meant that both plants were not economically viable (Berggren, 1993). However, there were other problems, too. A degree of managerial control was reasserted in the latter part of the 1970s and a reduction in job enrichment opportunities. Absenteeism and labour turnover remained high in both plants, although it is widely acknowledged that this may be attributed to a large extent to Sweden's social security system (Wickens, 1993).

The management at Volvo insisted that the decision to close Kalmar and Uddevalla was due entirely to market factors and not the work design techniques implemented in the plants (Wickens, 1993). There were certainly considerable benefits resulting from these initiatives. However, it appears that the benefits did not prove to be long-term and there were significant changes in the work design during the intervention which reduced the autonomous nature of the team working. These early studies provide an example of the

ambiguous findings of the research on self-managing teams and reinforce an interest in the long-term effects of such work design initiatives and the change to team working.

Some more recent studies have found that autonomous group working had a positive impact on business performance. A longitudinal study of the introduction of an autonomous work group in a food processing plant (Wall, Kemp, Jackson and Clegg, 1986) found that productivity was greater in the autonomous group than among colleagues in three comparison groups in traditionally-designed jobs. While the output of the four groups was the same, the autonomous work group was more productive because there was no need to employ supervisors. Moreover, members of this group experienced greater job satisfaction than their counterparts.

These findings are supported by more recent research (Cordery, Mueller and Smith, 1991), which found that employees in autonomous work groups had a more favourable attitude to work than their counterparts in traditional jobs. Moreover, although the level of organisational commitment among autonomous work group members declined over time, they were still more committed than workers not given any autonomy. Banker, Field, Schroeder and Sinha (1996) in a longitudinal field study examining the impact of work teams on manufacturing performance showed that both quality and labour productivity improved over time after the formation of teams.

These studies notwithstanding, support for the view that there are few robustly designed studies of the impact of team working on business performance comes from Goodman et al (1988). These authors quote figures from a review of 835 studies which presented some empirical data, and found that only 6% of these had both "longitudinal, empirical data and the necessary sample sizes, means, and significance testing ..... to perform a reasonable meta-analysis of these studies" (p.307). The data available revealed a bias toward collecting attitudinal versus hard productivity data.

Goodman et al (1988) summarised the findings from the research and divided their analysis data into two types of data: individual firm studies and meta-analyses. They believed that individual firm studies provided a detailed picture of the nature of self-managing teams and their effects on different criterion variables and report findings from three studies - Topeka (Walton, 1982), Rushton Quality of Work Experiment (Goodman, 1979) and the

confectionery plant study (Wall, Kemp, Jackson and Clegg, 1986). These findings are summarised in the following table.

Table 1.2 Summary of findings from individual firm studies of self-management (adapted from Goodman et al, 1988)

	Topeka	Rushton	Confectionery Co.
Commitment	Initial increase; decrease after 3 years, operational steady- state and skill surplus; increase on introduction of new products and expansion.	No evidence.	No evidence.
Attitudes	Similar trend to above; initial rise, a period of decline, then rising again.	Positive job attitudes for first 20 months, followed by decline.	Higher levels of work complexity and involvement; in terms of leadership, higher levels of consideration and tolerance for freedom. Greater levels of intrinsic satisfaction.
Productivity	Increase every year but one; product quality high; overhead costs low.	Slight positive effect - 3 to 4 % (this is an estimate).	Qualitative data indicate no difference to work performance.
Safety	No evidence.	Improvements in safety; indicators included accidents, violations etc.	No evidence.
Skills	No evidence.	Substantial increase in job skills.	No evidence.
Turnover	No evidence.	No evidence.	Higher turnover (may be attributed to labour market) and disciplinary dismissals (no supervisors to shield employees).
Benefits vs Costs	No evidence.	Analyses indicate benefits slightly exceeded costs.	No evidence.
Indirect Effects	Positive consequences – higher pay and job security. Negative consequences – friction at senior management level led to Topeka managers leaving.	Positive consequences - improvements in communication and co-ordination, new talent recognised and promoted. Negative consequences - increased stress for first-line/middle managers and conflict with the union.	Positive effects – employees preferred this form of work. Negative effects – managers experienced more stress.

From their analyses of these individual studies, Goodman et al (1988) concluded that self-managing groups do change organisational effectiveness outcomes. They concluded that the effects are greater on the more frequently measured attitude or quality of life indicators than on business criteria such as productivity; the effects on attitudes are not uniform, i.e. that they vary over time with the viability of self-managing teams; and finally, the rigour of the research design affects the reported results with the more rigorously designed studies showing more modest or no results.

Overall, from the individual firm studies and the meta-analyses, Goodman et al (1988) concluded that:

- self-managing teams had a modest impact on productivity,
- they did change attitudes but the change was specific to the intervention (changes in attitudes about responsibility, control and job variety were expected, but not changes about general satisfaction or commitment to the organisation),
- there were no clear trends for withdrawal behaviour (turnover and absenteeism), and
- they could improve safety.

All told, the findings from the empirical research are clearly not as impressive as those quoted in managerial and consultants' reports on self-management and in the more popular journals.

Recent research by Patterson, West, Lawthom and Nickell (1997) has taken a more holistic view of research into the impact of work design initiatives on work performance. These researchers started from the premise that managers know that people make the critical difference between success and failure. The effectiveness with which organisations manage, develop, motivate, involve and engage the willing contribution of the people who work in them is a key determinant of how well those organisations perform. However, Patterson et al (1997) acknowledge that there is surprisingly little research demonstrating the causal links between people management and business performance.

To fill this gap Patterson et al's (1997) research focused on measuring the relationship over time between people management and other managerial inputs, and business performance output. They applied a rigorous, comparative analysis over time to the individual elements of management activity and measured the contribution they made to performance. This research builds on previous work (e.g. MacDuffie, 1995) to assess systems of human resource management practices rather than individual practices. The logic behind this proposition is that firm performance will be enhanced by systems of practices that support each other and that have a mutually reinforcing effect on employee contributions to company performance. For example, the effectiveness of a comprehensive training programme may be increased when combined with appraisals to assess employee

performance and target development needs

Patterson et al's (1997) results showed decisively that people management practices have a powerful impact on performance and highlighted two clusters of practices that were significant predictors of both change in profitability and change in productivity:

1. acquisition and development of employee skills (including selection, induction, training and use of appraisals)
2. job design (including skill flexibility, job responsibility, variety and use of formal teams).

When the researchers examined change in profitability after controlling for prior profitability, the results revealed that human resource management practices taken together explained 19 per cent of the variation between companies in change in profitability. Job design (flexibility and responsibility of shopfloor jobs) and acquisition and development of skills (selection, induction, training and appraisal) explained a significant amount of the variation. This demonstrates the importance of human resource management practices. In relation to productivity, human resource management practices taken together accounted for 18 per cent of the variation between the companies in change in productivity. Job design and acquisition and development of skills explained a significant proportion of the variation.

Researchers have traditionally directed most effort towards examining the relationship between attitudes and individual job performance, particularly focusing upon the impact of job satisfaction. The evidence of this research is fairly clear in indicating a weak but significant association between job satisfaction, organisational commitment and individual job performance (Iaffaldano and Muchinsky, 1985). Patterson et al (1997) focused on the organisational level and examined the relationship between job satisfaction, organisational commitment and company performance. They found that job satisfaction explained five per cent of the variation between companies in change in profitability after controlling for prior profit. Organisational commitment also explained five per cent of the variation. In relation to the change in productivity, job satisfaction explained sixteen per cent of the variation between companies in their subsequent change in performance. Organisational commitment explained some seven per cent of the variation.

These results demonstrate the relationship between attitudes and company performance.

They suggest that managers of organisations eager to promote productivity and profitability should pay close attention to the attitudes of their employees and how they can be influenced to be more positive. The results demonstrate that the more satisfied workers are with their jobs the better the company is likely to perform in terms of subsequent profitability and particularly productivity. As such, work design initiatives that impact on worker satisfaction, such as self-management, are likely to impact on the profitability and productivity of an organisation

1.9.2 The Problems of Team Working

There are a few celebrated, highly publicised, examples of firms that have successfully adopted team-based systems, from a sociotechnical perspective or for reasons of competitive advantage e.g. Topeka and Xerox. However, the above examples and discussion illustrate that the findings of the research on self-managed team working are really quite ambiguous, with only modest benefits described by the more robust research designs.

Despite the widespread interest in this form of work organisation, an understanding of what takes place at a detailed and practical level in the implementation of team working in the workplace is still rather limited. The information from both surveys and case studies comes from a wide range of sources, including managers, consultants and researchers and there is wide variation in its quality. The picture that emerges is often one-sided and may overstate the degree of innovation and change actually taking place. Failed efforts are rarely reported (Applebaum and Batt, 1994), which is why exploring the problems of introducing and maintaining team working is considerably more difficult than exploring the benefits.

Figures from one recent study (Waterson et al., 1997) suggest that the rewards of introducing team working are not always forthcoming. Their study of 564 manufacturing companies in the UK found that 55% of them over the previous six years had used team-based working. However, the expected rewards from such initiatives had not always been yielded and the productivity or quality improvements resulting from teamwork and other such initiatives (e.g. JIT, TQM) had been judged as rather disappointing (Waterson et al., 1997).

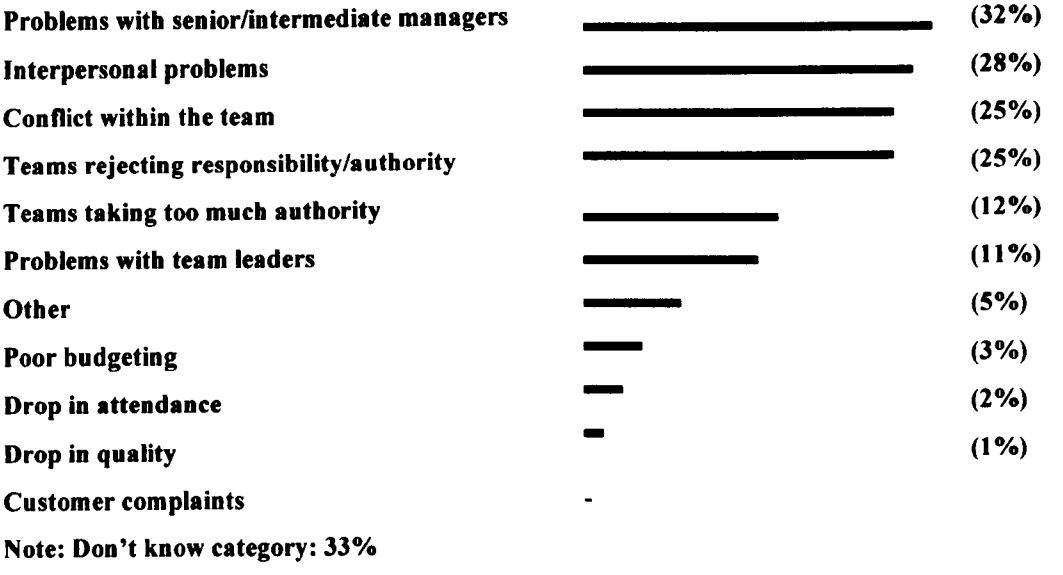
Early studies that exist (e.g. Trist and Dwyer, 1982; Walton, 1972; Goodman and Dean, 1982) suggest the reasons for the failure of self-managing teams over time include:

withdrawal of initial sponsor; insufficient training; stress and burnout of first-line and middle managers; lack of sharing of financial gains; lack of top management commitment; threats to union viability; failure of diffuse projects; unrealistic expectations of benefits and declining economic conditions.

Dumaine (1994) adds to this list: companies rushing out and forming the wrong kind of team for the job: teams getting launched in a vacuum, with little or no training or support: no changes in the design of their work and no new systems to help their communication. These things lead to frustration and people trying to figure out why they are in a team and what they are expected to do. Dumaine (1994) quotes Osterman as commenting "When teams are introduced in combination with other organisation changes, they work. When they're introduced as an isolated practice, they fail." (p.76). There is also a concern expressed by Dumaine (1994) that teams are overused, created where they are not really needed, or where it is inappropriate (lone wolves or creative thinkers). Most of the researchers comment that it is usually a combination of these factors rather than one single factor that affects the viability of the design.

The Industrial Society (1995) explored some of the difficulties in introducing self-managed teams and these are presented in the figure below.

Figure 1.7 Principal difficulties in introducing/maintaining self-managed teams



(Source: Industrial Society, 1995)

Significantly, their survey found that senior or intermediate managers represented the biggest difficulty in introducing the new approach. Arguably, these are the people who felt most threatened by self-managed teams. Team leaders were a relatively insignificant problem. The survey also found that teams were twice as likely to give organisations a problem by taking too little responsibility as by taking too much and that interpersonal problems and intra-team conflict were two of the major problems that the employer was likely to experience with the new set-up.

These results suggest that it may not be team working per se that is yielding limited results, but rather factors in the organisational change process to team working. This belief is supported by research findings. For example, Katz, Kochan and Keefe (1987) surveyed plants of a major U.S. automobile manufacturer in 1979 and 1986 and found that work teams had a negative effect on productivity. Explaining their results, the authors noted that "the negative impact of work teams on plant productivity in the company ..... resulted from problems associated with introducing the system ..... teams may yet help to improve productivity" (p.709).

MacDuffie (1995) also supports this view. In an empirical study of human resource bundles and manufacturing performance, Macduffie (1995) found that innovative human resource practices affected performance not individually but as interrelated elements in an internally consistent human resource system. These human resource systems contributed most to assembly plant productivity and quality when they were integrated with manufacturing policies under the organisational logic of a flexible production system.

Consideration of the nature of the organisational process in the change to team working and the systems that support such a change may increase our understanding of the mixed results from the research on self-managed teams. The issues will be explored in more detail in the next chapter.

1.10 The Theoretical Link between Team Working and Performance

A common approach to measuring the impact of groups is to evaluate their effectiveness. Group effectiveness is defined as performance and employee satisfaction (Gladstein, 1984). More specifically, according to Hackman (1991), group effectiveness is the degree to which:

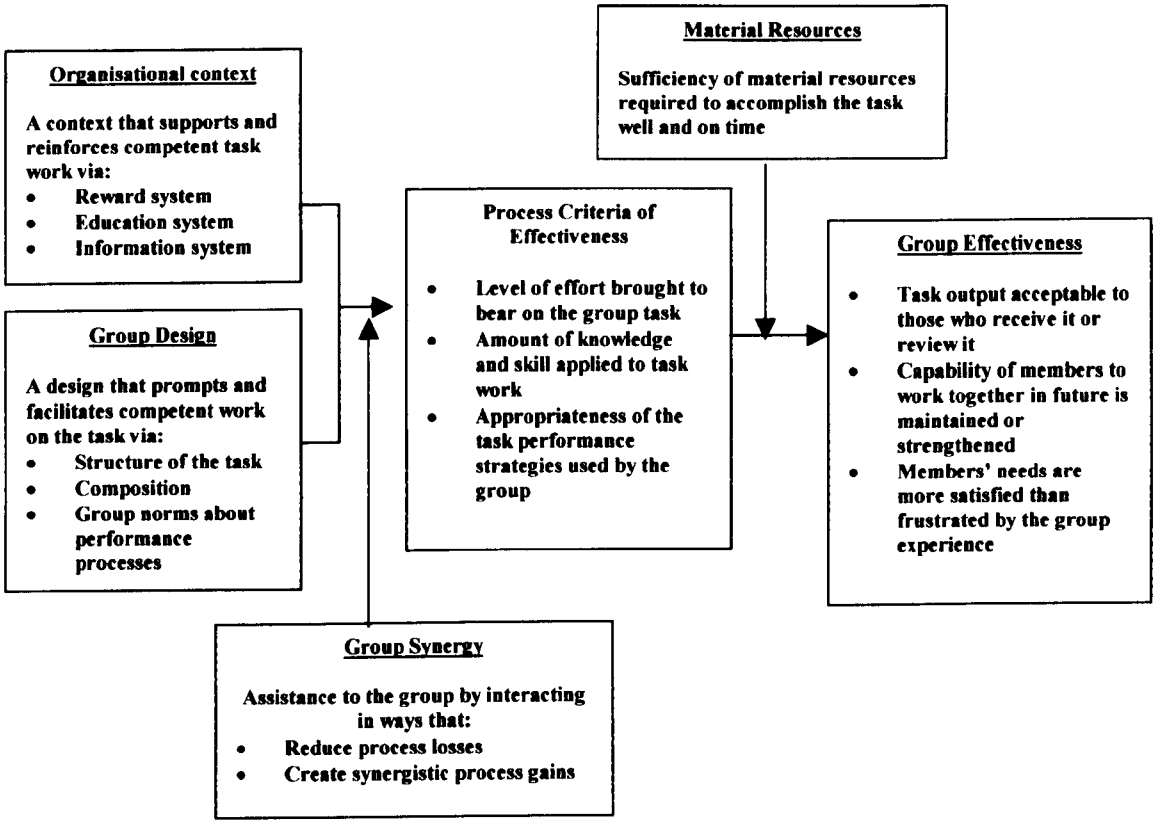
(a) a group's output meets requirements in terms of quantity, quality and timeliness,

(b) the group experience improves its members' ability to work as a group in the future, and

(c) the group experience contributes to individual satisfaction.

One of the key questions that needs to be addressed if organisations are to implement teams effectively is why should self-managing teams be more effective than more traditional work groups performing the same tasks? Understanding the theoretical mechanisms underlying self-managing teams is a precondition for understanding their effectiveness. Also, why should they be more effective than groups using other forms of participation (e.g. quality circles)? One useful approach here may be to examine the theory underlying self-managing groups. Hackman's (1982) model of work-group effectiveness appears to be an appropriate way to organise this discussion.

Figure 1.8 An overview of the normative model of group effectiveness (Source: Hackman, 1982)



At the core of this model are three process criteria: effort, knowledge and the appropriateness of task performance strategies. Increases in these three criteria, given task configurations, should improve the overall effectiveness of the group. The basic levers to change the process criteria are group design, organisational context and group synergy.

Self-managing groups bring about direct changes in group design and organisational context, which in turn should bring about changes in group synergy; all three factors should affect the process criteria.

Goodman et al (1988) use the Rushton case (Goodman, 1979) as an example to show the effects of this type of change on group effectiveness. In this case, one of the major goals for introducing teams was to increase safety. Changes in the structure of the group (that is, greater control, responsibility, opportunity to make decisions, and so on) directly affected the amount of effort expended and the level of group synergy. The problem-solving opportunities in the groups permitted selection of new task performance strategies. The changes in the organisational context (e.g. pay system, meetings and training) affected the level of effort and knowledge directed toward safety behaviours. Changes in group synergy affected the level of effort and adherence to task performance strategies. Changes in these process criteria in turn had a positive effect on the group effectiveness criteria of safety.

This model may help in our understanding of why studies on performance of self-managing teams produce such ambiguous results. Maybe one answer lies in one of the basic tenets of sociotechnical theory from which self-managing teams are derived. This principle claims that organisational effectiveness will be enhanced if management designs the social and technical systems jointly in some optimum way, rather than focusing on one or the other. Self-managing team interventions tend to modify the social system to fit the technological system and do not jointly optimise both the social and technological systems. If this happened, effects on productivity might be more pronounced.

Secondly, the basic theoretical rationale for self-managing teams is that if workers are given control over a whole task, responsibility and variety, they will be more motivated to perform that task. However, the instrumental behaviours that link effort and knowledge to the performance criteria are not clearly identified. There is no linkage in self-managing groups among the design change, the motivation and knowledge change and specific criteria such as productivity. Similarly, with cohesiveness, there is an assumption underlying self-managing teams that the design will enhance cohesiveness, which will increase group performance and satisfaction. For cohesiveness to affect performance, there needs to be available visible standards, deviant behaviour must be observed, the group must induce pressure, the deviant worker must conform, and the conforming behaviour must be instrumental for performance.

These conditions are not necessarily inherent in self-managing teams. Finally, there may be ceiling effects. In many studies there has been little consideration given to optimum settings for these interventions. If technology or organisational context constrains the use of energy, skill and problem-solving activity, there will be a ceiling effect on productivity (Goodman et al, 1988).

All of these factors are clearly important in understanding the link between self-management and work performance. It is important that organisations view the changes in context and consider the congruence of all the changes being considered in the system. An essential feature of any successful change to team working will be the change process itself. It would also seem essential for organisations to focus on what is necessary to help the project over time, not just what is necessary to start up the team. Organisations need full commitment over time, not partial commitment that is not sustained. Aspects of the internal support system e.g. the reward system need to be re-calibrated over time and diffusion to other parts of the organisation is critical. New work designs need legitimisation and infrastructure to support these activities; feedback needs to evolve over time. Group designs are dynamic and need to evolve over time and so there needs to be mechanisms to feed back information on the change process (Goodman et al, 1988).

In line with this, Wood (1979) argues that the approach to organisational change should be issue-centred as this will avoid the danger of defining the situation in terms of given solutions (and hence operating with panaceas) and will treat the development and modification of objectives as an integral part of the process of organisational change and not something that can be provided once and for all, ahead and in abstract of the process. These issues will be explored in some depth in the next chapter.

1.11Conclusion

In this chapter, the focus has been on describing the background to team-working with the aim of identifying some of the job design and contextual factors key to the effective development of teams. The impact of different production practices on the nature of teams and contemporary perspectives on team working were also considered. Attention was drawn to the distinctions between different types of teams that currently exist within organisations and that are described in the literature. Different team-based systems have different characteristics and requirements; as such, it is essential to the successful

implementation and development of teams in different organisations that these distinctions are understood at an operational level.

This chapter also focused on quantifying the trend to team working in the UK, and understanding the logic behind this work design initiative in the current economic and technological climate. The benefits and problems of team working were explored and a theoretical model presented to help explain the ambiguous nature of the results on the benefits of team working. The chapter concluded with the consideration that there needs to be congruence between the systems required for the change to self-managed teams and the supporting organisational systems. These issues will be considered in some detail in the next chapter.

CHAPTER TWO

Team Development and the Organisational Change to Team Working

2.1 Introduction

An organisation's strategy outlines the organisation's goals and the means for attaining these goals. An organisation's structure is a means to help management achieve these goals. Essentially, working out the strategy and the structure is the starting point for self-managed teams. Securing an appropriate work environment is also an absolute prerequisite for developing self-managing teams in the workplace (Robbins, 1998).

However, a successful change to self-management requires more. Team members, team leaders and supporting staff have to learn how to fulfil their new roles. Individuals are used to working in traditional organisations, in which self-management is generally an unknown phenomenon (van Amelsvoort and Benders, 1996). Self-management changes the management-employee relationship significantly. Command and control give way to coaching, support, negotiation and persuasion. To achieve this new culture and style of working, organisations need to embark on a programme of adjustment, focusing on a number of key areas. This chapter considers in some detail frameworks and models depicting the implementation and development of self-managed teams and the conclusions drawn from them, and presents these as key to an increased understanding of the process and the nature of the change to team working in organisations.

The focus on change processes is extended in the second part of this chapter, with consideration of the nature and management of this change process. One factor highlighted in the previous chapter concerned the mixed nature of the research findings. One suggestion from these findings was that team working yielded less promising results than expected because of the nature of the change process itself, rather than the concept of team working per se. In the second part of this chapter, the discussion will focus on the nature of organisational change. This section will start by contrasting the linear approach with the processual approach to change, and go on to consider the scale of the change, the roles played by change agents, the context of the change and the importance of congruence between old and new organisational systems. On the basis of this literature review, a statement of the objectives of this research will be presented.

2.2 Models of Team Development

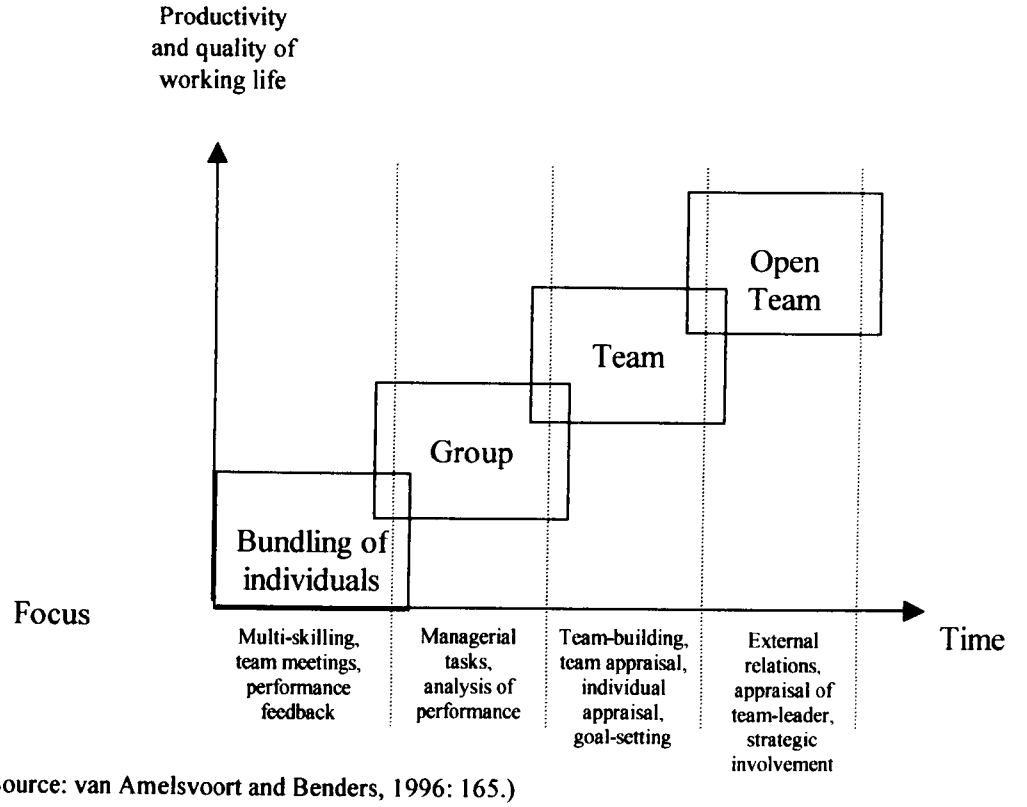
Three models of team development are described in this section. These have been selected for discussion from the numerous models presented in the literature because they provide in-depth analysis of the team development process and have a sound theoretical and empirical basis. The first model to be described is that of van Amelsvoort and Benders (1996). Their model of the process of team development is based on three core principles:

a) **From simple to complex** - over time, an increasing number of managerial tasks are integrated into the self-managing team. This is a gradual process and starts with a small number of simple tasks. As progress is made, a larger number and more complex managerial tasks can be assigned. The level of autonomy increases and team members become used to increased degrees of responsibility and accountability. Team members' confidence in their capabilities in handling their new work situation is gradually developed.

b) **From the individual to the team level** - initially, people act as individuals and the feeling of being a team member has yet to develop. In the beginning, the team leader has to approach team members as individuals. The process of empowering starts by teaching individual team members to regulate their own work processes. At a later stage of team development, team members can be assigned managerial tasks that are needed for the team.

c) **Strike a balance between employees' and organisational interests** - an effective self-managed team is oriented towards improving organisational efficacy. An important way of realising this is to ensure that team members can handle their own work processes as independently as possible and organisational constraints do not frustrate their attempts to work effectively. A high job decision latitude is an important job characteristic of the quality of working life (Karasek, 1979). From this point of view, employees' and organisational interests cannot be separated. The figure below is a graphical depiction of the team development model.

Figure 2.1 Model for developing self-managed work teams



(Source: van Amelsvoort and Benders, 1996: 165.)

As the figure illustrates there are four overlapping phases in the model and these are summarised below.

a) Phase 1: bundling of individuals

Once the technical conditions for implementing teamwork have been set, team members have to be trained to become multi-skilled workers. This enables team members to replace each other in case of absenteeism, so that the production process can proceed. Furthermore, being able to conduct a variety of tasks and provide a significant contribution to the overall production process is important in job design terms (relating to four key features of the Job Characteristics Model i.e. skill variety, task variety, task significance and autonomy). Finally, investment in their training signals to employees that things are really changing and that the change process is being taken seriously. A training matrix may be used for assessing the extent to which team members are capable of carrying out tasks and for identifying training needs.

In this first phase, team meetings are officially started and team members become involved in the change process. The team's activities in the change process are planned for the next six months and team meetings are held on a regular basis. Team members' communication

skills may need to be developed further to achieve effective meetings. During meetings, different kinds of operational problems are discussed and feedback on performance criteria (e.g. production quantity and quality, safety, housekeeping) is given to the team by the team leader. These performance criteria help the team focus on team performance.

b) Phase 2: group

The second phase focuses on integrating various organising and supporting tasks into the team, with team members becoming involved in activities such as maintenance, quality control, production planning, safety and dealing with absenteeism. Such tasks are transferred from managerial and supervisory positions to operators and it is often a difficult process, as managers and supervisors are effectively relinquishing power. Commitment to building teams faces a vital test at this point with managers and supervisors having to find new roles and perspectives. Team members need additional training and feedback on team performance is still a key issue.

c) Phase 3: team

The first two phases provide the basis for working autonomously: the emphasis shifts in this phase to working together without the direct intervention of managers. This entails solving conflicts between team members and consensual decision-making. Team building is a key issue. The appraisal of the team's results becomes the responsibility of the team itself and the team is involved in establishing performance levels, performance indicators and performance measures. In order to ensure the team's sense of responsibility with respect to its results, a variable wage component is introduced into the wage system. This is usually a small percentage of the total wages, so pressure to earn the bonus does not become detrimental to the team's functioning in terms of co-operative behaviour.

Individual behaviour and performance are discussed openly on a regular basis and the annual appraisal of a team member's functioning is done by a team member's peers and has an influence on the individual's wages.

d) Phase 4: open team

At this stage the team is involved with internal customers, external customers and partners and deals directly with clients and suppliers. The team also plays an important role in appraising the team leader and participates in the strategic issues on a company level.

Van Amelsvoort and Benders (1996) found that in the development of 267 teams in 23 organisations between 1992 and 1994, 29% of the teams had just been established, 63% of the teams were in the second phase and only 8% of the teams had entered the third phase. None of the teams had reached the fourth phase. Their research also indicated that the transition from the second phase to the third phase proved to be rather difficult and suggested a number of reasons why this may be so. Namely:

- the third phase is less concrete than the previous two and focuses on psychological group-dynamic processes. These are difficult to handle and team leaders often have little or no experience in this area. From their practical experience, van Amelsvoort and Benders (1996) also found that it was almost always the case that there were no examples from which team leaders could learn.
- traditionally, team members are selected on their technical skills rather than on their social and learning skills, but the latter are equally important for team development
- it is difficult for supervisors to transfer their tasks to shopfloor operators, breaking through the established division of labour, and
- phase 3 requires a change in reward system, which is often hard to achieve. A performance-related group reward system requires a tailor-made design and must be acceptable politically.

Van Amelsvoort and Benders (1996) also concluded from their practical experience that the length of the team development process differs considerably between organisations and may even vary within a particular organisation. They highlight a number of possible reasons for this:

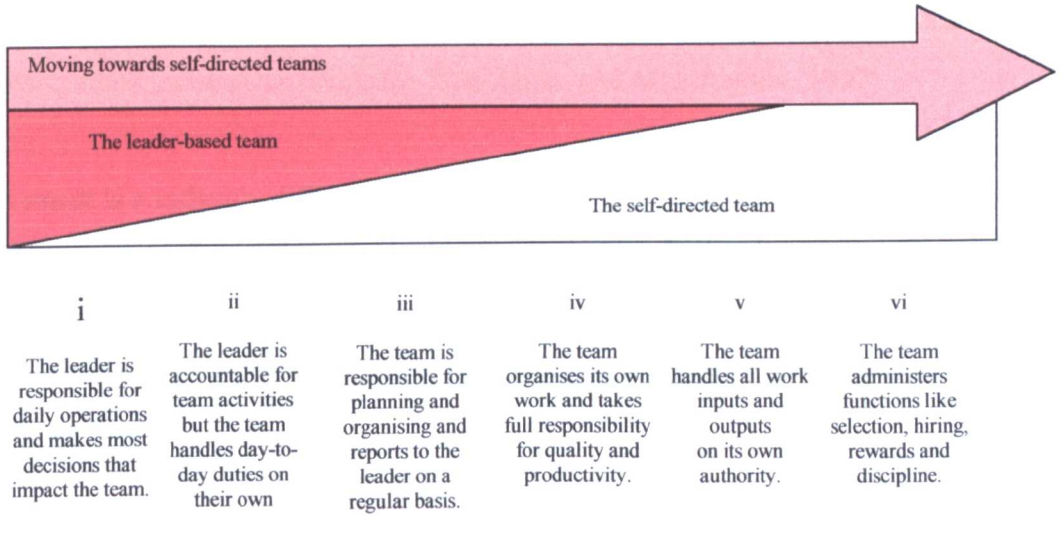
- differences in initial skill levels. Where initial skill levels are low, phase 1 lasts longer and considerable training effort is needed.
- differences in required skill levels. This is influenced by two factors, the desired level of multi-skilling and the breadth and depth of the skills to be learned. In production processes where many and "deep" skills need to be learned, extensive training programmes are required and may take up to five years.
- investment in training. Training costs may be considerable and require true commitment from management as production processes may need to be interrupted or even stopped.
- quality of internal relationships. High trust relationships help the process of change.

- varying degrees of acceptance of the new structure. In strong hierarchical cultures, there is often a lack of commitment to the new organisational form; in participative organisations, there is often more support and the process proceeds more smoothly. Sustained managerial commitment as reflected in actions is crucial to the success of the team development process

This is a very practical model, but one which has a sound theoretical basis in the concepts of, for example, the Job Characteristics Model and the Quality of Working Life literature. It also provides some analysis of the problems in the change process to team working and a practical focus on several features which appear central to the successful implementation of teams and which are described later in this chapter e.g. the organisational arrangements and human resource support systems.

Holpp (1993) also presents a very practical model, in which he describes six stages of development for teams to arrive at self-management (see Figure 2.2). In a similar vein to the previous model, Holpp (1993) takes a linear view of the team development process and focuses quite strongly on the transfer of responsibility and accountability from the leader to the team members.

Figure 2.2 Six steps to self-direction



(Source: Holpp, 1993: 65)

Holpp (1993) believes that self-directed work teams generally begin as leader-based teams, in which the leader is responsible for day-to-day activities and for making major decisions. As the teams become increasingly more established, they take on more and more

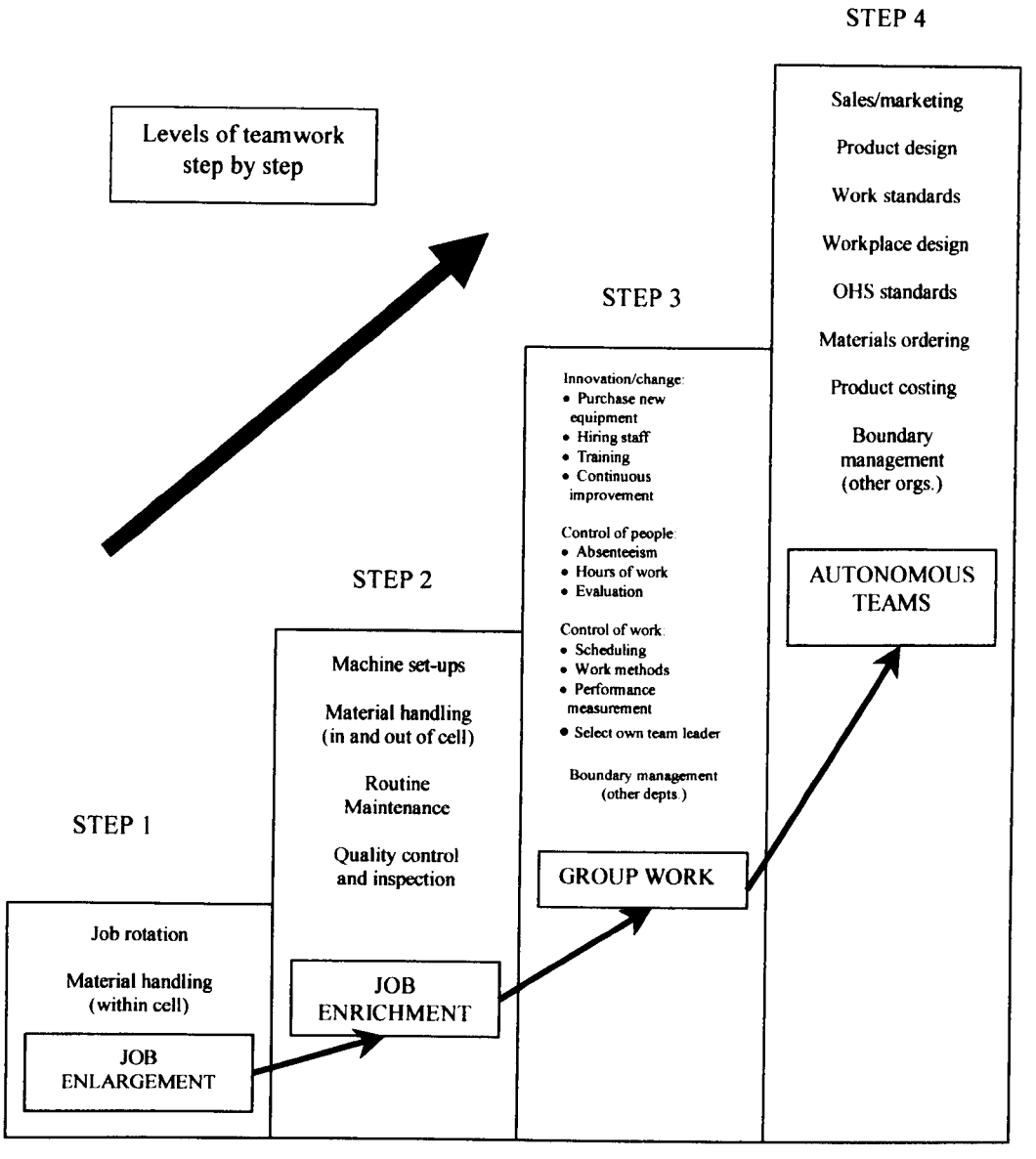
responsibilities, from handling day-to-day duties on their own, to planning and organising, for quality and productivity, until finally they perform their own selection, recruitment and disciplinary functions without the need for a formal leader.

The third model presented here comes from Badham, Couchman and McLoughlin (1997) and their work on team-based cellular manufacturing. Team-based cellular manufacturing involves grouping machines (lathes, drills, presses etc.) into groups or cells according to the particular processes and their sequence which are required to produce parts or families of parts. The technical redesign of production in this way creates the potential for the social redesign of work so that workers operating as a semi–autonomous team can perform the tasks in the cells. For this to happen, cell members need to become multi-skilled e.g. able to operate different machines and carry out maintenance tasks, and empowered e.g. able to take day-to-day operating decisions in the planning, execution and monitoring of cell operations.

In place of the traditional first-line supervisor, teams have leaders who may be elected by other team members rather than appointed by management. In addition, teams may be able to stop production as and when they see necessary to discuss work-related problems and so on. In their most advanced form, team-based cells might have considerable responsibility for interacting with their environment to the extent that they have direct contact with customers both inside and outside the organisation. Ultimately, they might operate, in effect, as mini-business units themselves (Badham, Couchman and McLoughlin, 1997).

The result is a radically different approach to designing the technical and social aspects of production from the traditional organisation and control of work proposed by the Taylorist principles of a detailed division of labour and hierarchical supervision. The various levels of team-based working said to be enabled by cellular manufacturing techniques are summarised in Figure 2.3.

Figure 2.3 Levels of teamwork in team-based cellular manufacturing



(Source: Badham, Couchman and McLoughlin, 1997: 148)

The models presented here are grounded largely in the theoretical models of work redesign described at the beginning of this thesis. The models themselves and the conclusions derived by their authors from empirical research and practical experience provide an insight into the team development process. Each of the models emphasises the gradual shift in responsibility and accountability for various production tasks and supporting activities from the team leader or supervisor to the teams themselves and the change in focus from the individual to the team.

All told, the key variables considered in these and similar models include: the initial analysis of strategic needs and corporate planning (e.g. Industrial Society, 1995); team design

(including team size e.g. Kulisch and Banner, 1993a, type of membership e.g. Piczak and Hauser, 1996, type of activities e.g. Lawler, 1992 and managerial style e.g. Manz and Sims, 1993); job and task design (e.g. Sexton, 1994); training (e.g. Wellins, 1992; Kulisch and Banner, 1993b) and rewards (e.g. Gandz, 1990).

These models also highlight some of the key issues that may prevent successful implementation of self-management. An understanding of these factors is essential, because the likelihood of failure of this work design initiative increases if the difficulties in implementing and developing teams are underestimated. Indeed, in the previous chapter, the somewhat ambiguous and rather disappointing results from the implementation of team working were noted. Empirical studies (e.g. Jurgens et al, 1993; Badham and Naschold, 1994) also indicate the transition to team-based working has not necessarily resulted in the unambiguous transfer of substantial autonomy to work teams and that team design initiatives have encountered severe implementation problems and often failed to progress beyond isolated pilot schemes.

These findings suggest there may be key factors pertinent to the successful transition to team working that are not encompassed in the existing team development models. In this context, it seems appropriate to build on the idea from the previous chapter that the disappointing results relating to team working and business performance may be associated with the change process rather than the concept of team working per se. What the factors listed above and the associated research on the team development models provide are some guiding principles to help organisations manage an effective change to team working. These factors have tended to result from the views of senior management in post hoc case studies and be rather prescriptive "how to introduce team working lists" (Whybrow and Parker, 2000: 107). However, such descriptions imply a smooth, linear process and provide a post hoc rationalisation rather than an account of the reality encountered (Buchanan and Storey, 1997).

These models do not take into account the reality of the introduction of team working which is a complex and political transition process, involving disruption to both diverse organisational structures (e.g. Badham et al, 1995) and individual belief systems (e.g. Parker et al, 1997). As Manz and Sims (1993) point out, the move to team working is a "dramatic new revolution" (p.1) and a "fundamental change from the traditional organisation" (p.5).

The transition to team working is a large-scale organisational change and the linear, step-by-step process models of change that suggest team working be imposed on organisational employees from the top (e.g. Lewin, 1951) are far from representative of this type of change process in reality. It is the argument of the next section that the change management process is crucial to the successful implementation of team-based work designs.

2.3 The Change Process

2.3.1 A Processual Framework of Change

The predominant models on the management of change remain rooted in the orthodoxy imposed by Lewin's (1951) seminal work. His classic work on intergroup dynamics and planned change has been particularly influential. Lewin (1951) argued that for change to be successfully managed it is necessary to follow three general steps: unfreezing, changing and refreezing.

The strength of this model lies in its simple representation which makes it easy to use and understand. Indeed, this theory has proven to be useful in understanding planned change under relatively stable conditions. This simplicity is also its major weakness as it presents an uni-directional model of change. With the continuing and dynamic nature of change in today's business world, it no longer makes sense to implement a planned process for freezing changed behaviours (Dawson, 1994). Implementing stability and reinforcing behaviour which conforms to a rigid set of procedures for new work arrangements does not meet the growing requirements for employee flexibility and structural adaptation to the unfolding and complex nature of ongoing change processes. Indeed, the linearity which this three-stage model suggests is not supported by the empirical evidence on the introduction of new technologies and management techniques (Dawson, 1997). In addition, this approach adopts a normative framework and assumes there is one best way to manage change that will increase both organisational effectiveness and employees' well-being.

In today's dynamic business environment, revision of implementation strategies to overcome or tackle unforeseen contextual difficulties in managing large-scale change is often needed. Organisational change is a complex process which is influenced by powerful coalitions within organisations and the history and the context in which the change is taking place (Dawson, 1997). One approach that adopts the view that change should not be treated as a series of linear events is the processual framework (Dawson, 1994). This approach suggests

that expected outcomes detailed in initial plans may need revising and modifying as a result of the ongoing interplay between the substance, politics, and context of change. These three main groups of determinants form part of a less prescriptive and more analytical processual approach to understanding organisational change.

The substance of change refers to the type of change (whether new technology or management technique), scale of change (whether incremental or radical transformation) and defining characteristics of the change initiative (content rather than labels). For example, do the changes require a transformation in plant/divisional and/or corporate level operations, and to what extent do the characteristics of the change programme (such as in the case of just-in-time production systems) enable or constrain the development of new forms of work organisation?

The politics of change is used to refer to the process by which certain well-placed individuals, groups or powerful coalitions can influence decision-making and agenda setting at critical junctures during the process of organisational change. An understanding of organisational politics should be central to any approaches which seek to explain the process of managing transition. For example, variations in commitment can significantly influence the successful management of change (Guth and MacMillan, 1989), particularly where differing vested interests between management levels and functions do not align with strategic objectives (Wilkinson, 1983). The findings from Dawson's (1994) research on new technology (following on from Boddy and Buchanan, 1986; and Clark et al, 1988) illustrate how the effects of technology on work organisation are dependent not only on the objectives, assumptions and values of those who make decisions about its use in organisations but also on processes of social choice and political negotiation between organisational factions during the implementation of new operating systems. As such, a critical task in the introduction of new technology is the design by organisational practitioners of implementation strategies (McLoughlin et al, 1995) and the mobilisation of certain key occupational groups may be an essential prerequisite to the successful management of change (e.g. Weir and Mills, 1973). Similar findings may be expected in the implementation of self-managed team working.

Finally, the context of change is taken to refer to factors within the external environment and those internal to the organisation, such as administrative structures, technology, history and

culture and the product or service of the organisation. It is claimed that a historical perspective on both the internal and external organisational context is central to understanding the opportunities, constraints and organisationally defined routes to change (Kelly and Amburgey, 1991). The co-existence of a number of competing histories of change can significantly shape the process and outcomes of ongoing change programmes. In this sense, the contextual and historical dimension can both promote certain options and devalue others during the process of organisational change.

By combining these three dimensions it is possible to engage in a processual analysis of the implementation of new forms of work organisations. Dawson (1997) found that these three groups of determinants all acted to shape the process and outcomes of several collaborative projects in work re-organisation. The processual framework also identifies three general timeframes associated with organisational transitions, namely:

- conception of a need to change
- process of organisational transition
- operation of work practices and procedures.

This framework incorporates the temporal element of large-scale change by commencing with a period which is defined as the conception of a need to change and ending with a post-transitional period of operation, in which emerging organisational arrangements and patterns of working relationships are further refined and developed during ongoing processes of change. In practice, it is difficult to identify the start of or completion of a major change programme, but it is useful for analytical purposes to identify periods of initial awareness (conception of the need to change) and periods when organisational resources are withdrawn from the management of particular change programmes and the new organisational arrangements form part of daily work routines (operation of new work practices and procedures).

In between these two periods lie the complex non-linear processes of change which may comprise a range of different activities and events. Dawson (1994) notes that whilst it may prove useful to identify and group a number of activities, tasks and decision-making processes these should not be treated as representing a series of sequential stages in the process of change (as with conventional stage models). The approach taken in the

processual framework is that organisations undergoing transition should be studied "as-it-happens" (Dawson, 1994: 4) so that processes associated with the change can reveal themselves over time and in context.

In some areas, these activities, tasks and events may result from the plans and preparations of management, in other areas decisions may result from the views, expectations and demands of certain employee groups or their representatives. In addition, certain individuals may act as major facilitators or inhibitors of change and prove instrumental to the success or failure of change programmes. In the process of managing change an organisation may move back and forth between various tasks and activities, and straddle the general time frames associated with conception, transition and operation (Dawson, 1994).

This temporal framework of change can also be used to accommodate the existence of a number of competing histories on the process of organisational transition (these organisational histories may be further refined, replaced and developed over time). The dominant or "official version" of change may often reflect the political positioning of certain key individuals or groups within an organisation, rather than serving as a true representation of the practice of transition management. They may also act to shape, constrain and promote the direction and content of future change programmes and as such warrant examination under this approach (Dawson, 1994).

In this research, this framework will be used to analyse the process and outcomes of managing the large-scale organisational change to team working. The team development models presented earlier suggested a somewhat linear, step-by-step process of change. According to the processual approach, transitional phases in this change process are unlikely to occur in a neat linear fashion, but rather may overlap, occur simultaneously, stop and start, and be part of the initial and later phases of major change programmes. This research will explore team development in the context of this processual approach.

In the next section of this chapter, processual themes important in team development will be considered in more detail. Firstly, the substance of change, in this case the transition to self-managed team working, will be considered, along with the scale of change and whether this is an incremental or radical transformation. The second area of focus will be the politics of change and the process by which certain well-placed individuals, groups or powerful

coalitions can influence decision-making and agenda setting at critical junctures during the process of organisational change. Change agent and operational roles will also be considered in this context. Finally, there will be some discussion about the internal context of the change, such as the organisational arrangements and administrative systems.

2.3.2 The Scale of Change: Incremental versus Radical

Traditional assumptions about change have been based on the concept of incremental, cumulative change. Advocates of the incremental model see change as being a process whereby individual parts of an organisation deal incrementally and separately with one problem and one goal at a time. By managers responding to pressures in their local internal and external environments in this way, over time, their organisations become transformed (Burnes, 2000). As Pettigrew et al (1992) note "The received wisdom therefore is that change will take place through successive, limited and negotiated shifts" (p. 14).

There has been considerable support for the incrementalist perspective (e.g. Quinn, 1980, 1982) and in recent years the pre-eminent exemplars of incremental change have been the Japanese companies (Hamel and Prahalad, 1989). Dunphy and Stace (1992) believe this approach avoids both the stagnation engendered by fine tuning and the brutality associated with rapid corporate transformations. However, as Mintzberg (1978) argues both incremental and radical change are apparent in organisations as they tend to undergo long periods of incremental change, interspersed with brief periods of revolutionary change.

Gersick (1991) builds on this concept and proposes the punctuated equilibrium paradigm as a challenge to the more traditional incremental assumptions about how change works. This paradigm proposes that fundamental change cannot be accomplished piecemeal, slowly, gradually and comfortably and conceptualises change as an alternation between long periods when stable infrastructures permit only incremental adaptations, and brief periods of revolutionary upheaval. This new way of thinking has far-reaching implications for organisational practice and theory about when and how change occurs and how it can be managed. More important, it offers some promising conceptual tools for understanding the issues facing organisations in an environment where incremental adaptation increasingly appears to be unequal to the economic, social and ecological dislocations taking place (Loye and Eisler, 1987).

The punctuated equilibrium model is based on the idea that relatively long periods of stability (equilibrium) are punctuated by compact periods of qualitative, metamorphic change (revolution). The interrelationship of these two modes is explained through the construct of a highly durable underlying order or deep structure. This deep structure is what persists and limits change during equilibrium periods, and it is what disassembles, reconfigures, and enforces wholesale transformation during revolutionary punctuations (Gersick, 1991).

Deep structure is the set of fundamental choices a system has made of (1) the basic parts into which its units will be organised and (2) the basic activity patterns that will maintain its existence. Deep structures are highly stable for two general reasons. Firstly, the trail of choices made by a system rules out many options, at the same time as it rules in mutually contingent options. Secondly, the activity patterns of a system's deep structure reinforce the system as a whole through mutual feedback loops. Tushman and Romanelli (1985) describe five kinds of structural and performance choices that make up organisations' deep structures (1) core beliefs and values regarding the organisation, its employees and its environment (2) products, markets, technology and competitive timing (3) the distribution of power (4) the organisation's structure and (5) the nature, type and pervasiveness of control systems.

Within equilibrium periods, the system's basic organisation and activity patterns stay the same. The equilibrium period consists of maintaining and carrying out these choices. Systems make adjustments that preserve the deep structure against internal and external perturbations, and move incrementally along paths built into the deep structure. Pursuit of stable deep structure choices may result in behaviour that is turbulent on the surface. Tushman and Romanelli (1985) describe the refinements and incremental steps human systems take during equilibrium periods as they work to achieve goals built into their deep structures. These authors believe these convergent periods are " ... relatively long time spans of incremental change and adaptation which elaborate structure, systems, controls, and resources toward increased coalignment, [which] may or may not be associated with effective performance (pp. 173). [They are] characterised by duration, strategic orientation, [and] turbulence ..... (pp. 170). During [these] periods ... inertia increases and competitive vigilance decreases; structure frequently drives strategy" (pp.215).

One of the major questions generated by the punctuated equilibrium paradigm concerns the

inertia that maintains a system's equilibrium. Tushman and Romanelli (1985) discuss three barriers to radical change in human systems: cognition, motivation and obligation. Limits on the awareness of alternatives constrain change in behaviour (Simon, 1976). Motivational barriers to system change are based on wishes to avoid losing opportunities, losing power struggles, failing at more difficult tasks or losing control over one's situation if the equilibrium ends (Gersick, 1991). Tushman and Romanelli (1985) discuss the inertial constraints of obligations among stakeholders inside and outside a system. They suggest that even if a system overcomes its own cognitive and motivational barriers against realising a need for change, the "networks of interdependent resource relationships and value commitments" generated by its structure often prevent its being able to change (1985: 177).

Another explanation for the stability of equilibrium periods is that systems benefit from this kind of persistence. These benefits have to do with the ability to pursue goals and accomplish work. The practices built into systems prescribe the methods to use and promises that certain questions will ultimately reward pursuit and this is why managers, task groups and organisations respond to obstacles by inventing ways to persist with their goals, not by changing their basic direction. Tushman and Romanelli (1985) define equilibria as periods during which organisations become more internally consistent and suggest that "selection processes favor ... organisations whose strategic orientations are consistent with internal and external environmental demands" (pp. 195). When the environment is reasonably stable, organisations that maintain equilibrium should become more and more thoroughly adapted to carry out their missions. By sticking to a course, a system can become skilled at what it does (Gersick, 1991).

The third major component of the punctuated equilibrium paradigm is the revolutionary period. Revolutions are relatively brief periods when a system's deep structure comes apart, leaving it in disarray until the period ends, with the choices around which a new deep structure forms. Revolutionary outcomes, based on interactions of systems' historical resources with current events, are not predictable; they may or may not leave a system better off. Revolutions vary in magnitude (Gersick, 1991). In Tushman and Romanelli's (1985) terms " .. reorientations are relatively short periods of discontinuous change where strategies, power, structure, and systems are fundamentally transformed toward a new basis of alignment (pp. 173). Recreations are reorientations that also involve discontinuous change in core values which govern decision premises ... [They are] the most radical form

of reorientation (pp. 179). During reorientations, organisation inertia decreases, competitive vigilance increases; strategy drives structure" (pp. 215).

This discussion about the punctuated equilibrium paradigm explains why proponents of this model do not believe that incremental changes in a system's parts would alter the whole. As long as the deep structure is intact, it generates a strong inertia, first to prevent the system from generating alternatives outside its own boundaries, then to pull any deviations that do occur back into line. According to this logic, the deep structure must first be dismantled, leaving the system temporarily disorganised, in order for any fundamental changes to be accomplished. Next, a subset of the system's old pieces, along with some new pieces, can be put back together into a new configuration, which operates according to a new set of rules.

According to the punctuational paradigm when basic premises change, all of the premises contingent on them are affected. This idea contradicts the gradualist view of systems as never moving (or having to move) very far from their status quo during any one step. Systems in transition periods undergo, first, a breakdown of the old equilibrium and a period of uncertainty about the future, before choosing a new basis around which to crystallise a new deep structure.

Tushman and Romanelli (1985) consider that revolutions occur because of the same features of deep-structured systems that generate inertia; the mutual interdependence of their parts and action patterns and the fact that deep structures determine how systems obtain resources from the environment. These features open systems' deep structures to two basic sources of disruption: (1) internal changes that pull parts and actions out of alignment with each other or the environment and (2) environmental changes that threaten the system's ability to obtain resources. For example, from an internal perspective, an organisation's growth strains its existing structures and practices (Tushman and Romanelli, 1985). The external perspective presents a less orderly source of change and Tushman and Romanelli (1985) provide a picture of shifts that can make organisation's strategic orientation inappropriate for their environments, including (foreseeable) maturation in product life cycles and (unforeseeable) changes in the legal and social climate, or the invention of substitute products and/or technologies. Such internal or external shifts do not, by themselves, cause revolutionary change; they only create the need.

Revolutions themselves seem to require decisive breaks in systems' inertia. One way in which the inertia of the equilibrium period can be broken is by "performance pressures ... whether anticipated or actual" (Tushman and Romanelli, 1985: 1979). Tushman, Newman and Romanelli (1986) describe as typical the scenario of an organisation falling into serious trouble before responding by replacing its top management. They found that externally recruited executives are more than three times more likely to initiate frame-breaking change than existing executive teams. The newcomer has the opportunity to see the system in an entirely different context than incumbent members and has the explicit task of breaking the old deep structure and establishing a new one. Tushman and Romanelli (1985) stress the importance of organisational leaders in managing reorientations.

During equilibrium periods, organisational systems may make incremental changes because members want to try something new. During revolutionary change system members are no longer directed by their old deep structures and do not yet have future directions. As such, they may experience uncertainty, often accompanied by powerful feelings. For example, Tushman et al (1986) described organisational reorientations as inescapably risky and painful to participants, yet potentially exhilarating too. This emotion often plays an important motivational role in the transition. Tushman et al (1986) also noted that without an adequate combination of urgency and optimism organisational systems at transition points may cling to old patterns, even while they recognise the need to change, or they may simply quit. Eisenhardt's (1989) research, showing the importance of a trusted advisor in helping organisations make major decisions fast and effectively, suggests transitional figures may also be critical in organisational reorientations where top executives remain in place.

Articulation of a new vision is central to organisational reorientation (Tushman and Romanelli, 1985). The sheer urgency and discomfort of being without a functioning structure lend intensity to the search for new solutions. As Tushman et al (1986) point out, an organisation in transition is unstable on a number of fronts. If a new order does not take control relatively quickly, numerous vested interests may pull it toward its old structure; transition periods may end quickly by default.

A few case histories have supported the idea that fundamental transformations occur according to the patterns predicted by the model. For example, Tushman, Newman and Romanelli (1986) examined the life histories of four organisations, AT&T, General Radio,

Citibank and Prime Computers, and described a progression of equilibrium periods during which organisational systems, structures and strategies were consistently reinforced toward increasing coherence with the organisation's basic missions. The equilibrium periods were punctuated by very brief periods of intensive and pervasive change, culminating in the formulation of new missions and the initiation of new equilibrium periods. Bartunek (1984) described repeated failures of a religious order to accomplish fundamental transformation until both the structure and the interpretive schemes of the organisation were rapidly and dramatically revised. Other studies have explored some of the correlates and consequences of revolutionary transformation. For example, Miller and Friesen (1984) showed that organisations that radically and quickly altered their formal structures, decision-making routines and information-processing devices performed better over their lives than organisations that changed gradually or incrementally.

As Gersick (1991) noted, punctuated equilibrium theorists typically contrast their prediction of discontinuous and pervasive transformation with a view of nonrevolutionary, or gradual, incremental transformation. For example, Miller and Friesen, following Cyert and March (1963), characterised the nonrevolutionary view as depicting "individual subunits of organisations dealing incrementally and disjointedly with one problem and one goal at a time while emphasising short-run reaction to short-run feedback" (1984:222). Non revolutionary views of organisational transformation thus emphasise the relative independence of organisational subunits as managers seek to adapt to changes in their local internal and external environments. Over time, as subunits repeatedly alter their goals and relationships to local environments, the organisation as a whole becomes transformed.

Punctuated equilibrium theorists, by contrast, stress the interdependence of organisational subunits. Following Mintzberg (1979), Miller and Friesen (1984) argued that organisations must be constructed so as to ensure a complementary alignment among structural variables. Tushman and Romanelli (1985) concluded that organisations develop "webs of interdependent relationships with buyers, suppliers and financial backers .... and patterns of culture, norms and ideology" (pp. 177) that legally and normatively constrain organisations to an ongoing commitment to established activities and relationships. Gersick (1991) described organisational deep structure as a system of interrelated organisational parts that is maintained by mutual dependencies among the parts and with competitive, regulatory and technological systems outside the organisation that reinforce the legitimacy of managerial

choices that produced the parts. According to this view, the result of interdependence is not cascading adaptation over related organisational subunits, but rather resistance to change as subunit managers seek to maintain a complex network of commitments and relationships.

Resistance to change is critical to punctuated equilibrium theory in that it establishes the key condition that supports revolutionary transformation as the principal means by which organisations can accomplish transformation. Resistance to change prevents small changes in organisational subunits from taking hold or substantially influencing activities in related subunits. As such, small changes in individual domains of organisational activity will not accumulate incrementally to yield a fundamental transformation.

Results of empirical research by Romanelli and Tushman (1994) demonstrate that revolutionary transformation, as predicted by the punctuated equilibrium model, is a principal means by which organisations fundamentally alter their strategies, systems, and structures. They found no evidence in their research to support the argument that very small changes accumulated over longer periods accomplish fundamental transformation. Their results support a key argument of punctuated equilibrium theory regarding the likely inability of organisations to instigate or conclude a fundamental transformation via incremental or gradual changes in organisational characteristics.

If these arguments are considered in the context of the change to team working, which is essentially a fundamental transformation altering an organisation's strategies, structures and systems, then the hypothesis must be that organisations will be more successful in effecting this transition through a radical rather than incremental process. The methodological implications emphasise the collection of documentary histories over long time periods.

2.3.3 The Politics of the Change

In this section, the internal politics of the change process will be considered, along with the roles of the change agents and operational personnel.

2.3.3.1 The Political Perspective on the Change to Team-Working

Models describing the team development process typically underplay or do not look at the complexity of the change from a political perspective. Indeed, Perrow (1983) notes that sociotechnical theory has tended to underestimate the political dimensions of the design and

implementation of sociotechnical systems and that there has been little concern to investigate the role of local and internal political processes which serve to configure the implementation and final outcomes of change. Badham, Couchman and McLouglin (1997) also comment that there has not been a focus on the systematic identification of the full political, organisational and technical roles of the people responsible for the range of actions needed to design, implement, run, defend and develop new sociotechnical configurations.

According to Badham, Couchman and McLoughlin (1997), the change to team working is inherently vulnerable given the complex and novel nature of this work redesign initiative in seeking to accomplish both technical and social change. These authors go on to say that understanding the process of this change within organisations and how it can be managed, in particular its micro-political dimensions and characteristics, is important as such projects are likely to encounter difficult people issues and controversial politics.

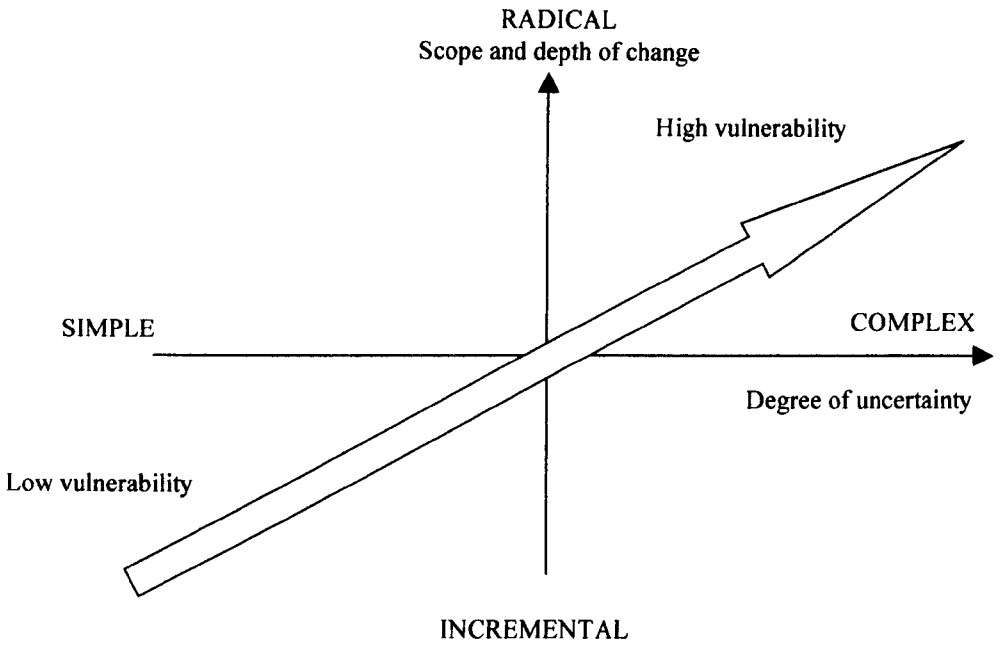
In using the term vulnerable, Badham, Couchman and McLoughlin (1997) are distinguishing two sets of conditions that make projects subject to organisational disruption and consequently failure: their degree of complexity and how radical they are. These are two key features of team-based work redesign programmes.

With complex projects, in contrast to more routine mechanistic types of change, there is a large degree of uncertainty about what is to be done and how to do it. Objectives are less clear, resource requirements not so well known, activities more often redirected and schedules reorganised. As McCalman and Paton (1992) observe, in such conditions it is more difficult to achieve the shared perception of the project's goals and keep the necessary commitment to provide a solution. More time and effort has to be spent ensuring effective communication, addressing people's perceptions, encouraging flexibility and generating and regenerating involvement in the face of new problems, setbacks and opportunities.

With radical change, problems arise from the degree to which organisational actors, culture and structure have to be transformed for the project to succeed. The radical nature of such projects is derived from two elements: the degree to which the change is central to the organisation's strategy and survival and involves modifications throughout the organisation (breadth) and the degree to which these modifications are a radical departure from existing ways of doing things (depth). The more major the project in these two senses, the more

politically controversial it is likely to be since the activities and interests of a wide range of different groups may be fundamentally threatened.

Figure 2.4 Degrees of vulnerability in change projects



(Source: Badham, Couchman and McLoughlin, 1997: 151)

The radical nature of sociotechnical projects derives from their attempt to transform both vertical and horizontal structures in the organisation. For instance, the creation of self-managing work teams involves cutting across traditional semi-skilled work boundaries and direct semi-skilled and indirect skilled demarcations. The complementary design of interdependent technical (e.g. cells) and organisational (e.g. teams) structures imposes greater demands for co-operation between industrial engineers and human resource personnel, ergonomists or human factors engineers and systems designers, and design engineering and manufacturing engineering. The self-managing nature of teams involves not only transforming line management, as supervisors become coaches to self-supervising teams, but also reverses the traditional relationship between direct production and indirect support departments. As engineering, accounting and personnel functions are devolved to the teams, indirect departments move into more supportive relationships.

The introduction of such projects therefore requires clear links with corporate strategy as senior management's commitment is crucial in overcoming opposition and securing the

levels of investment required. It also involves considerable changes in the skills, attitudes and activities of personnel at all levels. Direct labourers become responsible for far broader aspects of their work, line managers become concerned with system development and strategic issues and traditional specialists (e.g. industrial engineers, human resource specialists and accountants) are required to work more in interdisciplinary and interdepartmental teams, often in greater contact with direct production operations. Indeed, for Brandon (1993) it is this necessity for interdisciplinary collaboration that makes such strategic changes inherently vulnerable to the withdrawal of much needed support by different functional groups.

The complexity of such projects also increases their vulnerability. There are a considerable number of unknowns involved in their introduction. To take an example, in creating new forms of teamwork, both management and the workforce have to overcome traditional distrusts in order to offer rewards on the one hand and commitment on the other. Yet there are inevitable uncertainties about how the other side will behave and how far the final result will be either productive for the firm or rewarding for the employees.

In sum, by their nature, sociotechnical projects tend to cut across horizontal and vertical boundaries within organisations and impinge on the interests of a broad range of stakeholders who may perceive a variety of threats and opportunities. More than projects which focus mainly on the technical dimensions of change, sociotechnical projects may be characterised by political negotiations, alliances and compromises. As such, they are particularly vulnerable to organisational disturbances and micro-political disruptions. In such circumstances, the final nature of implemented change and its impact on productivity, working conditions and so on will be crucially influenced by how conflicts and compromises are managed and resolved during the change process.

This draws attention to the high level of configurational activity required to adapt general models of team work to particular production and organisational environments of a specific enterprise (Badham, Couchman and McLoughlin, 1997). Moreover, this activity can impose severe strains on project teams as apparently clear general directives become bogged down in a myriad of details and compromises. In the organisational sphere teams are expected to take on more responsibility and be trained to do so, yet how much responsibility, the speed of introduction, the time and facilities available for training, the educational and cultural

content of the training etc. are all far less clear. Decisions in all these areas require considerable investigation, thought and effort to ensure that generic sociotechnical ideas are effectively adapted to the specific demands of the organisation. The uncertainty, frustration and potential for sabotage involved in the lengthy processes of resolving such issues is a further factor which considerably increases such projects' vulnerability.

As such, a more direct focus on such issues as the nature and dynamics of the change process and the micropolitical dimensions and characteristics of the change to team working is essential. The organisational outcomes of change are not only bound by both internal and external context but also uniquely shaped by local social choice and political negotiation within the adopting organisation (e.g. Buchanan and Boddy, 1983 and Dawson, 1994). This social and political activity has a crucial influence on outcome variables such as productivity and the quality of working life.

2.3.3.2 Change Agents

This spotlight on the difficult people issues and controversial politics in the change process also establishes a more direct focus on change agent activities. Indeed, there is now a growing literature on the role of the change agent in dealing with the people issues in running organisational change projects (Frame, 1994). For some this involves supplementing a harder technically-oriented approach to the management of complex projects with a softer people centred approach using established organisational development methods (McCalman and Paton, 1992). For others, it means going beyond traditional technical project management and organisational development methods and developing the political backstage skills and techniques of the change agent (Boddy and Buchanan, 1992). A common theme in all such accounts is the difficulty of dealing with the people issues in these complex, uncertain, soft or vulnerable change projects.

What Badham, Couchman and McLoughlin (1997) refer to as configurational intrapreneurs are a crucial feature of the configurational process model in the production and maintenance of new work designs, such as team working. Configurational intrapreneurs play the key role of organisational champions, establishing and operating new configurations, managing their boundaries, as well as ensuring their survival and guiding their development. Organisational actors playing this role might included relevant line managers, manufacturing engineers, human resource managers and senior executives. The term intrapreneur is used here to

emphasise the internal organisational role played by such actors. However, their scope should not necessarily be reduced solely to such an internal role as it may involve crucial interventions in inter-organisational relations and in the activities of other organisations. The term also directs attention onto the active, uncertain and risky process of ensuring that production processes run smoothly, continue to receive support and are allocated the resources necessary for their further development. Such actors manipulate both technical and social elements, and overcome obstacles in both areas in order to design and implement working technical systems. They include both the workplace change drivers and higher level initiators and sponsors of change (Buchanan and Storey, 1997).

According to the processual perspective of change (e.g. Dawson, 1994), the change process requires interlocking contributions of a multiplicity of such change drivers. The actions of different groups and individuals in the organisation might not be consistent, or indeed supportive of each other, over time. The reality of the process of change is therefore iterative, with much back tracking (Buchanan and Storey, 1997) and the behaviour of the change drivers throughout the change process is important in shaping both the process and its outcomes. Buchanan and Storey (1997) argue that in a change process drivers of change do not slot into predefined roles, but rather are likely to adopt a plurality of roles. Indeed, individuals take up and switch roles depending on their perception of needs, personal competencies, the position of other individuals and personal self-interest. According to these authors, this role adoption and role switching represents an accomplished and contingent selection of behaviours designed to achieve particular aims in an evolving and uncertain context. The manner in which organisational events then unfold may be explained in part by role taking and switching, and on the differential levels of competence with which interlocking change drivers conduct themselves in the organisational change process.

All told, these principles emphasise the move away from prescriptive step-by-step inventories and towards describing the roles and change management responsibilities that facilitate the change process. The suggestion is that introducing change is not the responsibility of one multi-talented individual. Different stakeholders adopt change-driving roles, which can overlap and vary throughout the change process. Different individuals, or groups of individuals, may be expected to play different roles, contributing to the process in discrete overlapping, identifiable and potentially conflicting ways, at different times throughout the change process. Particular individuals, by virtue of their position in the

organisation, their relationship to the changes in hand, and the nature of their potential contribution, may be expected to assume multiple roles throughout the change. Buchanan and Storey (1997) describe the change process as having multiple actors, multiple drivers and multiple phases.

After reviewing different models and roles involved in change processes, Buchanan and Storey (1997) suggest that drivers of change (individual stakeholders or groups of stakeholders) could be expected to function in the following six roles:

- visionary, catalyst, "mover and shaker"- this role is primarily one of giving direction, inspiration and support, and is traditionally seen as the domain of the chief executive, or one in similar position (Williams, Dobson and Walters, 1993)
- analyst, compelling case-builder, risk assessor - this role involves assessing the value of the vision in the organisation
- team-builder, coalition former, ally seeker - this role involves political activity, bringing groups together and communicating about team working developments to prevent uncertainty, suspicion, rumours, and worry about e.g. pay, conditions, leadership etc.
- implementation planner, action driver, deliverer - this role involves planning the times of workshops and meetings etc., setting the agenda, and ensuring the date, time etc. are communicated
- fixer, facilitator, wheeler-dealer, power-broker – this role involves helping others to change and learn throughout the change process (Williams et al., 1993)
- reviewer, critic, progress chaser, auditor – this role involves feeding information back to the stakeholders and holding the threads of team-based working together.

Such an approach does not suggest a top-down change process. The change management roles and responsibilities outlined above could be played by individuals at any organisational level. The temporal order of the roles and responsibilities is similarly not prescribed, thus there could, for example, be many different stages throughout the process where visioning is appropriate at different organisational levels. The flexibility of such a framework is consistent with the iterative, complex and political nature of change processes as noted by researchers above (e.g. Badham et al, 1995). Thus, Buchanan and Storey's (1997) framework of change roles appears to offer some insight into how the change process might be facilitated without imposing linearity on the process or being prescriptive.

In this context, the focus is on the different change driver roles that may be adopted by the different stakeholders and groups of stakeholders throughout the implementation of self-managing work teams.

2.3.3.3 Operational Roles

Alongside the change-driving roles adopted during the transition process, organisational members continue to play their day-to-day operational roles. The nature of these operational roles and the impact of the change to self-management on them are considered below.

a) Managers and Supervisors

In the organisational change process, the commitment to the philosophy of empowerment and to the change itself by all levels of management has a direct influence on the success of the implementation and team performance. For example, Manz and Angle (1993) describe an insurance company in which service teams were introduced to disempower employees and to increase management control. The Chief Executive Officer saw the potential for teams to provide peer pressure and points of leverage for increasing his control of employees. This directly contradicts the philosophy of empowerment and destroyed the potential for self-managed teams, but demonstrates the influence of management on the implementation and development of teams.

In fact, one of the biggest obstacles to the success of self-managed teams is what Manz, Keating and Donnellon (1990) call the middle management brick wall. Success or failure is often determined before the teams are put in place as managers and supervisors find it difficult to prepare themselves to conduct business without traditional management and move themselves beyond managing and supervising to facilitating and leading. These findings were confirmed by the Industrial Society (1995) survey described in detail earlier. The results of this survey indicated that the biggest difficulty in implementing self-managed teams was the senior management in organisations.

Indeed, it is increasingly being recognised that it is managers and supervisors not employees who offer greatest resistance to the redesign of the organisation from a traditional to a high involvement structure. Even when their job security isn't threatened, managers and supervisors still face the challenge of defining new roles for themselves when employees are

striving for maximum autonomy. Schilder (1992) describes several companies which have introduced team-working successfully and notes that a critical aspect on which the management teams in Northern Telecom, Steelcase and Johnsonville Foods all agree is that self-directed work teams need senior management commitment to succeed.

The decision to adopt teams and to move towards doing business without traditional managers and supervisors requires the existing people at this level within the organisation to make significant adjustments. Middle managers have always handled two main jobs: supervising people, and gathering, processing and transmitting information. Work designs based on self-management tend to give workers a high degree of autonomy and control over their immediate behaviour. Typically, the workers are organised into teams on the basis of relatively complete task functions. They make decisions on a wide range of issues, often including such traditional management and supervisory prerogatives as scheduling work, deciding who will work on what machine or work operation, how to address interpersonal difficulties within the group, how to resolve quality problems and even administering pay and vacations. Passing of power and control to lower levels in the organisation can be an intimidating process for both managers and supervisors, stemming largely from their own sense of loss of status and power.

At the same time, the ever-expanding power and dwindling cost of computers have transformed information handling from a difficult, time-consuming job to a far easier and quicker one. In an instant, the middle manager's traditional functions have vaporised. The new role of managers and supervisors with the introduction of self-management is associated not with directing people, but with facilitating, advising and developing.

The extreme of the traditional approach is for managers to control and instruct the people who work for them. Although few managers will operate as restrictively as this in practice, sacrificing the command element of their job may still be a major challenge for them. Managers will need training for the new approach. The behaviour and actions of the managers will set the tone for the introduction of self-managing teams and largely determine the chances of success. Unwillingness to let go, reverting to a blaming culture, taking back control at the first sign of difficulties, will all send unmistakable signals to colleagues (Manz, Keating and Donnellon, 1990).

The introduction of self-managing teams amounts to a major culture change and a key issue

is whether senior management is actually prepared to release authority and responsibility in the way that self-management demands. Some of these changes to the management roles are described in the following table.

Figure 2.5 Types of manager

Old Manager	New Manager
❖ Thinks of self as a manager or boss	❖ Thinks of self as a sponsor, team leader, facilitator or internal consultant
❖ Follows the chain of command	❖ Deals with anyone necessary to get the job done
❖ Works within a set organisational structure	❖ Changes organisational structure in response to market changes
❖ Makes most decisions alone	❖ Invites others to join in decision-making
❖ Hoards information	❖ Shares information
❖ Tries to master one major discipline, such as marketing or finance	❖ Tries to master a broad array of managerial disciplines
❖ Demands long hours	❖ Demands results

(adapted from Dumaine, 1993)

In her examination of factors predicting team orientation within organisations, Russ-Eft (1993) found that one of the most important predictors was relationships within organisation-wide management. This factor included such items as: management treats people fairly, management keeps everyone informed, management keeps informed about how employees feel, management helps people develop their skills. This study emphasised the critical role the immediate manager or supervisor plays in the transition from the traditional organisation to the team-orientated organisation.

In a study of over 60 work groups involved in quality of work life projects in seven organisations, Trist and Dwyer (1982) found that managers had allowed almost all of the projects to die out despite the impressive results that had been achieved. In many of the projects, employees perceived their supervisors as not just disinterested, but negative toward the quality of work life activities. Managers felt that they were caught in a bind and that two sets of objectives that could not be satisfied simultaneously were being communicated to them from their superiors: (i) get the work groups functioning; (ii) maintain performance levels. They also felt that they were receiving neither the moral nor the resource support to address effectively this new set of demands. Specifically, management were perceived as: unwilling to change roles or policies that inhibited the more autonomous functioning of

groups, slow to respond to suggestions, not directly involved enough in monitoring the process and helping to solve problems, unclear on their roles in the new system, insufficiently communicative with other groups, poorly trained in group process facilitation and conflict management, and generally "going along with the program" instead of actively trying to make it work.

When Trist and Dwyer (1982) shared these data with the corporate managers involved, they were inclined to accept these data at least to some degree. They commented that such a long-range strategic undertaking requiring a large investment of management time and energy and a large investment in the training and development of the workforce was a daunting prospect. It put a strain on other priorities and managers alike, especially as the current systems of management practice had stood the test of time and both sides knew where they stood.

In addition to these more general managerial roles and responsibilities, leading self-managed employees calls for new perspectives and strategies which may not come naturally to those involved (Manz, Keating and Donnellon, 1990). Traditional assumptions about power, authority and influence are challenged with the introduction of self-management in which the emphasis is on participative management and teams managing and leading themselves.

The above findings suggest that the effectiveness of high-involvement organisations is affected by the managers' and supervisors' operational contributions to the implementation and maintenance of the change process. Indeed, some researchers (e.g. Manz, Keating and Donnellon, 1990) suggest that the conversion to self-managed teams is as dependent on managerial and supervisory attitude and behaviour change as it is on the development of teams. These authors found that traditional managers and supervisors recognised the need to change, but they did not know what new behaviours were expected nor if they could successfully learn and apply these new skills. Managers experienced a perceived loss of power and control as they realised that their subordinates were to become their own managers, and that their repertoire of management skills developed over years of experience and struggle were becoming somewhat obsolete. Indeed, as Schilder (1992) states some managers aren't able to make the transition. Statistics at Northern Telecom indicated that about 25% of its first-line supervisors left after team direction was adopted.

b) The Team Members

"You work as a team, rat on each other, and lose control of your destiny." This quote from a team member and cited by Hoerr (1989) emphasises the fact that the concept of team working troubles many workers. Team members are promised autonomy over their jobs, at the same time their old ways of working are threatened.

However, Hoerr (1989) goes on to say that opponents of co-operative working get more press than advocates of participation. In reality, Hoerr (1989) believes that people pro-participation constitute a much larger portion of most work forces and quotes figures that show in many plants where participation is not mandatory an average of about 25% of the workers volunteer to join problem-solving teams, another 70% are passive supporters, while only 5% remain opposed.

There are start-up problems for team members, too. For example, one team leader from Mazda commented that initial training sessions prepared workers for unprecedented involvement in shop-floor decisions, but that when they actually started producing cars there was no such thing as teamwork. He commented: "All of a sudden, you were just another factory rat" (Hoerr, 1989: 41). The team leader also commented that workers were pressured to keep the assembly line moving even though they were told they had the right to stop production to solve quality problems.

There are also barriers that separate management from employees that send signals to the team members about trust. For example, Schilder (1992) mentions the time clock (with self-management making employees responsible for their own breaks, lunches and work hours, as long as the changes did not affect customer service or productivity), the reserved parking spaces, executive dining facilities, dress codes etc. If these barriers persist after the introduction of team working, they send signals to team members that things are really not that different in the new set-up.

There are also suspicions among team members that the introduction of self-managing work teams is a way of getting rid of people. Perhaps more commonly, there is also a belief that self-management is a way of handing over the stress of added responsibility to the team, for which the supervisors are paid. One of the most important elements in implementing teams is training, in such areas as job skills, business knowledge, problem-solving and team

dynamics. Training eases the transition from traditional systems to teams, helping everyone to understand change, as well as deal with their feelings (Industrial Society, 1995).

2.3.4 The Context of Change

The context of change is taken to refer to the past and present external and internal operating environment as well as the influence of future projection and expectations on current operating principles. External contextual factors include changing social expectations and technological innovation. Internal contextual factors include the production environment (discussed comprehensively in the previous chapter), products or service and organisational arrangements and administrative systems. The internal contextual factor of organisational arrangements and administrative systems are particularly pertinent to the transition to self-management, in the sense that there needs to be congruence between new working patterns and such systems to reinforce the change process. These systems are discussed below.

2.3.4.1 Organisational Arrangements and Administrative Systems

Organisational arrangements and administrative systems refer to the structures, processes and systems which are designed to motivate and facilitate individuals in the performance of organisational tasks. The change to team working makes it necessary to review many of the organisations' routine systems for managing people.

Self-directed work team settings depend on upskilling approaches to human resource management (Youndt, Snell, Dean and Lepak, 1996) as the responsibilities of employees are expanded greatly. With this change, production employees are expected to make the transition from having limited responsibility for only the physical execution of work to a situation in which their responsibilities are considerably increased to include, amongst other things, planning, problem solving, quality assurance, scheduling, and maintenance. Self-directed team working also emphasises group interaction, interdependence and information sharing.

These changes create the need for different skills and attributes in employees. Appropriate recruitment, assessment and training programmes that emphasise attracting and developing individuals with appropriate technical, problem solving and interpersonal skills are essential and become instrumental in achieving the strategic goals of these interventions. Employee

interaction and information exchange must also be facilitated through appropriate structural, appraisal and reward systems changes to promote, for example, a high degree of interdependence and group problem solving.

It is essential that there is congruence between the objectives of self-management and the policies and systems supporting its implementation. For example, if a company continues to recruit individuals to work in individual jobs on an assembly line, it is unlikely it will acquire people with appropriate team working skills and commitment to team working. Indeed, the importance of the congruence of organisational arrangements between old and new systems was emphasised in the Industrial Society survey (1995). The results of this survey stated that one of the major obstacles to consider in the implementation of team working was senior management taking the wrong attitude to what is a major cultural change. If top management nominally hand more responsibility to the teams, while too many of the old controls and fears stay in place, then the change to team working will not be successful. Firms often fail to realise just how many of their traditional control systems for managing people will need to change. Many management systems are based on superior-subordinate relationships, like discipline, appraisal etc. and these are inappropriate in a culture where teams need to feel free to take decisions.

In brief, the findings from the research cited above suggest that for the successful implementation and maintenance of strategic manufacturing interventions there must be appropriate alignment of organisational arrangements and human resource systems. In the past, human and technical aspects of manufacturing have operated in relative isolation. However, evidence suggests that when firms fail in their adoption of new technologies one of the major stumbling blocks has tended to be the organisational arrangements and human resource management issues rather than difficulties with the technical systems per se (Adler, 1988). For example, Lawler (1981) warned that when a firm's pay system is not aligned with organisational changes it may not reward behaviour that is needed to make new systems work. Worse yet, existing reward systems may actually elicit and reinforce behaviour that is opposite to what is needed to make the changes work.

In this context, Nadler and Tushman's (1979) congruence model of organisational behaviour provides a framework and some useful concepts, which aid understanding of the dynamics of this change, in particular the importance of aligning the organisational arrangements to

the new working patterns.

In this model, organisations are seen as composed of interdependent parts. Changes in one element of the system will result in changes in other parts of the system. Similarly, organisations have the property of equilibrium; the system will generate energy to move towards a state of balance. The model conceives of the organisation as being composed of four major components. The first component is the *task* of the organisation, or the work to be done and its crucial characteristics. The second component is composed of the *individuals* who are to perform organisational tasks. The third component includes all of the *formal organisational arrangements*, including various structures, processes, systems etc., which are designed to motivate and facilitate individuals in the performance of organisational tasks. Finally, there is a set of *informal organisational arrangements*, which are usually neither planned nor written, but which tend to emerge over time. These include patterns of communication, power and influence, values and norms, etc., which characterise how an organisation actually functions.

The relationship among the components (task, individuals, organisational arrangements and the informal organisation) is the basic dynamic of the model. Each component can be thought of as having a relationship with each other component. Between each pair, there is a relative degree of consistency, congruence or fit. For example, taking the type of work to be done (task) and the nature of the people available to do the work (individuals), a statement could be made about the congruence between the two by seeing whether the demands of the work are consistent with the skills and abilities of the individuals. At the same time the rewards that the work provides could be compared to the needs and desires of the individuals. By considering these factors, an assessment can be made about how congruent the nature of the task is with the nature of the individuals in the system.

The basic premise of the model is that organisations will be most effective when their major components are congruent with each other. There is not one best organisation design, or style of management, or method of working. Rather, different patterns of organisation and management will be most appropriate in different situations. Changes in the environment often necessitate organisational change e.g. in the context of self-managed team working, factors relating to competition or technology may necessitate change in organisational structure and strategy. To execute a new strategy, the organisation and its subunits

(departments, groups, divisions etc.) must perform tasks that may be different than those previously performed. Building on the model just described, this means that modification may need to be made to organisational arrangements, individuals and the informal organisation.

For example, one frequent problem is that organisations expect individuals to behave in certain ways (particularly in a transition) while rewarding them for other conflicting behaviours (Kerr, 1975). In particular, rewards such as bonuses, pay systems, promotion, recognition, job assignment and status symbols all need to be carefully examined during major organisational changes and restructured to support the direction of the transition. This is a particularly pertinent issue in the context of the change to self-management, as most traditional organisations recognise and reward individual performance. When self-management is introduced, there is an expectation that individuals will assume team values and co-operate as a team. Rewarding individual performance in such circumstances is counterproductive.

Another concept from the model relates to the use of multiple and consistent leverage points. If an organisation is made up of components which are interdependent, then the successful alteration of organisational behaviour patterns must involve the use of multiple leverage points or modifications in the larger set of components which shape the behaviour of the organisation and the people in it (Nadler and Tichy, 1980). Structural change, task change, change in the social environment, as well as changes in individuals themselves are all needed to bring about significant and lasting changes in the patterns of organisational behaviour. Changes that are targeted at individuals and social relations (such as training) tend to fade out quickly with few lasting effects when done in isolation (Porter, Lawler and Hackman, 1975). On the other hand, task and structural changes alone, while powerful and enduring, frequently produce unintended and dysfunctional consequences (Lawler and Rhodes, 1976). Change which is in the direction intended and which is lasting therefore requires the use of multiple leverage points to modify more than a single component. The changes have to be structured so that they are consistent e.g. the training of individuals should dovetail with new job descriptions, reward systems or reporting relationships. In the absence of consistency, changes run the risk of creating new poor fits among organisational components and may result in decreases in organisational performance.

The notion of congruence between organisational systems is particularly important in the context of the change to self-management, given the strategic nature of the change and its impact on all aspects of organisational behaviour. As such, an organisation making this transition will need to ensure organisational arrangements and administrative systems support the new work design.

2.4 Conclusion

In this chapter, discussion has focused on the nature of team development with several empirically based models presented to elaborate on this process. The focus then turned to the limitations of these models in the context of the finding that the practical application of team working seems to yield less promising results than expected. In particular, with the transition to team working being a large-scale organisational change, the linear step-by-step nature of these models does not seem representative of this change process in reality.

On this basis, the focus then turned to processual models of change and the contribution of research in this area to increasing our understanding of the transition to team working. The scale of this organisational change was considered with specific focus on whether, on the basis of previous studies, this would be most effectively achieved through an incremental or radical transformation. Research findings specific to the politics of the change to team working and the roles of change agents and operational personnel were also considered, along with the contextual factors important in the transition to self-management.

The identification of this gap between the linear, step-by-step team development models and the reality of the change process to team working within organisations provided the focus for this research. Indeed, on the basis of the findings in this literature review, the objective of this research was established, as follows:

To examine, at a practical and detailed level, the team development and organisational change processes in the large-scale transition to self-managed team working in brownfield manufacturing sites.

This statement will be elaborated further after the discussion on research methodology in the next chapter.

CHAPTER THREE

Research Design and Methodology

3.1 Introduction

This chapter describes the methods that were employed in exploring the factors that influence the team development process and the nature of the change to self-managing teams in brownfield manufacturing sites. This research addresses these issues using a longitudinal case study design, in recognition of the fact that team working is a continuously evolving and changing process with many different stages of team development (e.g. Katzenbach and Smith, 1993).

This chapter begins by detailing the epistemological base of the study and continues with a description of the case study approach undertaken in line with this base. The chapter then goes on to detail each of the individual research techniques, namely observation and one-to-one and group interviews. This chapter presents the reasoning behind this particular research design in this context. The specific details of the observation periods and interview programmes (and in one case questionnaire design) for each of the four companies selected for this five-year period of research are contained in the following four case chapters.

3.2 Epistemological Stance

One question facing researchers across many disciplines relates to the gulf between the positivists (or empiricists) and the phenomenologists (or social constructionists) (e.g. Silverman, 1993). The positivist paradigm supposes a real world existence of an objective, independent and value free truth. This objective truth can be uncovered by the scientific method, which seeks to measure the degree of relationships among variables (Cassell and Symon, 1994) and is seen to be systematically rigorous and reliable. As such, the focus of the positivist paradigm involves measurement, causation and objectivity.

The phenomenologists on the other hand assume that there is no clear cut objectivity or reality and that the truth about the world is not independent of the individual but is dependent upon his or her perceptions, thoughts and beliefs (Atherton, 1993). Phenomenologists therefore concentrate on interpreting and understanding what people

say and do in their natural environments. They are concerned with the non-scientific world of actors' interpretations of their situations (Dawson, 1994). As such, the phenomenological paradigm includes understanding, meaning and subjectivity.

From an epistemological perspective, there are pluses and minuses to both the quantitative and qualitative approaches. On the one hand, the main criticism levelled against a quantitative approach is that the research methods produce superficial data and may result in the complete physical separation of researchers from the field they are studying (Bryman, 1988: Whyte, 1984). On the other hand, the quantitative approach adopts the stance that true knowledge can only be obtained in the pursuit of science and, hence, automatically discredits and devalues research which actively engages in the subjective and non-scientific world of the actors' interpretation. Quantitative theorists describe qualitative research as subjective, unscientific, having limited generality and being "soft" (Dawson, 1994). For the quantitative researcher, the world is clearly defined and the methods well documented, the biggest problem being whether the issue lends itself to scientific inquiry. For the qualitative researcher, everything is grey, ambiguous and at times "spiritual", the biggest problem being how to make sense of the data and generalise from a small sample (Dawson, 1994). These comments notwithstanding, Symon and Cassell (1998) suggest that the more recent phenomenological paradigm and its associated qualitative research tools, which have constantly been viewed in lower esteem, are becoming increasingly credible.

In the context of this thesis, it is not such epistemological differences that are important, but understanding the use of appropriate tools to tackle a particular research problem. It is more beneficial to recognise that there are undoubtedly differences between the quantitative and qualitative approaches, but that each approach has its advantages and disadvantages in different contexts. Indeed, Campbell (1984) considers that science is a polymorphous activity which draws on a range of theoretical and philosophical bases and takes on a variety of different methods. Bryman (1988) suggests that in order to overcome the polarisation in this epistemological debate, the researchers should select the most appropriate techniques for investigating any specific research question. The decision on which approach is appropriate is about balance, intellectual breadth and rigour (Silverman, 1985).

In the context of this research question and the investigation of self-managed team development and factors that impact on the success or failure of the change process in applied settings, the researcher recognised a greater affinity with the phenomenological approach. This recognition is summed up in Hartman's (1990) comment that "there are many truths and many ways of knowing" (p.3). As such, the research design incorporates largely qualitative techniques within the case study approach to provide a deep and full understanding of the key issues in the team development process and the context of this change process i.e. the companies undergoing the organisational change.

This recognition stemmed in part from the work of several authors (e.g. Bryman, 1988: Dawson, 1994) who note that qualitative methodologies have particular value and significance for understanding the complex processes associated with change. Indeed, qualitative research has made a significant contribution to the understanding of different aspects of the phenomenon in question (e.g. Bryman, 1988). Change is not an event, particularly radical and complex change, such as the implementation of self-managed work teams. During the years the companies in this research were studied, changes were occurring continuously. Change is a process, and hence the need for, and the value of, qualitative longitudinal research which can compare and contrast changes in perceptions and expectations over time. Qualitative research is suited to the micro-analysis of change, identifying the details of a particular change over time. Indeed, as noted in the last chapter, Dawson (1994) considers organisations undergoing transition should be studied "as-it-happens" so that the processes associated with the change can reveal themselves over time and in context.

In summary, Creswell (1998) defines qualitative research as "an inquiry process of understanding based on distinct methodological traditions of inquiry that explore a social or human problem. The researcher builds a complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting" (p.15). This researcher took a qualitative approach, using case study methodology to explore the multiple dimensions of the process of organisational change to team working and display the complexity of the issues involved. The methodology enabled the researcher to describe what was going on in the organisational change to team working at different stages of the change process, what some of the obstacles to change were and how organisations tackled the barriers that arose in this process. The organisational change to

team working is a complex process affected by many variables and, as such, it was important to explore the issues in detail in their natural setting.

3.3 Case Study Methodology

Hartley (1994) defines case study research as a "detailed investigation, often with data collected over a period of time, of one or more organisations, or groups within organisations, with a view to providing an analysis of the context and processes involved in the phenomenon under study" (p. 208). Robson (1993) suggests a case study is "a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence" (p. 52). From these and similar definitions, four important characteristics of the case study approach may be identified, namely that: (i) it is an approach not a method, and within this approach the researcher may use multiple methods; (ii) it is concerned with context; (iii) it is concerned with the particular; and (iv) it can involve a longitudinal element. Each of these characteristics will now be discussed in turn to illustrate the appropriateness of the case study approach for exploring the team development process and the factors affecting the success of the organisational change to team working.

Firstly, the use of multiple methods within a case study strategy was important for this research study. The use of multiple methods enabled the researcher to obtain a full and in-depth picture of the team development process and the change initiative. The use of multiple methods also enhanced the validity of the research by permitting triangulation (Yin, 1994). Triangulation relates to the need to employ more than one method of investigation and hence more than one type of data. By combining different sources of data, validity can be said to be enhanced if either the conclusions drawn from the sets of data are mutually confirming, thus providing cross validation, or indeed if discrepancies exist as this shows the researcher has investigated a variety of explanations (Bryman, 1988). Yin (1989) also suggests that multiple sources of evidence establish construct validity as they provide multiple measures of the same phenomena.

Secondly, concern for the context of study was important. This research was addressing the team development process and the impact of different factors within the organisation on the success or failure of this work design change. As such, the detail from the case

study approach enabled the researcher to adequately identify the key contextual factors in this change process. In line with this, Hartley (1994) suggests that the case study approach is appropriate for understanding processes and behaviours which are little understood.

Thirdly, the case study approach is concerned with the particular and Bromley (1986) suggests that it has links with the idiographic domain. In this context, the particular referred to each of the four case companies. In exploring these, the case study approach permitted an in-depth organisational analysis, enabling a greater understanding of the process of the change to team working.

Finally, many case studies include a longitudinal element. In the context of this research, a longitudinal approach was particularly appropriate as team development is generally recognised as taking between two and five years (Katzenbach and Smith, 1993). Indeed, Robson (1993) suggests that when the main focus of research is to describe or assess change over time, a longitudinal research design is appropriate. With a longitudinal research design, the same set of people and the same issues or situations are studied over a set time.

Qualitative research seeks to explain the interconnected and dynamic processes inherent in everyday life and, as such, to avoid a static snapshot view of social life which may be a characteristic of quantitative research. Through a concern with holistic and detailed descriptions of social settings and a commitment to reporting actors' interpretations of events, the final product is commonly a processual account of interaction and change (Dawson, 1994). Longitudinal research was appropriate in this context as its continuity allowed the researcher to follow the organisational changes and team development in the four companies for periods of between eighteen months and four-and-a-half years. Relatively few in-depth cases focusing on this work design initiative exist and understanding of this change process will be greatly enhanced through longitudinal research.

Cassell and Fitter (1992) also suggest that the longer time commitment involved in case study research provides the researcher with an opportunity to develop relationships with organisational members which enables the researcher to gain a greater insight into their

collective understanding by actively sharing that experience. This was the experience of this researcher and the close relationships developed over the long involvement (in three of the cases this extended to almost four-and-a-half years) provided in-depth insights into the change process at different level of the organisations.

However, practical consideration can limit the use of longitudinal research. For example, longitudinal research requires a considerable time commitment from both the researcher and the participants, which may not always be feasible. In this study, the researcher had the time available to devote to a longitudinal design and had sustained access to all four companies, which permitted such an approach. Finally, Cassell and Fitter (1992) suggest that studies spanning a longer time period allow for greater influences on the research, such as changes in operating personnel or technology. This researcher faced such changes in the companies involved in this study. However, these were treated not as problems, but as illustrative of a piece of real world research where things cannot be easily controlled and where situations are dynamic.

To ensure high quality of the research design, the researcher has paid attention to the case studies' construct validity, internal validity, external validity and reliability. Construct validity refers to establishing correct operational measures for the concepts being studied (Yin, 1989). Case studies have often been criticised for failing to develop a sufficiently operational set of measures and for using subjective judgements to collect the data. In this research, the construct validity has been increased by clarifying the propositions, by discussing in some depth the development of the theoretical model and by using as many sources of evidence as possible to measure each concept. Theory development was an essential step in this research and the theoretical frameworks presented in the earlier chapters provide the study propositions at the heart of the research design. The propositions provide guidance in determining what data were collected and the strategies for analysing the data.

Internal validity refers to establishing a causal relationship, whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships (Yin, 1989). When an investigator of a case study infers that a particular event resulted from some earlier occurrence, the internal validity of the inferences comes into question. There are important questions here, including: Have all the rival explanations and possibilities

been considered? Is the evidence convergent? (Yin, 1989). Methods for addressing the case studies' internal validity include pattern matching and chronology analysis. With pattern matching, an empirically based pattern is compared with a predicted one. If the patterns coincide, the results strengthen the internal validity of the case. The use of rival theories is helpful by providing alternative causal relationships and, subsequently, a consideration of rival explanations. The analysis of chronological events is a special form of time-series analysis (Yin, 1989) that traces events over time and provides the initial basis for causal inferences. The arraying of events into a chronology permits the researcher to compare the chronology with that predicted by the explanatory theory. In this study, the internal validity was increased by examining data from the cases carefully in line with the theoretical explanations and by consistently seeking alternative explanations. The case narratives trace the events associated with the change processes over time.

External validity refers to whether a study's findings are generalisable beyond the immediate case study and has been a major barrier in doing case studies. Critics typically state that single cases offer a poor basis for generalising, but as Yin (1989) points out there is a different premise for generalising case studies than that used for generalising survey research. Survey research relies on statistical generalisation, whereas case studies rely on analytical generalisation. In analytical generalisation, the researcher generalises a particular set of results to some broader theory. Theoretical propositions were used to guide the case analysis in this research. As Yin (1989) has noted, however, the generalisation is not automatic. A theory must be tested through replications of the findings in a second, third and so on study. This replication logic is the same that underlies the use of experiments, and allows scientists to generalise from one experiment to another. In this research, each case had a specific theoretical basis and data were collected using repeated measures. In the case conclusions, the researcher generalised from the particular set of results to the broader theory. The researcher also included some cross-case analysis in this study and these techniques are considered later in this chapter. The cross-case analysis increased the generalisability of these research findings.

The goal of reliability is to minimise the errors and biases in the study. Accurate documentation of the procedures followed will increase reliability and in this research a case study protocol (for example, the data collection instruments and the procedures)

and a case study database (all data collected from the case studies, such as observation and interview notes and records) were used. A case study protocol is essential when using a multiple case design

Whilst the case study approach was most appropriate in the context of this research, some disadvantages are evident. Yin (1989) notes that "the demands of a case study on a person's intellect, ego and emotions are far greater than those of any other research strategy" (p. 62) and indeed this research was at times very demanding, especially in terms of developing close relationships with four very different companies and sets of people. Also, a criticism frequently aimed at the case study approach is that generalisation is limited. However as already noted, Yin (1989) argues that case studies as analytic units should be thought of in the same way as a complete experiment. Case studies use repeated observations, discussions and interviews etc. in a particular context in the same way the traditional scientific experiment uses repeated measures on participants. In this study, repeated observations and interviews were used.

In summary, the case study approach was adopted in this research to enable the use of multiple methods over a relatively long period of time, to provide a greater understanding of the context of the research and hence allow a more detailed understanding of the nature of the change to team working.

3.4 Research Design

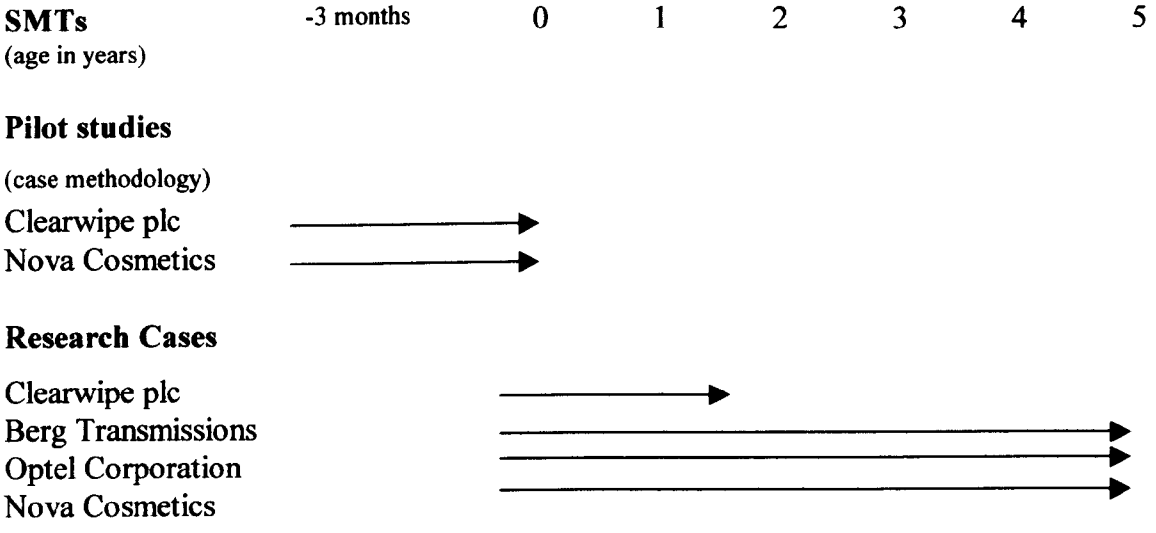
This research was designed around four cases, each case being the longitudinal study of a company implementing self-managing team working over a period of between two and five years. This approach was taken to remove the limitation of some of the other studies in this area, which typically focus on the early stages of the change to team working. It is widely acknowledged (e.g. Katzenbach and Smith, 1993) that the change to team working takes between two to five years and it is realistic to expect that the organisations, and the teams themselves, face different challenges at different times in the change process. As such therefore, this researcher was keen to take a more longitudinal perspective and to clarify some of these issues.

Rather than just follow one organisation over a period of four or five years, the researcher selected and worked with four organisations. Each of these organisations had

made the decision to implement self-managed team working and the senior managers were in the early stages of discussions about the transition process at the time the researcher became involved in the process. The overall timescale for the researcher's involvement in the development of team working across the companies was from start-up to almost five years. This design provided the opportunity for in-depth insights into the factors that led to the success or failure of team working at different stages of team development. The inclusion of four companies in the study provided the researcher with greater confidence in making generalisations to companies outside the scope of this study. This approach also removed one of the problems associated with longitudinal research in one organisation only, i.e. that the organisation being studied decides to stop the change initiative for some reason (as happened with Clearwipe in this research, for example). Although such a failure provides valuable research data in itself, it limits the scope and impact of the research.

The research design is illustrated below.

Figure 3.1 The research design



As Figure 3.1 illustrates, the case study settings enabled the researcher to follow the transition to team working throughout the transition process from the initial stages of team design to the later stages of team development. In each of the case studies, a variety of methods were used including interviews, observations and documentary analysis, over periods of up to five years. Indeed, it was the researcher's intention to work with all four case companies for about four years, but as Figure 3.1 illustrates, Clearwipe did not progress the initiative beyond eighteen months.

The cases were used individually and collectively to enable the researcher to illustrate the issues described in the earlier chapters on team implementation and development and the nature of the change process. The cases focused on different perspectives of the change to team working in manufacturing organisations and the researcher used the findings to develop a framework, which is presented in the concluding chapter.

3.5 The Research Process

Multiple sources of information were used in each case including observations, interviews, and documentary analysis. This range of data provided a detailed description of the issues in each company and enabled the researcher to interpret the cases in the light of the frameworks of team working and the nature of the change process described in earlier chapters. In one company also, some questionnaire data was collected (and this is discussed in the relevant case chapter as it is only applicable to one case).

3.5.1 Gaining Access

Prior to the start of this study, the researcher had been involved in lecturing on public training courses at Brunel University on the design and implementation of self-managed team working. During these events, the researcher encountered about sixty companies considering the transition to team working. These contacts provided the base from which the four companies involved in this study were selected according to the criteria described below.

In terms of locating the specific sites for the research, there were certain basic criteria that needed to be established to enable valid comparisons to be made between the companies. The main objective of the research was to explore the development of self-managed team working in brownfield manufacturing sites. The researcher decided to base the research in brownfield manufacturing sites, in part because as Parker and Jackson (1994) note there has been a lack of research attention given to forms of high-involvement management in brownfield sites and yet many such sites are introducing team working, but also because the implementation of self-managed work teams is fundamentally different in existing operational situations than in new ones. All told, this decision immediately excluded some options e.g. greenfield manufacturing or service organisations.

The researcher ensured that all the brownfield companies had the same stated aim at the outset of the change initiative, namely that they were implementing and developing self-managed work teams. The companies were also selected not just because they were accessible but also because they seemed ordinary. One of the purposes of the research was to highlight the reasons for success and failure of team working in brownfield manufacturing sites and the researcher was keen that the results be relevant and applicable to companies outside the scope of this research. As such, the companies were selected because they represented typical cases, highlighting the normal or average organisational change to team working (Cresswell, 1998). This allowed the researcher more freedom to interpret the data against the theoretical frameworks, to make logical generalisations and to apply the information to other organisations. These three criteria obviously provided limitations in the choice of companies.

Also, in case study methodology a bounded system is typically studied, in this instance the development of self-managed teams and the process of change to team working. In some of the companies approached, the change to team working was embedded within wider organisational initiatives. As such, outcomes would have been difficult to interpret. Finally, there was the issue of gaining access to the company. Some companies presented so many barriers (e.g. limited access time, limited opportunity to meet team members etc.) that producing an in-depth analysis of the organisational change would have been impossible. To some extent, therefore, the choice of organisations was determined by those managers and teams that agreed to participate in the study.

Wedgewood (1995) suggests companies which make the most fitting case studies are those who are progressive i.e. receptive to new ideas and open-minded, changing i.e. introducing new working practices and also committed to a partnership relationship i.e. believe that the research is mutually beneficial. All four companies displayed these characteristics. They were progressive in the sense they were taking on new ideas to maintain competitive advantage. They were changing by implementing self-managing team working and they believed that this research would be beneficial to all parties and hence were committed to a relationship with the researcher.

Access to the four companies was gained through submitting proposals and gaining the

permission of senior personnel (the Managing Director and/or the Human Resources and Operations Directors). Gaining access was a fairly long and time-consuming process. Indeed, researchers (e.g. Buchanan et al, 1998) have long recognised the difficulty that access to case study organisations poses. It was also the case that once initial access had been gained, this needed to be continually reviewed and relationships maintained and developed.

With regard to the type of access, the researcher was ultimately aiming to negotiate long-term access to enable a longitudinal design to monitor the change to team working over time. Additionally, the researcher needed access to a large number of different parties within the organisation to capture the various perspectives on the change process. In line with recommendations from Easterby-Smith et al (1991), the researcher ensured that during initial contacts with the companies both the researcher's and the organisations' objectives were considered. For example, to establish reciprocity between the parties, the companies were offered feedback reports on the research findings. Johnson (1975) suggests this type of report promotes the exchange nature of the relationship between the researcher and the participant organisation. Additionally, Strauss and Schatzman (1973) suggest that by offering feedback to the company, the company can be assured that the researcher will not hit and run.

Access is a continual process as there are many doorways to be negotiated and relationships change over time (Strauss and Schatzman, 1973). In all the organisations, access began with contact at senior levels and the development of these relationships. Through appropriate introductions, the researcher then began to develop relationships at other levels of the organisation. At all times, participants were provided with information on the nature of the research, why the researcher was interested in the site, how much time the researcher would be on site and the nature of that presence (e.g. observing, discussing, interviewing). Initially, the researcher spent time in the companies becoming familiar with the activities and the relationships between employees. The confidence of team members was gained by, for example working on the lines or joining in with social events, and participation by teams and individuals was voluntary. The researcher provided all participants with explanations about the central purpose of the study and the procedures. The confidentiality of the participants was protected in this research.

In a sense, the aim was to develop cognitive access (Saunders et al, 1997), to enable the researcher to reveal the reality of what was really happening in the change to team working at all levels of the organisation. This was very important in the context of this research question. Relationships at all levels in the companies built up incrementally over time to the point where the researcher was asked to attend team meetings at the companies and was welcome at any time on the shopfloor to observe the teams and chat with team members and their managers.

As the relationships developed, the researcher was gradually able to introduce more intrusive methods of research. Johnson (1975) suggested the merits of using an incremental strategy to gain depth of access. Primarily this involves developing positive relationships using fairly unobtrusive methods and when relationships are established more obtrusive methods, such as interviews can be used.

To build up in-depth pictures of the cases, the researcher collected extensive forms of data. In each company, the researcher:

a) conducted observations of teams performing their work and attending meetings. The number of visits to each team was determined by the researcher's judgement of the amount of additional information that would be obtained by observing further meetings. In all cases, the teams were willing for the researcher to attend multiple meetings and spend as much time as required observing their work on the shopfloor. The researcher recognised one limitation of this approach i.e. the potential for team members to alter their behaviour when an observer is present, and this reinforced the need for a multiple method approach
b) carried out semi-structured one-to-one and group interviews with managers, team leaders and team members, which were later transcribed
c) had access to organisational documents and analysed memos, minutes of team meetings and other records
d) collected performance-related information, where possible.

All told, a multiple method strategy was adopted and a strategy of "weaving back and forth among methods" (Whyte, 1976: 216) was used. These individual research methods are considered in some detail below.

3.5.2 Observation

(a) The Research Technique

Observation essentially involves going into the field and analysing what has been seen (Mays and Pope, 1995). Hammersley and Atkinson (1983) point out that all social research takes the form of participant observation and involves participating in the social world in whatever role and reflecting on the products of that participation. More specifically, researchers have defined several different forms of observation. For example, Robson (1993) sees the two extremes of observation as being participant observation at one end and structured observation at the other. Gold (1958) classified types of observation associated with the participant observation end of the continuum: complete participant, participant as observer, observer as participant and the complete observer.

At the start of this study, the researcher took on the role of a complete observer to get to know the physical layout of the shopfloor and the patterns of machinery and methods of working. However, the most fitting description of the type of observation used throughout the research was the participant as observer. In this role the observer reveals their identity as an observer to the participants. The observer then tries to establish close relationships with members of the group being observed and tries to gain the trust of the group. This type of observation allows the researcher to become involved in activities or areas that would usually be out of bounds (Yin, 1989). All of these characteristics of the participant observer role apply in this study. The researcher made the nature of the research clear to the participants and developed close relationships at all levels of the organisations. This enabled access to meetings and invitations to join in with more informal events, such as coffee and lunch gatherings. Greater insight into people's feelings and expectations was therefore possible.

As well as allowing the researcher access to areas, events and groups that would otherwise be inaccessible, observation also uncovers discrepancies between what people say and do (Robson, 1993). This quality of observation became more important as the study progressed, for example in providing insight into the data from the interviews. Also, observation can uncover behaviours which have become unconscious or are difficult to verbalise (Mays and Pope, 1995). This was important in approaching relatively sensitive issues, such as people's feelings about team working and their

expectations/concerns about the change process. One of the benefits of the observation was that by seeing the social world of the participants the researcher was in a better position to understand the other sources of data.

(b) The Observation Process

As noted above, the observations in the organisations took several forms in this research. Firstly, the researcher spent time becoming familiar with the layout of the different shopfloors and ascertained the nature of the different work processes (as a complete observer). Secondly, a more detailed observation of the different work processes took place, for example chatting to team members on the job and asking them about their parts of the work process and team working. Robson (1993) documents this approach of using informal discussions as part of the observation process. Indeed, to get a broader picture as well as make sense of the data collected, it was important to spend some time doing "research-by-wandering about" (Dawson, 1994) in each company. It was possible to discuss some of the issues surrounding the change to teams with the operators/team members, in addition to the more formal, semi-structured interviews. These informal group and individual discussions were important to later analysis of the interview data. Thirdly, the researcher was invited to team meetings and more informal team gatherings. This was a valuable experience as it demonstrated the acceptance of the researcher into the organisations and highlighted some of the team development and change issues in the companies.

Robson (1993) notes the importance of recording observations made as soon as possible. To limit observer bias through, for example selective memory, this researcher tried to write up field notes on the same day as the observations were made. Delbridge and Kirkpatrick (1994) suggest that there are three types of data generated by participant observation. Primary observation, which are notes about what happened or what was said at the time; secondary observations which are statements made by the observer of what happened or what was said and experiential data which relates to feelings and perceptions as the observer experiences the process that is researched. Primary observations were permitted on the shopfloor in situations such as meetings and secondary observations related to the informal chats with the various organisational members. Experiential data were nearly always collected and this involved the researcher detailing thoughts and feelings about what had been observed.

The observation notes provided an account of what happened chronologically over a particular period of change in the company. Notes were also made on issues of specific concern, such as the type of contingencies managers or team leaders had to deal with, or any deviant events in implementing and developing teams. The data analysis was an ongoing activity which moved back and forth between the field and the data already collected (Taylor and Bogdan, 1984). Observation and analysis were heavily interwoven. Robson (1993) notes that this interweaving of analysis and observation is characteristic of the case study approach.

The observation notes collected during the study were used to validate much of the data collected during the semi-structured interviews. The evidence and the findings contained in the annotated summaries from the interviews were subsequently cross-checked and validated with the material contained in the observation notes.

(c) Reliability

The main threat to the reliability of the observation data comes from observer bias. This observer bias is to a large extent unavoidable. Delbridge and Kirkpatrick (1994) argue that "because we are part of the social world we are studying we cannot detach ourselves from it, or for that matter avoid relying on our common sense knowledge and life experiences when trying to interpret it" (p. 43). However, there are methods for limiting the impact of observer bias. In this study, field notes were written up as soon as possible to try to limit selective memory and the strategy of looking for alternative explanations was also used to reduce bias as it forced the researcher to have a wider focus.

All told, the process of observation was ongoing throughout the research study. All of the data collected was useful in building up a contextual analysis of the company and providing a further source of evidence for cross validation of the individual and group interview data. Indeed, the examination of team implementation and development over such a long-time period in the companies meant that observational methods also became critical to establishing the process of change. According to Bryman (1988) the use of participant observer methods is essential in studies which use semi-structured interviewing as one of their primary methods of data collection to ensure the inclusion of a sense of process.

At the outset of the researcher's work with each company, observation and time spent on the shopfloor proved instrumental in establishing good relationships, building up rapport and eventually being seen as another member of the organisation. By the end of the work in each company, the researcher was often included in informal group discussions and this proximity to the teams being studied and the familiarisation with their work patterns produced very rich and detailed data. Observational research was used to enable the team development and change processes to be better understood.

3.5.3 The Interview

3.5.3.1 The One-to-One Interview

(a) The Research Technique

Kahn and Cannell (1957) define interviews as purposeful discussions between two or more people. Essentially, this discussion represents a flexible and adaptable way of finding things out (Robson, 1993). The type of interview adopted here was the semi-structured interview. Robson (1993) defines this type of interview as one in which " the interviewer has worked out a set of questions in advance, but is free to modify their order based upon a perception of what seems appropriate in the context of the conversation, can change the way they are worded, give explanations, leave out particular questions which seem inappropriate with a particular interviewee or include additional ones" (p. 231).

The semi-structured interview has been classified as non-standardised and as respondent (Healey, 1991). It is non-standardised, because although the researcher has a list of guiding questions, their exact use can vary in practice and it is respondent because the interviewer directs the interview and the interviewee responds to the questions.

The researcher adopted a semi-structured interview because this type of interview provides some structure but allows the researcher a level of flexibility in the questions asked. This was important as it allowed the researcher some latitude in approaching the questions at different levels of the organisations at different times of team development. Teams do not develop at the same rate even within the same organisation.

In all the companies, there was considerable planning of the first interview. Saunders et al (1997) suggest that knowledge of the organisation and the areas to be addressed helps

increase the credibility of, and trust in, the researcher. The interview questions were open-ended. Cohen and Manion (1989) suggest that open-ended questions are flexible and allow the interviewer to probe and to go into more depth if appropriate. Open-ended questions also result in unexpected or unanticipated answers which may suggest hitherto unthought of relationships or hypotheses.

Interviews followed the sequence suggested by Robson (1993) of introduction, warm up, main body of interview, cool off and closure. All interviews began with introductions and explanations of the purpose of the interview. The researcher chose to write down the interviews rather than record them, as much of the material provided by team members was sensitive and team members generally felt more comfortable without the presence of a tape recorder. This was largely because they were completely unused to being recorded, felt self-conscious about it and consequently less able to express themselves freely.

Even as the relationships with the interviewees developed over the transition periods, the interviewer started each interview by asking easy, non-threatening, factual questions to warm up the interview and put the interviewee at ease. As the interview warmed up, issues relating to the major purpose of the interview were explored. As these were semi-structured interviews, the interviewer introduced certain areas and asked questions based on the responses on the interviewee. The sequence of the interview questions sometimes changed from the original guiding list but all major areas were covered.

(b) The Interview Process

A programme of semi-structured interviews was carried out in all companies with all appropriate levels of staff in relevant functional areas in the operating units. Essentially, the purpose of the interviews was to chart the change to team working and the team implementation and development processes within the four organisations. As such, the interview questions were very factual questions about the events and activities that were occurring within the organisations during the transition period.

The number of interviews varied according to the number of employees within each company, but also according to the amount of new information elicited from the respondents during the interviews. As such, it is not simply the case that the more

employees within the organisation, the greater the number of interviews. Indeed, both Clearwipe plc and Nova Cosmetics had approximately 450 employees on the shopfloor during the transition period and 82 and 117 interviews were conducted respectively within these organisations. Optel Corporation had between 700 and 1,000 shopfloor employees during the transition period and 69 interviews were used to establish the team implementation and development process. However, the total number of interviews was high within Clearwipe plc and Nova Cosmetics because of the difficulties encountered by these organisations in the team implementation and development process, the need for the researcher to gain insight and understanding of these problems and the fact that the researcher continued to learn new information from the interviews.

To expand further on this last point, the interview questions focused on factual information describing the team implementation and development process, and not, for example, attitudes about team development. As such, the researcher came to a point during the interview programmes within each company when no new information about the team development and change process was being elicited. This point was reached sooner in some companies than others. For example, when Berg Transmissions switched in 1997 to Toyota Production Teams with their strict code and disciplined approach to work, the researcher discovered quite quickly that she was not learning anything new from the interviews with the different people involved in the change process. On the other hand, when Nova Cosmetics entered the second phase of their team development process in 1995 and a period of uncertainty and confusion began a more extensive interviewing programme was required as the interviewer was gathering a wealth of information from the Human Resources Manager, Business Unit Leaders, Advisers and Team Members about the change and the problems being encountered across the Packaging Department. As noted above, this is reflected in the number of interviews conducted in these companies at these times i.e. in Berg Transmissions there were eleven interviews and in Nova Cosmetics there twenty-four interviews during this period (see Table 5.1 in Chapter Five and Table 7.2 in Chapter Seven for more detail).

The specific schedule followed for carrying out interviews was determined with the assistance of all the parties involved (managers, team leaders and team members) and details of the interview programmes within each company are included in the case narratives. The interviews varied enormously in length, but usually lasted about one

hour. The topics covered variously over time included: job history, current work practices, job content, work organisation, individual/team job tasks and responsibilities, the role of the manager/supervisor, training, organisation structure, team structure, team development, team relationships, production methods, the nature of the work, perceptions/attributions of effectiveness, experience of innovation and change and employer practice and philosophy. Specific details of the interview programmes are provided in the individual cases and there are copies of interview schedules and observation notes in Appendices 1 and 2.

Overall, in each company, the interview programmes lasted for approximately four years, although there was some variation, e.g. the programme in Clearwipe was much shorter because the transition process ceased after eighteen months. The longitudinal nature of the study meant that repeat interviews became critical methods of establishing the process of change and data were collected in each company in phases. The researcher interviewed key players in the change initiative every three months or so, sometimes more frequently. For example, in Clearwipe when it became apparent that the change to team working was struggling interviews were conducted every six to eight weeks with a range of team members, team leaders and managers.

(c) Interview Analysis

The literature suggests that there is no one best way of analysing qualitative interviews (Robson, 1993; Saunders et al, 1997). Indeed, to suggest one best way would contradict the very nature of qualitative research. Broadly speaking however, researchers have two choices in analysing qualitative data. Researchers can take an inductive approach which explores qualitative data without a pre-determined framework, or a deductive approach which uses a theoretical or descriptive framework to analyse the qualitative data (Yin, 1994). In this study the researcher adopted a deductive approach, having already developed broad theoretical positions relating to the team development and change process from the literature and on the basis of which the researcher had developed interview protocols for the semi-structured interviews.

With all the interviews, the analysis of the information began soon after the collection of the data. It was intended that by being closer to the data a more adequate analysis could be undertaken. The interviews were transcribed to iron out any nuances and to fill in any

gaps. Also, the field notes were sometimes difficult to read and contained abbreviations and the transcription process enabled the researcher to interpret these and fill in any missing data while the information was still fresh in her mind. When the field notes were reviewed, the researcher was stimulated to remember things which had been noticed or said at the time. These additions were marked by double parentheses in the transcripts to guard against bias (Miles and Huberman, 1994). The transcription process allowed the researcher to re-familiarise herself with the interview data.

Essentially, there were three levels of analysis of the interview data in this research. As already described, the interviews were semi-structured and guided by a series of questions (see the Sample Interview Protocol in Appendix 1). The first level of analysis of the data from the interviews was quite straightforward in some ways, in that it was more a matter of compiling the wealth of information from the individual and group interviews within the organisations than analysing the words or phrases used during the data collection. This was a very descriptive activity. During the interviews the respondents were asked very factual questions about team development, e.g. is the team involved in the day-to-day maintenance of machinery? Or is the team involved in setting up machines? By asking similar questions about the change process and team development in a series of interviews with a range of people over several years, the researcher built up a detailed picture of what was happening in the team development process within each organisation. The responses to these questions enabled the researcher to chart the team implementation and development process over time.

This part of the process involved taking the concrete answers given by the respondents to specific interview questions and summarising these into a meaningful and accurate narrative describing the change process to team working in the different organisations. This process required little judgement or word recognition on the part of the researcher. Extracts 1 and 2 in Appendix 3 are examples of interview transcripts in which respondents are providing answers to specific questions about team development.

The first extracts (Extracts from Interviews at Clearwipe with Pilot Team Members) are from repeat interviews with a pilot team member in Clearwipe. In these extracts, the researcher is asking questions about the development of team empowerment, specifically whether team members are becoming involved in the maintenance of machinery (see

Appendix 1 – Interview Protocol, questions about Team Empowerment). These extracts provide information about training team members in skills associated with machine maintenance and indicate some of the obstacles faced by the team members in this process e.g. the limitations on team member's involvement through lack of training and the particular restrictions placed on some team members in completing machine set-ups because they were too short to reach some of the machine parts.

The second extract (from an interview at Berg Transmissions with the Plant Manager) provides an insight into the approach taken by Berg Transmissions to involve team members in continuous improvement activities. The extract provides information on the nature of the infrastructure changes that were implemented towards the end of 1998. The company introduced new terms and conditions for the team members, which required total active participation in kaizen activities, and to support this a new pay system was also introduced.

At the second level of analysis, the researcher was required to use a more inferential approach to the data. The researcher collected some data during the interviews which was not in direct response to the interview questions. This was often in the form of examples or stories about things that had happened during the different phases of the change or team development process. These examples or stories were often volunteered at the outset of the interview, during the settling-in phase when more general and open questions were asked, or they emerged out of the discussions at the close of the interview when trying to elicit whether there was anything else of significance the respondent wanted to discuss or felt had not been covered adequately elsewhere. At a basic level, the researcher used content analysis on this type of interview data. Patton (1990) describes content analysis as a common type of category generation, which involves finding patterns in the data and placing each pattern into a category. The next section describes in some detail how the researcher conducted this analysis.

The analysis of these examples or stories broadly followed the approach described by Miles and Huberman (1994). The theoretical frameworks established by the researcher at the outset of this work guided the development of the interview protocols and also guided the content analysis. Having said that, the researcher was aware of the importance of being open to things that she had not known about or did not expect to

find in the information, and was careful not to be too rigid in examining the information only according to the conceptual frameworks.

In analysing this information, the researcher started by coding the appropriate parts of the interview transcripts. Coding involves differentiating and combining the data and making reflections on this information (Miles and Huberman, 1994). Codes are attached to chunks of information, of varying size, but usually in this research to phrases, sentences or paragraphs. Examples of how the information was chunked are given below. These examples are taken from the fuller interview transcripts contained in Extract 3 (interviews at Optel Corporation with Resource Support Team Members) in Appendix 3.

The first chunk relates to a phrase (in Extract 3A), namely *"The team clammed up....."* The researcher highlighted this phrase in the text as it described the reaction of team members to an incident that had taken place on the shopfloor. Team members had been asked what had happened and were not forthcoming about the event. This was a team response to a particular event.

The second chunk refers to a sentence (also in Extract 3A), namely *"For some reason, a shoe was thrown by one of the team and injured somebody."* This sentence was highlighted in the text as an event which occurred within a team and was related to Health and Safety issues. With regard to Team Empowerment, there are specific issues relating to the teams ensuring their own work area is safe and to assuming responsibility for Health and Safety standards (see Interview Protocol in Appendix 1). Again, this information was used as an indicator of an issue relating to team empowerment.

The third example (from Extract 3B) concerns a potential barrier to the team development process in the form of a problem associated with the new peer group assessment system, and provides an example of a paragraph-sized chunk of information. It reads as follows: *"The peer review – implemented to help generate team spirit, but identifying good and poor performers at intervals seems to compromise team spirit in some teams. Whoever is reported as a poor performer knows the rest of the team has done this. Linked to pay, so it is a big issue for the team members. Not enough is done to help the poor performer and the team is left to deal with the issues and tensions. It's divisive, blocks the progression of team work".* Again, this comment was not elicited

from a specific question about the peer review system, the change process or team procedures, it was an issue presented during a warm-up conversation. The material provided some information about the development of new organisational arrangements in Optel Corporation and their potentially negative impact on team development.

All told, these three extracts provide examples of how information collected during interviews, but which was not in direct response to interview questions, was chunked. The focus of all the interviews was the change process and the implementation and development of team working and these examples demonstrate that the data provided largely comprised factual descriptions of events or activities which were occurring during this transition period. Essentially, the information was chunked and coded because it was not collected in direct response to interview questions about particular team implementation and development issues. As such, it required some degree, albeit limited, of interpretation.

In this research, descriptive codes were used to code this information from the interviews (Miles and Huberman, 1994). Descriptive codes entail little interpretation; essentially they attribute a class of phenomena to a segment of text. The codes used were, to some extent, based on similar groupings of ideas to those contained in the interview protocol. For ease of use, the codes were semantically close to the terms they represented.

The following table provides examples of these codes and there is a more extensive listing provided in Appendix 4. The examples presented in this table are extracted from the data contained in more detailed interview transcripts also in Appendix 3. These particular extracts are summarized in Table 3.1 to enable the author to describe more meaningfully, and with reference to specific interview data, the process undertaken in coding the interview information.

Table 3.1 Examples of Code Categories

CODE CATEGORY	EXAMPLE
TEAM EMPOWERMENT (TEAM EMP)	
Housekeeping (HK)	"Housekeeping is a big issue at the moment, especially as we are at the end and have the walkway next to us. The operators keep talking about the empty boxes left on the line and how they get knocked across and over towards the tape" (Nova Cosmetics - Adviser) "I am still not happy with the way the place looks. Had the Housekeeping Team down- but the team have still not taken on board what they said. I have told them the standards for the Unit, highlighted the problems specifically. They should do all this, not wait to be told all the time – it is their responsibility to keep the area clean and tidy." (Nova Cosmetics – Adviser)
Safety (SAF)	"For some reason, a shoe was thrown by one of the team and injured somebody" (Optel Corporation – Resource Support Team Member)
Problem Solving (PROB SOLV)	"The girls on labelling were fed-up .... with having to label by hand. There has been a problem with base labels which has meant hand labelling, and the base labels on mascara bottles are very small, which makes it worse. Identified in morning meetings and they set up a visit from the supplier." (Nova Cosmetics – Adviser)
TEAM PROCESSES (TEAM PRO)	
Cohesiveness (COH)	"The team clammed up .." (Optel Corporation – Resource Support Team Member)
Trust (TRUST)	"If the team won't talk, tell people what happened, and are not open, then it suggests a lack of trust" (Optel Corporation Resource Support Team Member)
CHANGE PROCESS (CHGE PRO)	
Barriers (BARR)	Whoever is reported as a poor performer knows the rest of the team has done this. Linked to pay, so it is a big issue for the team members. Not enough is done to help the poor performer and the team is left to deal with the issues and tensions. It's divisive, blocks the progression of team work" (Optel Corporation - Resource Support Team Member)

The codes e.g. TEAM EMP: HK (Team Empowerment: Housekeeping) were noted in the left-hand margins of the interview transcripts. The right-hand margins of the transcripts were used for more general comment, particularly for reflections and noting points to cross-check with other data or things to follow up during the next wave of data collection e.g. in Extract 3A a note was made to cross check any problems relating to trust with other interview/observation data. This process of coding the information is examined in more detail below, with specific reference to the interview transcripts in

Extracts 3 and 4 in Appendix 3

Extract 3 in Appendix 3 focuses on information from interviews with Resource Support Team Members within Optel Corporation and provides examples of general comments and observations made by the respondents. The comments were not made in response to specific interview questions and, as such, they were to some extent more open to the researcher's own interpretation. Both extracts provide specific examples of team activities or events.

In Extract 3A, the Resource Support Team Member is describing an incident that occurred during the night shift, when a member of a team threw a shoe, causing injury to another person. The first chunk of information coded was *"a shoe was thrown by one of the team and injured somebody"*, and this was noted as "TEAM EMP: SAF" in the left-hand margin, as it related to team empowerment and safety issues. In the margin next to the second chunk i.e. *"the team clammed up.."*, the researcher noted "TEAM PRO: COH" as the fact that none of the team talked about the event related to the team development process and reflected some degree of cohesiveness between team members. The final chunk coded in this extract was *"If the team won't talk, tell people what happened, and are not open, then it suggests a lack of trust"*. This was coded as TEAM PRO: TRUST. The respondent was specifically commenting on an aspect of the team process relating to trust between the team and management.

The researcher also noted in the right-hand margin the need to check this event out against other information. On the one hand, the team demonstrated a level of cohesiveness in response to this event, and cohesiveness is one feature of the team development process. On the other hand, the respondent implied there was a lack of trust between the team and management. Trust is also a feature of the team development process and lack of trust may detract from team development. As such, the researcher needed to check information from other sources to understand this event and the researcher noted this in the margin.

In Extract 3B, the Resource Support Team Member is describing the implementation of the peer review system within Optel Corporation. This system is part of the new organisational arrangements implemented to enhance team development, but the

respondent was commenting that without the right support, such systems might, in fact, have been creating a barrier to this process. This sections goes as follows: *"Whoever is reported as a poor performer knows the rest of the team has done this. Linked to pay, so it is a big issue for the team members. Not enough is done to help the poor performer and the team is left to deal with the issues and tensions. It's divisive, blocks the progression of team work"*.

This was coded as CHGE PRO: BARR as it is describing how the new system may in fact have been creating a barrier to the progression of team work. The poor performers in teams knew that other team members had identified them as such, and as the peer review was linked to pay this had a financial impact. The respondent felt that not enough was done to help the poor performer, the team was left to deal with the tension and issues arising from this situation and that this provided a block to the progression of team working.

The extracts contained in Section 4 of Appendix 3 illustrate further the descriptive coding used, but also illustrate how the researcher interpreted this data over time. This section contains data from interviews with advisers/supervisors within Nova Cosmetics. The examples provided in this series of extracts come from different time periods during the interview programme. Each example was initially coded individually and descriptively, but then later during the process of constructing the case narratives, interpreted within the context of the other examples and the team development process within Nova Cosmetics. The first extract (4A) was from April 1994 and describes the fact that the operators seem to recognize the need for housekeeping activities, but do nothing about the boxes on the line i.e. *"Housekeeping is a big issue at the moment, especially as we are at the end and have the walkway next to us. The operators keep talking about the empty boxes left on the line and how they get knocked across and over towards the tape"*. This was coded TEAM EMP: HK. At this stage in the team development process, the team were not taking responsibility for housekeeping activities.

Extract 4B is from a subsequent interview in April 1995 and describes the team members on one line taking the initiative to solve a problem with the labelling machine. Specifically, the information reads (but this is abbreviated in the table because of the limitations of space) *"The girls on labelling were fed-up, more and more so in fact, with having to label by hand. There has been a problem with base labels which has meant hand labelling, and the base labels on mascara bottles are very small, which makes it worse. Identified in morning meetings and they*

set up a visit from the supplier (through me, but asked for by them). The supplier saw the problem and is changing the material. It was a real boost for something to happen, made everybody feel good." This was coded TEAM EMP: PROB SOLV. At this point in the change process, the team members were taking some responsibility for some of the problem-solving associated with their tasks and activities.

The final extract in this section (4C) describes problems with housekeeping again and comes from an interview in November 1996. It reads as follows: *"I am still not happy with the way the place looks. Had the Housekeeping Team down- but the team have still not taken on board what they said. I have told them the standards for the Unit, highlighted the problems specifically. They should do all this, not wait to be told all the time – it is their responsibility to keep the area clean and tidy."* This was also coded TEAM EMP: HK and, similar to Extract 4A denotes the team members unwillingness to take responsibility for housekeeping activities.

These three extracts provide meaningful information on team development individually, but interpreted in the context of the change process within Nova Cosmetics reflect the move towards and then away from team empowerment. The three extracts represent different periods of time in the transition process and indicate how team members at the start of the change process were unwilling to take the initiative, then moved towards some degree of empowerment and then became unwilling again to take responsibility for their work area. Together, these extracts illustrate one of the central findings of the case, namely the shifts in team member's willingness to take the initiative over time.

In the final stage of the analysis of this data, the researcher focused on constructing narratives from the information to write the case descriptions and to explain the team working implementation and development process in the four case organisations included in this research. The information elicited from the interviews was used to compile summaries to describe and explain the change process and team implementation and development in each of the four companies. The case narratives were generally ordered chronologically to reflect the team development process.

(d) Reliability and Validity

In utilising semi-structured interviews as a key research tool in this study, the researcher had to consider the issue of the reliability and validity of the interview data. Reliability, is said to be threatened by the lack of standardisation in semi-structured interviews

(Robson, 1993). This is related to bias both from the perspective of the interviewee and the interviewer. To some extent, a level of bias existed in this study, as the interviewer had a frame of reference devised from earlier literature searches and information about the company. However, it is accepted that the researcher could not avoid having some influence on the research. Indeed, some authors (e.g. Marshall and Rossman, 1989) suggest that non-standardised methods, such as the semi-structured interview used in this study, are not necessarily intended to be repeatable since it represents reality at that point in time and a situation which may be subject to change. The interviews in this research represent a perspective on the change to, and development of, team working in all four organisations. Whilst issues of reliability may not have been paramount in the interview process itself, it was important that interviewer bias did not develop at the analysis stage. To counteract this, the researcher deliberately looked for examples which did not fit into the categories devised.

The validity of the interview data was also a prominent issue. It is important that the interpretation of the data collected can be said to be trustworthy. Sykes (1991) suggests that the flexible, interactive and probing nature of interviews ensures that issues are covered from a variety of angles, thus increasing validity by increasing the likelihood that the researcher has obtained a full picture or account. Additionally, in this research the interviewer had other forms of data with which to cross validate the interview data e.g. the observational records.

As such, the researcher considers that the one-to-one interview data were both reliable and valid.

3.5.3.2 The Group Interview

(a) The Research Technique

As the researcher was interested in studying the actions and opinions of work teams, group interviews seemed a natural choice as part of this research programme. Group interviews capitalise on communication between research participants in order to generate data and encourage participants to talk to each other rather than the interviewer (Kitzinger, 1994). Group interviews are also relatively unstructured and free flowing and aim to facilitate the expression of ideas and opinions (Zikmund, 1994).

Group interviews were selected for a number of reasons. Firstly, group interviews were a suitable way to explore people's knowledge, experiences, opinions and attitudes (Denning and Verschelden, 1993). The group interviews allowed people to talk of their experiences and thus allowed the researcher to understand how these opinions might be constructed. Secondly, group interviews provided a vehicle to study groups in a relatively natural situation i.e. group discussion (Krueger, 1994). This property provided access to a variety of communication which is useful because people's knowledge and attitudes may not be entirely encapsulated in reasoned responses to direct questions (Kitzinger, 1995). Indeed, Kitzinger argues that everyday forms of communication may tell us much about what people know or experience. Saliently, these descriptions of people's knowledge and experiences will be in their own vocabulary.

Thirdly, in this study the group interviews capitalised on naturally occurring groups (Kitzinger, 1995). This was advantageous as it allowed the identification of shared and common knowledge and the existence of group norms for example. This was an important characteristic in the context of the team development process. Fourthly, through the group processes and interactions with each other, the research participants were able to explore and clarify their ideas and opinions in ways that would be less easily accessible in a one-to-one interview (Kitzinger, 1995). Some of the issues inherent in team development (e.g. the trust between the team and management) are not always easy to discuss and it was considered that the group interview may facilitate this process. Finally, Watt and Ebbutt (1987) argue that the discussion which groups generate helps in yielding a wide range of responses. This is useful for several reasons. It may take the research in unexpected directions, prompting issues that the researcher had not previously considered. Additionally, the wide range of opinions may also include critical comments. Indeed, Kitzinger (1995) suggests that groups often highlight more critical opinions. In this context, the teams or groups were able to talk openly and freely and negative comments were revealed in some cases.

Group interviews also have their disadvantages. For example, Kitzinger (1995) suggests that the group dynamics in operation may silence voices of dissent. In this research, there were a few examples of very dominant members of the group influencing the group dynamics (e.g. the pilot team leader in Clearwipe, although in this case this provided an accurate reflection of how team meetings and shopfloor discussions were usually

conducted). The confidentiality of the groups is also compromised through the presence of other research participants. Saunders et al (1997) suggest that in conducting group interviews a high level of skill is required in order to maintain focus and encourage research participants to talk to each other. Indeed, Krueger (1994) notes that the researcher has less control in the group interview situation as participants have the potential to influence the course of the discussion. Finally, the data generated can be cumbersome and complex (Kitzinger, 1995). In this study, the researcher did experience some of these problems, in particular transcribing the interview data when there was more than one person talking at once, which was in fact quite a common occurrence.

(b) The Group Interview Process

In this research, the group interviews were conducted with established teams. Given the nature of the research question and the constraints of working in an applied operational setting, theoretical sampling was inappropriate. However, in all organisations the selected groups represented a range of the shopfloor work teams and different levels of the organisation. The fact that the sample comprised naturally occurring work groups capitalised on people's shared experiences. By interviewing complete work teams, the researcher also met the requirement prescribed by Morgan (1988) for having a minimum of six organisational members. Most of the self-managing teams established in the course of this research programme comprised between six and ten team members.

During the group interviews, the researcher worked to a list of guiding topics and questions. This guide included content and process questions (Steyaert and Bouwen, 1994). The content questions related to the level of team development and the nature of the change. The process questions related to attempts to stimulate the group, by asking for illustrations of responses. The critical incident technique (Flanagan, 1954) was employed as a way of maintaining focus and establishing in-depth examples of behaviour.

The group interviews usually lasted for about an hour and were conducted in a setting familiar to all the participants e.g. the staff restaurant, rest room or shopfloor meeting rooms. The sessions began by the researcher introducing the purpose of the discussion i.e. to explore the team development and organisational change process. Participants were requested to talk to each other rather than the researcher and the researcher stressed that there were no right or wrong answers to any of the questions. The

researcher also stressed the confidentiality of the group discussions. The discussions always started with general topics before moving on to the specific and the critical incident technique was used to elicit examples.

(c) Group Interview Analysis

The analysis of the group interview data followed a similar procedure to that described earlier for the analysis of the one-to-one interview data. The main difference was that the transcription of the data was more time consuming given that there were many respondents within each session. Given the group dynamics in these interviews, examples of the group processes were included in the coding scheme e.g. laughter, changes of mind etc. (Kitzinger, 1995). Examples that did not fit the framework were sought in an effort to counteract bias.

(d) Reliability and Validity

Concerns about the reliability of group interview data echo those described for the one-to-one interviews. For example, Calder (1977) notes that there is a concern about the subjectivity of the technique and a feeling that any given result might have been different with different respondents, a different moderator or even a different setting. The reflexive nature of qualitative research can help in answering these concerns. Reflexivity refers to ways in which the researcher influences the research (Johnson, 1999). Hammersley and Atkinson (1983) argue that the researcher cannot escape from the social world in order to study it. Therefore, qualitative research accepts that the researcher is likely to have some influence on the research process.

In order to address concerns regarding threats to reliability some authors (e.g. Johnson, 1999: Sykes, 1991) have suggested that the entire research process is made transparent to others. Marshall and Rossman (1989) have suggested keeping a research diary to facilitate this process. With respect to the group interviews conducted in this research, the researcher recognises that she is likely to have had some influence on the data collected. In relation to Calder (1977), it is also recognised that to some extent different data were collected from different respondent groups. As such, this is not considered problematic. Rather it is seen as intrinsic to this type of qualitative research. Also, a detailed account of the process has been provided to enable others to see how the group interviews were conducted and how the conclusions were reached. Finally, to counteract

bias, deliberate attempts were made to look for data which did not fit the categories devised.

The validity of the group interview data can be said to be high for several reasons. Firstly, there is high ecological validity as the group interviews were conducted in a naturalistic setting i.e. group discussion. Secondly, there is high face validity, owing largely to the believability of the participants' comments (Krueger, 1994). Thirdly, as the group interviews uncovered a wide range of opinions, it is likely that a fuller picture has been obtained, thus increasing validity (Sykes, 1991). Finally, the validity of the data is further enhanced through the triangulation with the other collected data.

3.5.4 Documentary Analysis

The final part of the data collection in the cases related to the analysis of documentary evidence. In all the organisations, permission was granted for the researcher to access documents such as strategy documents planning the change, training plans, team role and task descriptions and minutes from team meetings. The researcher found it extremely useful and informative to analyse documents relating to the change to team working. In particular, the data from strategy documents tended to provide information about the context of the change and minutes from team meetings tended to chart the progress of team development in terms of their responsibility for problem-solving and different tasks etc. An example of the latter type of document is included in Appendix 5.

The researcher recognises the limitations of documentary analysis in the sense that the documents were open to different interpretations and did not necessarily represent the objective truth. However, the documentation provided a supplementary source of information and was particularly useful in providing information about events that had occurred between visits. As such, it was logical to access the documents and cross validate the relevant information with data from observations and interviews.

In practice, the actual design of the research and the data collection techniques were influenced by various opportunities and constraints within the organisations, such as production schedules and crises and the success and failure of particular teams. Essentially, during data collection particular emphasis was given to the importance of using a number of complementary techniques: for example, observation, informal

individual and group discussion, in-depth interviewing and use of documentary material. In addition, whilst the write-up of material often relied heavily on interview data, the information collected through the use of these other complementary techniques was equally central to the final analysis. In particular, observation notes proved to be an important data source, providing a chronology of events; an account of routine and unforeseen activities and tasks; an awareness of the informal organisation of work; and the non-linearity of the processes of change.

In the course of the data collection, there were many field issues to resolve in each company. The nature of all the companies was such that they tended to be very reactive to market demands and there were many occasions when operational issues took precedence over scheduled interviews and meetings with teams and team members. As such, the researcher underestimated the time it would take to collect extensive data from each company at the outset and greater immersion in the companies was required than was originally planned. In the final analysis, up to thirty-five days was spent in each company, meeting with the teams and conducting interviews and observations. The length of time spent in the companies varied greatly and depended on the number of teams within the organisation, the number of team members and the managers involved, as well as the participants' level of interest. It was often more difficult to schedule interviews and groups meetings with the less committed or interested team members.

3.5.5. Ethical Issues

Research ethics concern "the appropriateness of your behaviour in relation to the rights of those who become the subject of your work, or affected by it" (Saunders et al, 1997: 109). Ethical issues were a particular issue in this research as it involved real world organisations. Indeed, Wells (1994) suggests that "in general the closer the research is to actual individuals in real world settings, the more likely are ethical questions to be raised" (p.290).

Ethical issues were paramount in this study as the researcher was charting the organisational changes as they occurred. The researcher followed the ethical guidelines of the British Psychological Society (1991), which state that the researcher should: not deceive participants, cause physical or psychological harm to participants, invade the privacy of participants and should respect the anonymity of research participants.

Research ethics were considered at all stages of the research, from gaining access to reporting the findings.

3.6 Piloting the Research Techniques

Final preparation for the research involved piloting the observation and interview methods. The pilot studies were used to refine the data collection plans and procedures to be followed and to assess the wording of the questions developed for the individual and group interviews. Observational methods, interview formats, and documentary analysis were piloted in the three-month period prior to the change to team working in Clearwipe and Nova Cosmetics.

Access to both companies was negotiated prior to the start of the transition to team working and a considerable amount of time was spent collecting contextual data, through meetings and interviews with managers, advisers and team members. The researcher spent time observing the production process, the nature of the work and the work organisation. The researcher worked as an operator on several lines to establish a closer relationship with the line workers and gain more in-depth knowledge of the production process. The researcher also piloted the interview questions with managers and operators, transcribed the data and analysed the content, developing themes and summaries. Observation notes were incorporated into these summaries to provide a fuller picture.

The pilot studies were instrumental in refining the methodological issues of this research and of considerable value in developing an understanding of conducting research in an applied setting. The pilot studies were also instrumental in expanding the very theoretical basis of the researcher's knowledge, in refining the objectives for the study and in consolidating the research focus.

3.7 Cross-Case Analysis

This research comprised four case studies of brownfield manufacturing organisations undertaking the transition to team working. Each case tells its own story and provides insight into the research objectives focusing on the team development and change process in organisations. Theoretical frameworks were used to study each case in depth. However, the four cases together also tell a story. As such, and as Silverstein (1988)

considers, there is tension between the particular and the universal and the need to reconcile an individual case's uniqueness with the need for more general understanding of generic processes that occur across cases. In this study, as well as the analyses of the particular individual cases, the researcher undertook cross-case analysis to enable a focus on the more generic themes relevant across the cases.

There are several reasons why cross-case analysis is important. Firstly, it enhances generalisability. Some authors argue (e.g. Denzin, 1983) that this goal is inappropriate for qualitative studies. However, in the context of organisational case studies, it does seem important to know something about the relevance or applicability of research findings to other similar settings. Multiple cases, adequately sampled and analysed carefully, provide focus on the question of whether the findings make sense beyond the specific case (Miles and Huberman, 1994).

A second, more fundamental reason for cross-case analysis is to deepen understanding and explanation (Miles and Huberman, 1994). Glaser and Strauss (1967) note that using multiple comparison groups finds out under what sets of structural conditions the hypotheses are minimised and maximised. Multiple cases help a researcher find negative cases to strengthen a theory through examination of similarities and differences across cases. Multiple cases provide information about the specific conditions under which a finding will occur and about the general categories of how those conditions may be related (Miles and Huberman, 1994).

Miles and Huberman (1994) suggest that there are two different approaches to cross-case analysis: the case-oriented and the variable-oriented. Ragin (1987) considers a case-oriented approach focuses on the case as a whole entity, looking at configurations, associations, causes and effects within the case, and only then turns to comparative analysis of a number of cases. The cases are examined for underlying similarities and constant associations, comparisons made between cases with different outcomes and on these bases the researcher starts to form more general explanations. The variable-oriented approach is conceptual and theory-centred from the start, casting a wide net over a large number of cases (Runkel, 1990). The building blocks are variables and their inter-correlations, rather than cases. In the variable-oriented approach, the details of any specific case recede behind the broad patterns found across a wide variety of cases, and

little explicit case-to-case comparison is done.

Ragin (1987) notes that each approach has pluses and minuses and neither approach is better for making qualitative data analysis. In this research, a case-oriented strategy was utilised. Yin (1989) advocates a replication logic and this was used to assess the different factors that impact on the team development process and the success or failure of the change to self-managed work teams. A theoretical framework is used to study one case in depth and then successive cases are examined to see whether the pattern matches those in previous cases. Such a research design requires multiple case studies and uses multiple methods to collect data in each case. The multiple-case replication design uses theory to predict what should be found for each case. The cases either support or refute the theory. The replication logic is particularly effective when the theoretical framework clarifies the conditions under which a particular phenomenon (e.g. successful self-managed work team implementation) is expected to be found, as well as the conditions where the opposite is expected to occur (e.g. failure to implement self-managed work teams). If the characteristics of the cases exist as the theoretical framework proposes, the case studies, in aggregate, would provide strong support for the initial set of theoretical propositions. If the cases are in some way contradictory, the initial propositions must be revised and re-tested with other cases.

In this thesis, the findings from each case study are presented in separate chapters and the focus in these chapters is very much on the particular. In the concluding chapter of the thesis, the concepts from the theoretical frameworks, configurations, associations, causes and effects are considered and a more comparative analysis of the cases is presented, involving an investigation of the underlying similarities, associations and different outcomes of the cases. The focus turns to the universal and the search for more general explanations. A new conceptual framework highlighting key team development and change process issues in the transition to team working is presented in the concluding chapter.

3.8. Case Descriptions

The next four chapters are dedicated to the case descriptions. Each case begins with an outline of the context and organisational setting, a chronology of the change process and detailed descriptions of the development of the teams. The data collected from

interviews, observations and documentary analysis is presented for each company and the data summaries are related to the literature, providing different levels of analysis and broader interpretations of the meaning of the case.

For each case study, a single narrative was written to describe and analyse the case. The four cases are each structured in a similar way to display cross-case comparisons and to enable the researcher to analyse the data, draw conclusions and to input into the theory on the development of teams. This also allows the reader to examine the answers to the similar questions within each case and to make cross-case comparisons. The description of the implementation and development of team working in the companies is presented chronologically, because the events unfold and follow a process. The case studies are bounded by time and cover events over time. Themes that are interrelated across the cases are identified and explanations developed in the final chapter.

3.9. Conclusion

In summary, the researcher has adopted methods from the phenomenologist paradigm in this study. A case study strategy was employed to enable an in-depth, multi-method approach. Observation, one-to-one and group interview and documentary analysis techniques were used to gain a detailed understanding of team development and the nature of this change process in four brownfield manufacturing organisations. These methods were complementary and enabled the researcher to explore the different aspects of the team development and change processes described in the previous chapter.

On the basis of the discussion of the methodological issues, the objective stated at the end of Chapter Two was elaborated as follows:

The objective of this research was to examine, at a practical and detailed level, the team development and organisational change processes in the large-scale transition to self-managed team working in brownfield manufacturing sites. This was undertaken through empirical evidence drawn from a detailed knowledge of case study data collected over a period of almost five years in four organisations.

The next four chapters contain these case narratives.

CHAPTER FOUR

Case Study One: Clearwipe plc

4.1 Synopsis

Recognising the importance of work design in gaining competitive advantage, this UK-based manufacturing company decided to introduce self-managed team working. The initiative was piloted over a six-month period in the packing area of one of the Manufacturing Units and then introduced more widely across the Unit in the following eighteen months.

This case focuses on three key aspects of the introduction of self-managed team working: firstly, the initial stages of self-managed team development on a brownfield site, with particular emphasis on team design and the nature of the production environment; secondly, the process by which the work design changes were introduced and, thirdly the rationale for, and success of, a pilot study in the context of the change to self-management.

The company took many positive steps to introduce self-managed teams, including the creation of a steering group to manage the initiative, training for team leaders and team members and support and guidance from external consultants. Initial successes were suggested by organisational performance data for the pilot team. For example, the company has cited improvements in efficiency of 2-3% in the first six months (IRS Management Review, 1997), although these improvements do not appear to have been sustained over the long term.

A key issue in this case concerns the design of the self-managing teams within the context of the existing production system. A key implication from the case is that the nature of the implementation process has a significant impact on the eventual outcomes.

4.2 Introduction

One of the central themes presented in recent years is that modern production conditions, driven in particular by changes in product markets and technology, favour autonomous team-based working far more than ever before. The many different types of team design were described in Chapter One.

In practice however, the potential for using self-managing work teams in the context of some organisational designs and production practices seems to be restricted for several reasons. Three of these reasons are described here in the context of this case. Firstly, there may be problems associated with the "fit" between the design of the teams and the design of the production system. Secondly, despite the claimed commitment of management to team-based working, it has not necessarily resulted in the unambiguous transfer of substantial autonomy to work teams in many cases (Jurgens et al, 1993). Thirdly, contemporary initiatives have encountered severe implementation problems and often failed to progress beyond isolated pilot schemes (e.g. Badham and Naschold, 1994). In this case, there is also a discussion about whether the introduction of a pilot scheme in the context of such a radical initiative as the implementation of self-managing teams may present its own problems, in part at least because of the complexities of the existing and traditional organisational systems.

These issues will be explored in the context of this case from a processual perspective as described in Chapter Two. The processual approach to change enables examination of the links between team working initiatives, the scale, content and context of the change, and team effectiveness. Findings from this case relate to the team design and manufacturing strategy, the influence of politics on the change process with specific reference to operational roles played by the managers, supervisors and team members, and organisational arrangements and systems (particularly pay). In this case, these factors are explored in the context of a company at the outset of the change to team working and the data and analysis are therefore concerned with the factors pertaining to the successful implementation of team working in the early stages of the change process.

4.2.1 Team Design and Manufacturing Strategy

Taking first the issue of the fit between the design of the teams and the design of the production system, an assumption made by some organisations is that it is quite straightforward to create self-managing work teams in the context of the existing manufacturing strategies in an organisation, especially when operators are already working in groups or cells. Indeed, at the outset of initiatives to introduce self-managing work teams, some organisations do not consider the strategic nature of the change to self-managed team working and the radical restructuring required for the implementation of this form of work design (Badham, Couchman and McLoughlin, 1997).

In some cases, problems relate to the competing demands of new work design and existing strategies, for example, the fit between the team design and the production practices. Certainly, there is evidence of these problems in recent research, particularly pertinent examples of which, in this context, relate to the introduction of self-managed work teams into lean production environments. Some organisations may have created difficulties in the implementation of self-managed teams by mixing systems with different philosophical and practical bases.

Research by Cutcher-Gershenfeld et al (1994), cited in Chapter One, is an example of work supporting these ideas. These authors found that some UK manufacturing operations are simultaneously attempting to encourage the development of self-managed work teams while reducing buffers through reduced in-process inventory and just-in-time delivery. The resulting tension between team autonomy and team interdependence could have been managed through strong leadership, but this did not fit the traditional sociotechnical systems view of teams as being self-managed or autonomous.

Cutcher-Gershenfeld et al's (1994) findings illustrate the types of problems associated with the practice of self-managed work teams and the pressures of lean production systems. At a practical level, the problems manifest themselves in the schism between the philosophy of autonomy, team decision-making and internal organisation on the one hand and the constraints of lean production on the other. The system of lean production lends itself to a strategically planned, hierarchically driven management system within which task-orientated teams can operate to produce continuous improvements. The driving objective behind lean production is to eliminate waste. This elimination takes place in removing work in progress, stock, independent inspection and rework from the production system. Teams within a lean production environment may be flexible and by necessity are interdependent, but they are inextricably linked in a production process which is formally structured and bureaucratically organised to achieve high productivity with lower costs. Self-managed work teams, on the other hand, require an environment where autonomy and independence are possible and where structure is internally imposed by the team members who are responsible for making production-related decisions.

This brief discussion illustrates some of the fundamental incompatibilities between the underlying philosophical and practical bases of these two systems. The following case

will explore in detail some of the practical problems and issues relating to the implementation of teams designed according to principles of self-management in the context of a lean production environment.

4.2.2 The Implementation Process

On a completely different note, the second argument of this case is that the change-management process is crucial to successful implementation of self-managed work teams. Complex and novel projects, such as the introduction of self-managed work teams, are inherently vulnerable, because they seek to accomplish both technical and social types of change which potentially raise many political issues (Badham, Couchman and McLoughlin, 1997).

In recent accounts of such change initiatives, a common theme has been the difficulty of dealing with the people issues and controversial politics that surround uncertain and vulnerable projects. Badham, Couchman and McLoughlin (1997) use the term vulnerable to describe changes that are complex and radical, both features of the transition to self-management. With complex projects, there is a large degree of uncertainty about what is to be done and how to do it. Objectives are not always clear, resource requirements not always well known, activities often redirected and schedules reorganised. As McCalman and Paton (1992) observe, in such conditions it is more difficult to achieve the shared perception of the project's goals and keep the necessary commitment to provide a solution. More time and effort has to be spent ensuring effective communication, addressing people's perceptions, encouraging flexibility, and generating and re-generating involvement in the face of new problems, setbacks and opportunities.

With radical change, problems arise from the degree to which individuals, culture and structure have to be transformed for the project to succeed. The transition to self-management is radical because the change is central to the organisation's strategy and involves modifications throughout the organisation and these modifications are a radical departure from existing ways of doing things. The more major the project in these two senses, the more politically controversial it is likely to be since the activities and interests of a wide range of different groups may be fundamentally threatened. The likelihood of political disruption and opposition will increase the project's vulnerability.

The radical nature of this change also derives from the fact that both vertical and horizontal structures in the organisation are being transformed. The creation of self-managing teams involves cutting across traditional semi-skilled work boundaries and direct and indirect demarcations. There are greater demands for co-operation between all levels and functions in the organisation and a transformation of line management, as supervisors become coaches and the traditional relationship between direct production and indirect support departments is reversed. As technical functions (e.g. engineering and personnel) are devolved to the teams, indirect departments move into more supportive relationships (Badham, Couchman and McLoughlin, 1997). The removal of such traditional work boundaries and demarcation lines is a source of potential disruption in organisations.

Indeed, the transformation of both horizontal and vertical boundaries with the introduction of self-managed work teams impinges on the interests of a broad range of stakeholders, who may perceive a variety of threats and opportunities. More than projects which focus on the technical dimensions of change, sociotechnical projects may be characterised by political negotiations, alliances and compromises. In such circumstances, the final nature of implemented change and its impact on productivity, working conditions and so on will be crucially influenced by how conflicts and compromises are managed and resolved during the change process.

The introduction of self-managing teams also involves considerable changes in the skills, attitudes and activities of personnel at all levels. Direct labourers become responsible for far broader aspects of their work, line managers become more concerned with system development and strategic issues and traditional specialists (e.g. engineers and human resource specialists) are required to work more in interdisciplinary teams, often in greater contact with direct production operations.

The complexity of such projects also increases their vulnerability. There are a considerable number of unknowns involved in their introduction. For example, in creating new forms of team work both management and the workforce have to overcome traditional distrusts in order to offer rewards on the one hand, and both effort and commitment on the other. Yet there are inevitable uncertainties about how the other side will behave and how far the final result will be either productive for the firm or

rewarding for the employee (Badham, Couchman and McLoughlin, 1997).

In the change process itself, as self-managing work teams are adapted to the particular production and organisational environment, clear directives become complicated by a myriad of detail and compromises. For example, teams are expected to take on more responsibility and be trained to do so, yet how much responsibility, the speed of the introduction, the time and the facilities available for training, the educational and cultural content of the training etc. are all far less clear. The uncertainty, frustration and potential for sabotage involved in the lengthy processes of resolving such issues is a further factor which considerably increases a projects' vulnerability.

In summary, a company may take many positive steps to implement self-managed teams, communicating about the need for change and a vision of the future state and enabling key players to participate in the design and introduction of the teams. However, there are many issues relating to the complexity and vulnerability of the change to self-management and the implementation process, which may have an adverse impact on the outcome of the initiative. This case will explore these issues using a wealth of information collected from an extensive interview programme.

4.2.3 The Introduction of a Pilot Team

The Industrial Society survey (1995) found that despite the complexity of initiating self-managed work teams relatively few have been piloted. In fact, only 25% of organisations surveyed had piloted self-managed work teams in their organisations. The additional complexities engendered by implementing a pilot team in an already complicated change process suggest that alternative strategies in introducing self-managed work teams may hold more appeal to many organisations.

Indeed, it is proposed in this thesis that one of the major problems with piloting self-managed work teams relates to the radical and complex nature of the change. To be successful team-based work designs must fit with the organisational arrangements and systems. This notion of congruence was discussed in some detail in Chapter Two, in particular the importance of the fit between organisational systems (existing organisational structures, policies and procedures) and the team-based systems being implemented. For example, Nadler and Tushman (1979) suggest that organisations will

be most effective when their major components are congruent with each other, that changes in one element of the system will result in changes in other parts of the system and that organisations seek equilibrium, moving towards a state of balance.

Taking this perspective, if an organisation introduces a pilot team-based work unit in an operational environment in which there is a traditional, hierarchical structure, supported by organisational arrangements and systems based on individual values, there will be conflicting pressures on the team. In the team development process, efforts will be made to influence the team to act and think as a unit, yet they will still be working and receiving rewards in a traditional, individual-oriented system. In a pilot situation, organisational arrangements, such as supervisory and managerial practices and reward systems, will not be changed and will continue to support an individual approach to work. All elements of the work environment need to be congruent to sustain team-based work systems. When one pilot team is introduced in one part of an organisation, this congruence does not exist.

It is, however, important to recognise that organisations face a difficult question when implementing radical and fundamental change initiatives, such as self-managed work teams. There is the need to balance a test of the proposed structure, to make sure it works in practice in a particular environment, with the realisation that such a test in itself may prove impractical because of the lack of congruence between the old and the new organisational systems. In some ways, the introduction of pilot teams may represent caution and the realistic concern to maintain organisational effectiveness. In the case of self-managing work teams, however, pilot teams may in themselves create too many obstacles to success and doom the initiative to failure. This is essentially because key figures are operating in two systems (the old and the new), with two sets of arrangements, policies and procedures and achieving a workable balance in a changing environment is very difficult.

4.3 Aims of the Case

In the present case, there are three aims. Acknowledging recent work conceptualising the problems of fit between lean production manufacturing strategies and self-management, the first objective of this case is to explore the implications and practical limitations of implementing self-managed work teams in an existing assembly line and

cell-based lean production environment. The focus will be on the impact of the change on specific features of the work organisation, such as leadership, autonomy and interdependence.

Accepting the difficulties inherent in the introduction of self-managed work teams in a lean production environment, the second aim of this case is to examine in some detail the implementation process and the complexities of the people issues in such a change process. Qualitative data from an extensive interviewing programme will be used to explore the politics of the change process, in terms of people's perception of the changes to vertical and horizontal structures and the removal of demarcation boundaries between direct and indirect work. The case will also consider managers' and team leaders' styles in handling these sensitive changes and the effect of this on team member's behaviour. Also, with regard to the implementation process, the case will explore the problems created by uncertainty. Even in a change process with detailed action plans and the participation of those involved in the change, there is room for frustration and uncertainty and lessons can be learnt from detailed case analysis.

The proposition in relation to the third aim is that in a complex and radical initiative, such as the introduction of self-managed team working, a pilot study is not the most appropriate implementation strategy. The nature of organisations is such that they seek to maintain a steady state. To effect a change, the forces for change must be stronger than the forces to maintain the status quo. This is unlikely to be the case when only a small part of the organisation changes, unless special features are introduced, such as the creation of an "elite" team or rewards associated with the change process. When one pilot team based on the principles of self-management is created in an environment designed on the basis of interdependence, low control and individual values and rewards, then there is a problem of congruence between elements in the system and there are inherent barriers to success. Heavy demands are placed on people expected to operate with the demands of two competing and conflicting systems simultaneously. Data collected from interviews with team members, team leaders and managers is used to explore the nature of the problems associated with implementation of pilot self-managing work teams.

4.4 The Design and Methods of the Case

This case was designed as a longitudinal study, investigating the implementation of self-managed work teams over a two-year period from their introduction into the organisation in November 1996. Multiple sources of information were used in this case, including observation and structured interviews (both individual and group).

4.4.1. Observation

As a first step, after the negotiations with the company to secure participation in the study, the researcher initially took on the role of passive observer on the shopfloor. At this stage, there was no involvement with any of the operators, and the idea was to learn about the work environment before the team working intervention. This short period of observation provided an opportunity to learn about the work processes and products, and to record details of the physical setting, events and activities.

The researcher took on the participant as observer role throughout the remainder of the study and spent time on the shopfloor and at meetings, observing the teams and advisers and their activities, interactions, work patterns etc.

4.4.2. Interviews

The researcher conducted a programme of interviews to collect data on the transition to team working (see Table 4.1 below). The interviews started prior to the intervention and continued on a quarterly basis throughout the two-year research period. Both one-to-one and group interviews took place face-to-face and off the shopfloor. All the interviewees had a minimum of one year's experience within the company.

4.4.2.1. One-to-One Interviews

This study was initiated at the beginning of the change process and the researcher was able to interview all the key players in the intervention, including team members, team leaders and managers. The one-to-one interviews were used to gather detailed data and personal perspectives about the change to, and the nature of, self-managed team working. Interview protocols were used to record comments.

4.4.2.2. Group Interviews

Group interviews were seen as advantageous and included in the design because in a

team-based work setting they were considered likely to yield important information about the teams i.e. the changes, team dynamics and team problems from a team perspective. Individual comments and ideas from members of the groups (i.e. complete teams or groups of team leaders) provided the other group members with inspiration and thoughts about the initiative. Again, interview protocols were used to record comments.

Table 4.1 Interview Programme: Schedule of Interviews within Clearwipe (numbers of interviews in brackets)

Pilot Study: November 1996 – January 1997	One-to-One Interviews: Manufacturing Director (2); Production Manager (3); Personnel Manager (2); Training Manager (2); Pilot Team Leader (2); Pilot Team Members – 2 repeat interviews with 2 Team Members (4) Group Interviews: Steering Group (2); Pilot Team (1)
Pilot Team: January – May 1997	One-to-One Interviews: Manufacturing Director (1); Production Manager (3); Personnel Manager (2); Training Manager (3); Pilot Team Leader (3); Pilot Team Members – 3 repeat interviews with 3 Team Members (9) Group Interviews: Steering Group (2); Pilot Team (2)
Cell Teams: September 1997 – June 1998	One-to-One Interviews: Manufacturing Director (1); Production Director (3); Training Manager (3); Technical Support Facilitator (2); Team Leaders – 3 repeat interviews with 3 Team Leaders (9); Cell Team Members – 3 repeat interviews with 3 Cell Members (9) Group Interviews: Cell Teams – 4 repeat interviews with 3 Cell Teams (12)

4.5 Company Background

4.5.1 Company Profile

Clearwipe plc is an American-owned manufacturer of vehicle windscreen wiper products, employing approximately 450 permanent and 200 temporary staff at its factory in South Wales. The site opened in 1992 after the company relocated from its plant in

Brentford, West London, which had been established in 1928. Clearwipe plc supplies original equipment to the main UK-based car companies, including Ford, Honda, Rolls-Royce, Rover and Vauxhall, and to the domestic and overseas after-market. Overall, it exports about half of its production. In the 1996-97 financial year, Clearwipe plc UK had a turnover of £32 million. The company holds a range of quality accreditations, including ISO 14001 and 9001, and is a Ford Q1, Rover Group RG2000 and Volkswagen VDA-6 rated supplier. It received Investors in People accreditation in 1995.

4.5.2 The Work Environment before Self-Managed Team Working

When Clearwipe plc relocated to Pontypool from West London in 1992, it was intent on establishing a wholly different culture and way of organising work that would secure commitment from all employees and assure the company's long-term future. Changes were planned to the old production system, the rigid job demarcations and the status differences, which had characterised the Brentford factory for almost 65 years. In their place, Clearwipe plc intended to introduce cellular manufacturing, kanban systems, team working and total flexibility across all areas of the company. An open management style and single-status terms and conditions were also planned for the new factory. By 1996, these plans had been implemented with varying degrees of success. For example, Clearwipe plc had moved towards a just-in-time philosophy of operations and had introduced cellular manufacturing and kanban control, but had been less successful in changing to team working and an open management style.

The original blueprint for the new factory included the introduction of self-managing work teams, with the hope that these teams would be established in every part of the plant that lent itself to this form of work design. However, the logistical requirements of relocation meant that plans for the introduction of self-managing teams were put on hold initially. This was mainly because a large product inventory was needed to satisfy customer demand while relocation and start-up were accomplished and the move to South Wales also coincided with an upturn in the demand for Clearwipe plc's products. As a result, the emphasis of the plant in the first few years was solely on "output" and some of the intended initiatives, e.g. open management and self-managed team working, did not materialise. Also, only fifty Brentford personnel made the move to South Wales and these people were employed on short-term contracts to facilitate the transfer. This

meant that an entirely new workforce had to be trained before the plant was fully operational. Whilst the introduction of self-managed team working was not initiated immediately, the company continued to use appropriate selection procedures to ensure that the operators employed would be suitable for a future change to self-managed team working.

The decision to resurrect the idea of self-managed work teams was taken in November 1996. Observations and qualitative data from interviews with operators, team leaders and managers in January 1997 revealed that the work design of the operators at that time was very traditional. Clearwipe plc manufactures high volume, low cost products and fluctuations in product demand create unpredictability and variability in the production units. The manufacturing operations are based on lean production principles. This has resulted in high interdependence amongst groups of workers, completing a narrow range of different tasks. The interviews revealed that the operators' tasks were largely standardised, fragmented and specialised, and had a low level of task identity. Work method and work pace were set by management. Essentially, the operators had little control over what they did, and how and when they did it. The team leaders and supervisors were responsible for planning the work, recording and analysing team-related data (efficiencies, scrap, and downtime), allocating jobs and tasks and liaising with internal and external customers. The technicians in each section were responsible for changeovers and machine maintenance and the line feeders provided the lines/cells with the necessary materials. In many ways, the operators waited to be told what to do and when to do it. Team leaders were inundated by very basic questions from operators all the time. This is illustrated by the following quotations taken from the interviews with team leaders in January 1997:

> *"... whenever I am at my desk, people come and ask me for a form for holidays or absence, for example, and yet they know that what I will say is 'fetch one from the personnel cupboard'.."*
> *"... if any part of the machine goes wrong they come and ask me what to do, knowing that what I will say is find a team member who is trained on that bit or call a technician. And still, they ask me first every time."*

The amount of variety that operators had in their jobs was limited, partly because of the nature of the tasks themselves, but also as a consequence of the distinctions made between the direct and indirect tasks (the operators and the support functions). For

example, technicians were called to complete even routine changes to machines, although it was widely acknowledged that many operators were so experienced on the machines they could already carry out these changes if they were so inclined. Other operators would have been able to carry out these changes quite easily after appropriate training. Job feedback was also limited with, for example, operators having no involvement in calculating performance data, nor receiving feedback from that information.

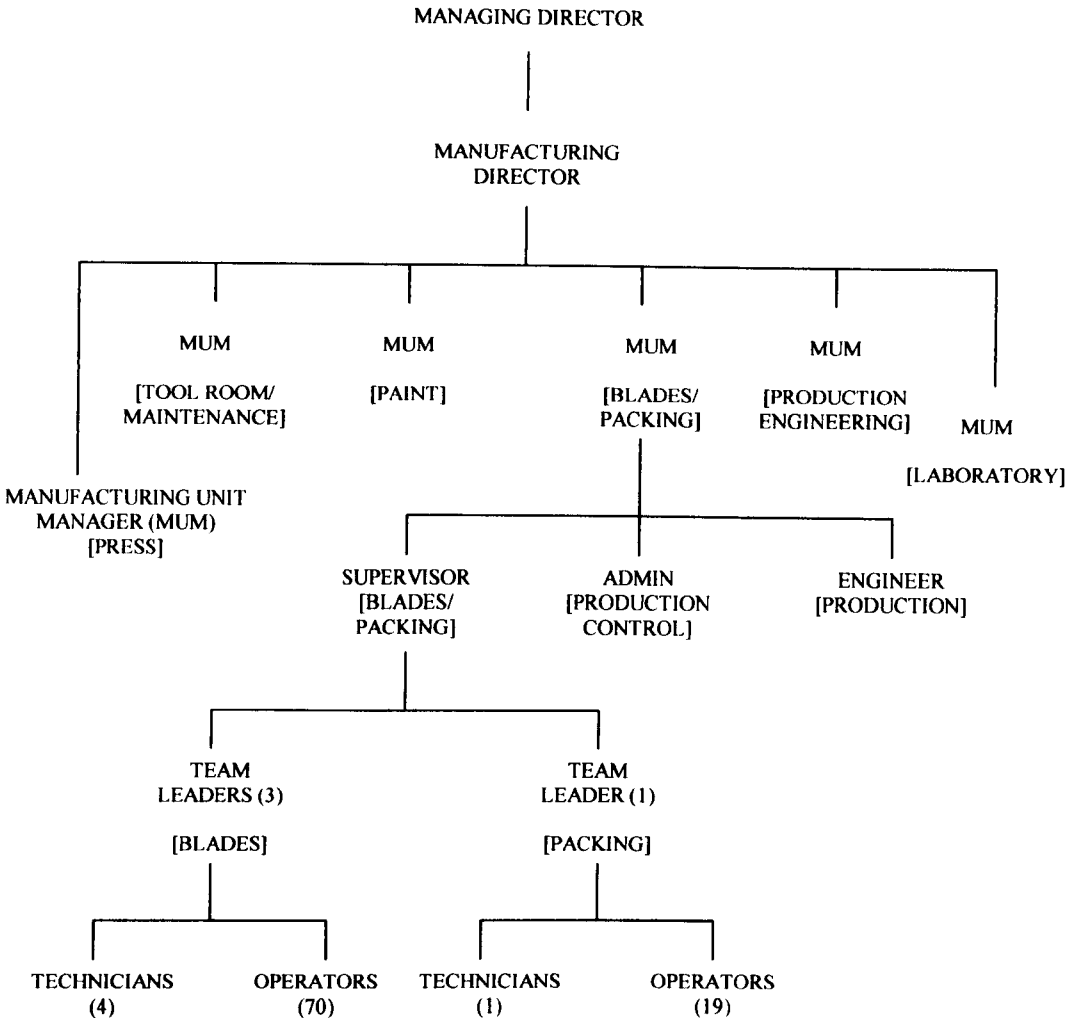
Each cell/line was responsible for performing a limited set of interdependent tasks. Operators had limited information processing and decision-making to do during task performance and, in many ways, the lean production system at Clearwipe plc provided an environment which encouraged programmed and routine responses from the operators. The cells/lines were hierarchically driven by the team leaders. The lean production system, with no buffer stocks, created an environment in which the emphasis was on keeping the production process going. In early 1997 in Clearwipe plc, it was the team leaders, not the team operators, who solved any problems arising on the shopfloor to achieve this. As such, there was limited collaboration between cell/line members and limited ownership of the production process. The following table summarises the work organisation prior to the implementation of self-managed team working in Clearwipe plc.

Table 4.2 Characteristics of the lean production system in Clearwipe plc.

Characteristics of manufacturing organisations	*Lean Production in Clearwipe plc*
Origin	Japan – Toyota Pull System, 1960s
Primary Goals	Continuous improvement in work operations; improvements in organisational flexibility and product quality for competitive advantage
Assembly operations	High interdependence among groups of workers
Leadership	Depends on strong team leader
Task cycles	Fragmented, specialised tasks – low level of task identity
Work method	Standardised tasks – exact standards developed for each process, the cells/lines have no influence over work pace or method
Work organisation	Cells/lines, with strong leaders chosen by management
Job rotation	Scheduled, workers carry out a wide range of narrow tasks
Indirect tasks	Responsible for quality control, problem-solving etc. to reduce costs and improve quality
Material Flow	Pull system; no buffer stocks; system fits with high interdependence and strong leadership
Individual work pace	Set by management, variations impossible
Links	Tightly linked to internal customers - to improve product quality

The very traditional organisational structure at Clearwipe plc is indicated in the following figure, which illustrates the hierarchical nature of management in the organisation at November 1996. Although the figure describes only one section of the organisation (the one focused on later in the case study), it is representative of the organisational structure as a whole.

Figure 4.1 Organisational structure of the Blades/Packing Manufacturing Unit at Clearwipe plc in November 1996



During the initial interviews in January 1997, it emerged also that some of Clearwipe plc's managers believed it was harder to make the change to self-managed team working on a brownfield site in 1997-8 than it would have been to persevere with the change on a greenfield site in 1992. Attitudes, expectations and patterns of work behaviour had evolved to fit the existing structure, systems and culture, and the managers considered redefining these in an organisational change process to be an extremely difficult task.

4.5.3 The Rationale for Self-Managed Work Teams

The rationale behind Clearwipe plc's decision to implement self-managing teams was, according to the Manufacturing Director, to "*tap the talent of its people*" in terms of innovation and ideas by letting operators and team leaders take on greater responsibility and control of their work areas. As mentioned in the last section, the jobs performed by

the majority of the operators on the shopfloor were monotonous, involving a number of repetitive tasks. Self-managed team working was seen as a way of improving work performance and increasing job satisfaction, by providing individual employees and teams with more control over their day-to-day activities.

In early 1997 in Clearwipe plc, there was considerable unpredictability in the work environment created by fluctuations in product demand. One of the features of the introduction of self-managed work teams was the belief that the teams would be able to exert some control over the variability in the production environment. Research (e.g. Cordery, Wright and Wall, 1997) indicates the importance of self-managed work teams being able to control aspects of the production environment.

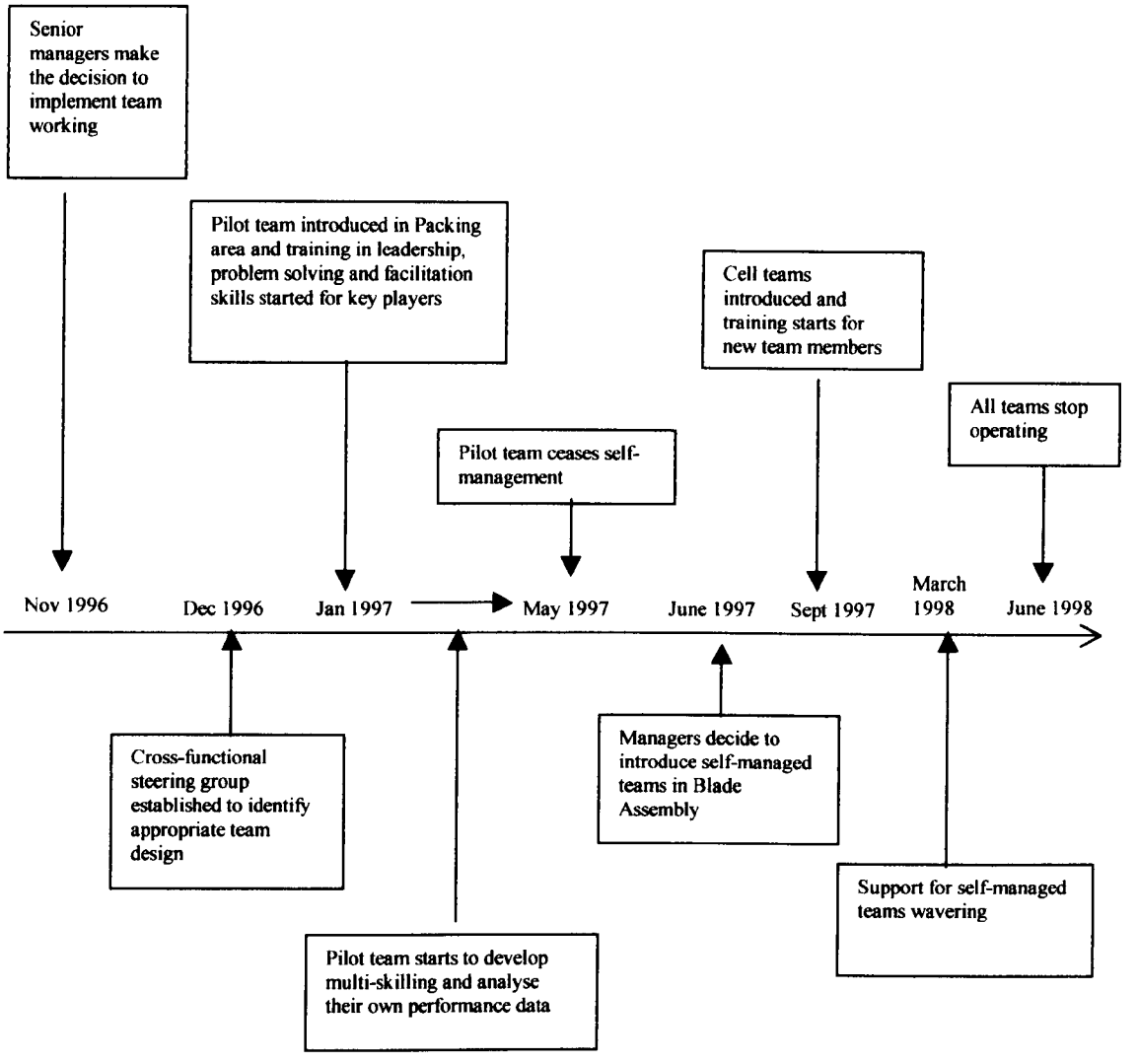
Self-managed team working was also seen as an extension of the continuous improvement philosophy, with the aim of giving staff a greater understanding of the whole production process, right through to the end-user. According to the Manufacturing Director "*taking ownership is the bottom line*" and self-management would enable the company to serve the customer better. It is interesting to note that, at the outset of this initiative, self-management was seen as an extension of the continuous improvement philosophy. In fact, as it transpired, the juxtaposition of the two very different philosophies of continuous improvement and self-management proved incompatible in this production environment.

In the change process, it was envisaged that the nature of the organisation would move from a traditional, autocratic, hierarchical structure to a team-based, participative, involvement structure.

4.5.4 The Design Process for Self-Managed Team Working

The key stages of the implementation process and the timing of the different interventions during the change process are recorded on the time line below.

Figure 4.2 The timing of events in the move towards self-management



Towards the end of 1996, Clearwipe plc's management decided that it was appropriate both from an economic and an operational point of view to pursue its vision of self-managed team working. The Manufacturing Director and the Personnel Manager led this initiative and the following steps took place as part of the preparation for, and implementation of, self-managed team working. These steps are described below, loosely in chronological order.

4.5.4.1 Deciding on a Model of Self-Managed Team Working

The first step was to identify an appropriate model of team working. In November 1996, the Manufacturing Director and the Personnel Manager attended an externally run course on the introduction of self-managed work teams. They also visited other companies to see self-managed team working in action and to benchmark themselves against other manufacturing organisations.

In January 1997, a steering group was set up, with cross-sectional representation from the organisation. The steering group included the Manufacturing Director, the Personnel Manager, the Manufacturing Unit Manager (Blade Assembly/Packing), the Training Manager, a team leader and external consultants. The steering group's remit was to consider the design of the team and to identify training requirements, support systems and timescales.

The steering group decided on a model of self-managed team working, in which teams of three to ten team members would gradually assume responsibility for a range of the duties assigned to team leaders under the existing structure. No restructuring would take place and teams would be created from existing work units. The size of each team would depend on the size of the original work units or cells. At this time, in January 1997, a widely accepted perception of the team leader's role was that too much time was spent fire-fighting and reacting to endless, unnecessary question and problems from operators. It was believed that providing the operators with more control and autonomy over their immediate work environment would enable team leaders to invest more time in wider company issues, such as operational strategy and planning, and free them from their predominantly reactive role.

The steering group agreed that the self-managed work teams would assume responsibility for the organisation of, and have authority to take decisions in, the following areas: day-to-day manufacturing decisions (e.g. planning and scheduling orders, prioritising lists for customers), machine changeovers, housekeeping, problem-solving and administration (e.g. recording and analysing team-related data on scrap, efficiencies, downtime, absence and sickness), developing and maintaining a training matrix for the team to ensure all team members were multi-skilled, job rotation (e.g. making decisions about the allocation of jobs and tasks within the team), quality, and internal/external liaison with other teams and customers. In January 1997, responsibility for these tasks resided with the team leaders and the aim was for the self-managing teams to have little or no reliance on team leaders in these areas within twelve to eighteen months of the introduction of self-management. The responsibility for, and authority to take decisions about, the allocation of holidays and overtime, and involvement in the budget process would be devolved to the teams in the longer term. Responsibility for discipline and assessment would remain with the team leaders/managers.

The steering group based their decisions about the nature of the work to be assumed by the teams by marrying a textbook view of the subject with the practical realities of the situation within the company. For example, Wellins et al (1991) define self-managed work teams as groups of employees who have responsibilities for managing themselves, assigning jobs to members, planning and scheduling work, making production-related decisions and taking action to remedy problems. Taking this definition one step further, Manz (1992) considers that self-management lies on a continuum. At one end, a low degree of self-management implies that the team has little discretionary decision-making power or responsibility beyond such a rudimentary level as when to take a lunch break or when to call maintenance for a repair. At the other end, a high degree of self-management implies that the team has great latitude in decision-making, including such responsibilities as the procurement of raw materials or the hiring and firing of team members. The practicalities of the situation for Clearwipe plc resulted in them aiming the initiative at the high end of this continuum.

In terms of team working aspects of this definition and initiative, there is a notion that a work team is a group of individuals working interdependently to solve problems and accomplish tasks (Manz and Sims, 1993). Again, as with self-management, the use of teams may also be thought of as lying on a continuum (Manz, 1992). At one end, teams with a low degree of interdependence consist of employees who rarely see each other and perform their tasks without exchanging information or materials. At the other end, teams with a high degree of task interdependence consist of employees who frequently interact and constantly exchange materials and information to complete their tasks. Clearwipe plc's aim was to create a high degree of interdependence between the team members.

All told, the design of teams in Clearwipe plc was such that their success depended on team members' willingness to engage in self-managing behaviour and to share responsibility with other team members.

These plans for the transfer of responsibilities from team leader to team member and associated role shifts were very much in accordance with the team development frameworks described in Chapter Two (i.e. van Amelsvoort and Benders, 1996: Holpp, 1993: Badham, Couchman and McLoughlin, 1997). There would be a gradual transfer

of responsibility and accountability for daily operations and associated decisions from the team leader to the team members, until the team reached the situation in which the team members handled all inputs and outputs on their own authority and were involved in functions like selection and rewards.

The Manufacturing Director believed that the teams would go through three stages before successful self-management was realised. First, they would develop their own norms and ways of dealing with things (looking inward); second, they would establish an effective working relationship with their internal suppliers and customers; and finally, once these two goals had been achieved, they would develop closer contact with external customers.

The steering group agreed that the leadership role would gradually transfer from the "external team leaders" to "elected team leaders" within the teams and they drafted definitions of all new roles (the new external team leader role, the elected team leaders, team members and facilitators). The steering group decided that the transition to self-management would begin with a pilot team in the Blade Assembly/Packing Unit, which would be initiated in late January 1997, and gradually extend to other areas of the organisation.

4.5.4.2 Timescales

At the strategic, philosophical level, there was a realistic view about the length of time it would take to implement and develop successful self-managing work teams within Clearwipe plc, i.e. two to five years. In January 1997, the steering group devised an action plan describing the different stages of team development and implementation and the timescales for each stage. This clearly reflected a long-term perspective.

At a more practical day-to-day level, however, there seemed to be an expectation that teams would produce more immediate changes and results and indeed, there was some pressure from management on the pilot team and the first cell teams to produce results quickly.

4.5.4.3 Training

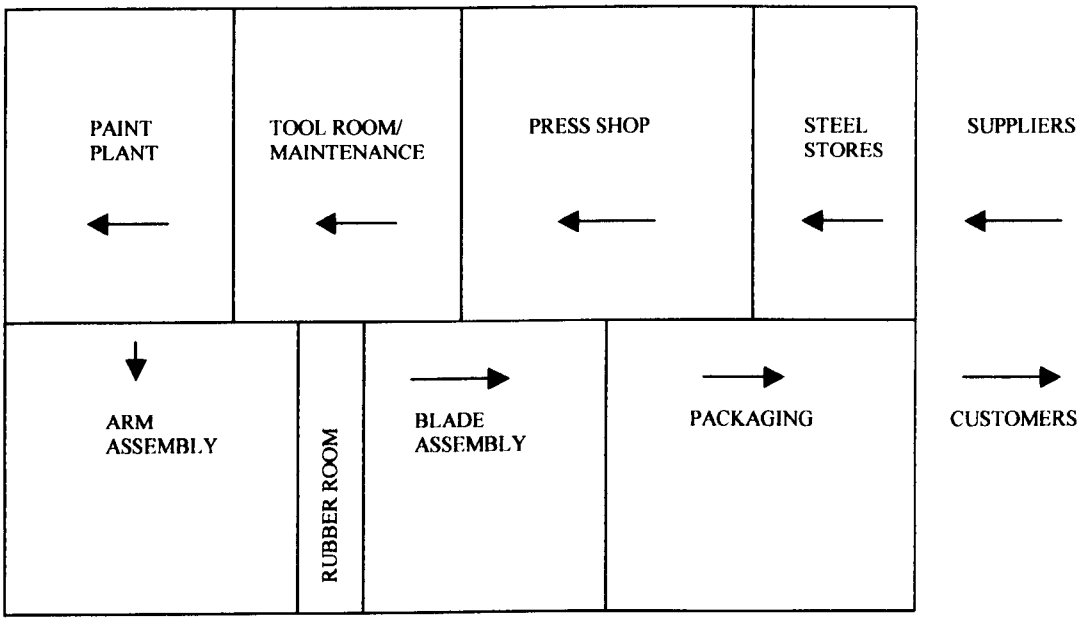
Training was considered key to the success of self-management. Members of the steering group underwent formal classroom training in leadership and problem-solving skills in January 1997. The members of the pilot team attended a one-day training programme in January which introduced the concepts of self-management, as well as providing problem-solving skills training. The Training Manager and the team leader of the pilot team also attended a one-day course in facilitation skills.

4.5.5 The Pilot Self-Managed Work Team

4.5.5.1 Implementation

The pilot self-managing work team was set up in January 1997 in the packaging area of the Blade Assembly/Packing Manufacturing Unit. The packaging area was chosen because its proximity to the customer in the supply chain made it a good starting point for the forging of closer customer links. Also, any teething problems could be addressed without adversely impacting other areas of production. The layout of the production process at Clearwipe plc is illustrated in Figure 4.3 below.

Figure 4. 3 A plan of the shopfloor layout at Clearwipe plc.



Another reason the packaging area was identified as appropriate to pilot self-managed team working was because a new automatic packaging machine was installed in 1996 and its initial performance had failed to live up to expectations. The introduction of self-managed team working with a focus on continuous improvement was believed to be one

way of tackling this performance problem.

In addition, packaging was a self-contained unit and its group of workers a clearly identifiable team. The existing group was an appropriate size for a self-managing team, with eight members, and it was clearly possible for the group to take more control over, and responsibility for, their day-to-day activities. The group was relatively interdependent, working on common products and reporting to the same team leader.

The initial reaction to the notion of self-management among team members was very positive. The steering group, which included the pilot team leader and the Training Manager, decided on a plan for the transition to self-management. A logical starting point seemed to be the development of multi-skilling in the team, and the associated development of a training matrix. Team members would be able to learn the technical skills for changeovers, for example, fairly quickly and could design and set up the matrix itself. This would provide a feeling that things were starting to change and would be rewarding for team members, as well as immediately increasing variety in the job.

It would also tackle a persistent problem for the team. A large amount of the downtime, which reduced efficiency and was a major issue for the senior managers, stemmed, in part at least, from only one team member having the skills and confidence to carry out changeovers and minor technical adjustments to the packing machine. Once the training matrix was developed, and as team members became more multi-skilled, decisions about the allocation of tasks would become the responsibility of the team.

Alongside this practical initiative, the team members were asked to use their newly acquired problem-solving skills by starting to record and analyse team-related data and by developing a continuous improvement project to work on as a team. As mentioned previously, machine and operator efficiency were considered to be a problem, averaging about 55%, and this was a key issue the senior managers wanted the team to address through self-management. By recording and analysing their own data, and having to describe and document reasons for downtime, machine stoppage etc., the team would gain more knowledge about their work practices, and would be more likely to take ownership of any problems and responsibility for solving them. These problem-solving activities would significantly increase the cognitive demands of the team members' jobs.

At this stage, the team leader's role in the transition to self-management involved guiding team members to handle their new responsibilities, attending team meetings and providing input to the team's problem-solving projects. The team leader was also adapting to a new role, trying to provide guidance without directing the team in their work and without taking responsibility for their problems. The steering group agreed that when the team was sufficiently developed, some functions of the team leader role would transfer into the team to an elected team leader. Indeed, a leader was selected within the pilot team after three months. The Training Manager took on the role of facilitator for the pilot team at the start of the transition period, to advise and guide in team meetings and help develop the team members' interpersonal, team working and meeting skills.

4.5.5.2 Pilot Review

In May 1997, the pilot self-managed team ceased to be self-managed for two main reasons. Firstly, product demand increased dramatically and the company needed to introduce shift working into the packaging area. The self-managed team was split up to ensure operators with experience on the machine were available across both shifts. Secondly, and perhaps more importantly, there was some frustration amongst senior managers because little visible progress seemed to have been made towards self-management and towards improving performance, especially efficiency. It is interesting to note with regard to this second point that, although the performance of the pilot self-managed team did not improve significantly as the steering group and senior management had expected, team performance did not dip either. In fact, it has been reported by Clearwipe plc that during this period efficiency improved by 2-3% (IRS Management Review, 1997). Pilot team performance in Clearwipe plc did not conform to the pattern widely acknowledged in the literature (e.g. Katzenbach and Smith, 1993), in which there is a clear downturn in performance by teams before noticeable improvements.

However, despite this frustration with regard to efficiency data, there were some significant changes in the team and the way they worked together during the five-month pilot period. Clear, sustained benefits were not achieved in terms of improved efficiency; however, the team members took on more responsibilities, became more multi-skilled and achieved results in several continuous improvement projects, whilst maintaining

stable, albeit low, performance levels.

The pilot self-managed team did, in fact, start to assume responsibility for, and to take decisions in: day-to-day manufacturing decisions (requesting information on customer deadlines, to know which products to build and when, to help reduce numbers of changeovers and hence downtime and the team also requested an inexpensive solution to a machine problem to reduce downtime); allocation of tasks and job rotation; housekeeping (changing the layout of the work area to a more logical and productive configuration and relocating some stock items to save operators carrying large boxes over, or pushing them under, a conveyor): team-related data (calculating their own efficiencies, starting to analyse efficiency problems and to generate ideas to tackle some of the more immediate problems, recording their data visually); training (team members started to train each other on machine skills and to transfer knowledge; previously, only one team member had the knowledge and experience to complete changeovers and four team members had developed these skills by May 1997 and these four team members also learnt to set up the machine); internal/external liaison (liaison with one customer led to changes in the configuration of boxes sent to the customer, which solved a problem for that customer).

There was also a significant change in terms of team dynamics. Over the five months that the team was self-managed, the team dynamics improved remarkably, with team meetings becoming more productive and constructive. The team was starting to develop norms (Tuckman, 1965). The team selected a team leader after three months. This elected team leader was the person with the most technical skills, who could already handle changeovers and minor technical problems and who was, therefore, well placed to pass on this knowledge to other team members. The elected team leader was also responsible for convening team meetings and leading those meetings.

Peer pressure developed in the team, as it evolved. For example, team members were initially protective of colleagues who were absent, not wanting to confront them on their return and make them account for their absence. This changed, as the team realised that it was responsible for its own performance. The team established its own norms with regard to absence.

In many ways, it is clear that, although the pilot self-managed team did not demonstrate the immediate and tangible performance improvements, particularly the improvements in efficiency, anticipated by the senior managers, the team did develop significantly over the five-month period. Within the team itself, the team members had started to assume responsibility for monitoring efficiency data, downtime, scrap etc. and to plan their work (increasing the cognitive demands of the job). The team members started to become multi-skilled (increasing job variety) and were working more interdependently as a team in taking on these new roles and functions. The team was clearly a long way from becoming self-managed, but it was certainly the case that the team members' jobs had been enriched and enlarged (Badham, Couchman and McLouglin, 1997).

One of the main reasons for introducing a pilot team in one area, before wider implementation of the self-management initiative, was to identify any particular problems that would hinder the wider dissemination of teams in Clearwipe plc. Some of the key issues highlighted by the pilot study are now described.

Team meetings were supposed to take place on a regular basis (i.e. weekly) to review the transition to self-management and the progress of the team members in taking on their new responsibilities and to provide an opportunity for the team to discuss their problem-solving projects. Other meetings took place as and when necessary and were designed to facilitate the team's progress towards self-management. One of the initial difficulties with the meetings was that they were scheduled, on the instructions of the senior managers, to take place outside the shift times. Team members were paid overtime to attend these meetings, but the timing of the meetings (e.g. 7am, an hour before the usual starting time) meant that some people had difficulty making arrangements to get to the meetings, because of, for example, transport- or childcare-related problems. The fact that they were outside normal working hours was perceived by the team members to reflect a lack of commitment to the transition to the self-managing work team initiative by senior management.

The meetings themselves went through quite a standard pattern of development, with team members in the early meetings spending their time very negatively, complaining about the company and the problems facing them in the self-management initiative (forming). They then moved into a second phase (storming), with team members vying

to define their roles in the team (Tuckman, 1965). By the end of the five-month period of operation, the team was starting to develop norms. There were problems, however, in the team meetings. For example, individual team members came up with lots of ideas for improvements, but had no real idea how to put them into practice. This situation increased feelings of uncertainty as team members knew they should be doing something but were unsure what to do and how to do it. The team leader and the facilitator were trying not to be directive, rather to coach and guide, but it seems the team members were not ready for this approach. As a consequence, the meetings became "talking shops", with few of the initiatives discussed put into practice. This was frustrating for team members and senior managers alike. Communication problems also came to the surface when suggestions failed to get the support of other team members.

It was also difficult for the team to achieve any real control over their work methods and work pace. The production process is such that the tasks are very standardised and the Blade Assembly cells and Packaging line work interdependently to assemble and package the products. This following example illustrates this. The pilot self-managed team suggested a change to the way in which the work orders were processed, to reduce the number of machine changeovers required and hence the downtime. Running small batches on this machine has always been a problem because of the amount of downtime required for changeovers. However, as fundamental to the success of the team in gaining control over their work area and as logical as this suggestion seemed, it was impossible to implement without a radical change to the work processes and configuration of the cells in Blade Assembly. Senior management considered this inappropriate in a pilot situation.

The interface between the pilot self-managed team and other areas of the plant did not work well either at first. The packaging team was initially frustrated that other departments did not take it seriously because they were operating with an elected team leader rather than a formal team leader. In spite of the single-status ethos of the plant, there was an initial reluctance among team members to approach managers or team leaders in other sections, the general feeling being that it was the job of the unit manager to do so.

The steering group, whilst professing to understand that the change to self-management

is a major cultural change, requiring major shifts in attitude and behaviour, seemed to have expectations of quick results. A lot was expected from the pilot team in a short time. There was also particularly strong emphasis on the efficiency problems of the team from senior management, and this was reflected in all their dealings with the team. At the outset, when the team was being set up, team members were encouraged to think of an efficiency-related issue for their first problem-solving project. Many of the team meetings turned into problem-solving meetings, with the team focusing on their inability to increase their efficiency. In the face of this emphasis on efficiency, other achievements went unnoticed and were not acknowledged by the managers, causing disappointment amongst team members. The belief also developed amongst the team members that the managers had only one goal for the self-management initiative i.e. to improve their efficiency, and that the discussions about making their jobs more interesting through increased variety and autonomy were meaningless.

It was clear from the outset that some of the team's efficiency problems were created by the operators rather than the machine. The team was only just starting to develop the confidence and cohesion to tackle sensitive people issues towards the end of its operational period. In team development, it is quite usual (e.g. Katzenbach and Smith, 1993) for teams to take on safe, practical projects in the first instance. The managers were also disappointed that the pilot team did not seem to want to take responsibility for the packing machine. For example, when the machine was down for a whole day, the team did not self-manage, they waited for the team leader to tell them how to spend the day, whilst engineers repaired the machine.

Day-to-day responsibilities (see previous list) were devolved to the team from day one. The pilot team discussed the nature of self-management with the steering group, the trainer and external consultants and expectations of self-management were shared. It seems, however, that despite the action plans for the devolution of tasks and some timescales for the transition process, the team did not know how to take on these responsibilities and needed a considerable amount of direction and guidance from the team leader and facilitator. There still seemed to be some considerable uncertainty for the team members and team leaders about their roles, responsibilities and expectations.

There were also some problems with commitment by one of the key players associated

with the pilot self-managed team. The elected team leader did not always attend team meetings and did not share his knowledge with the team, despite that fact that he had the most technical knowledge about the packaging machine and this was one of the reasons he had been elected to this role. Although the notion of multi-skilling was discussed widely with the team, and it was a clear expectation of self-management that the team members would share their knowledge and experience, the elected team leader did not want to share his knowledge with other team members. Nor was he always immediately available when the machine stopped which had a negative impact on team performance (increasing downtime and decreasing overall efficiency). At least in part, this behaviour was politically motivated by the elected team leader, as he felt he should be upgraded to technician with his knowledge and skills. The situation was made more complicated because management did not want to tackle this problem as a disciplinary issue. They wanted the team to be self-managing and take on the responsibility for dealing with their own problems, although the team was clearly not ready to do this at this stage.

It was also difficult for the team leader to fulfil her role. With the pilot team, her role was as a facilitator. With the other teams in the area, she had more of a traditional, supervisory role. The transition between the two types of role, from tell-direct to coach-participate, whilst simultaneously working with the pilot self-managed team and other groups of workers in her section, was extremely difficult to manage. The team leader also acknowledged that she found it extremely difficult to pass on her responsibilities to the team members e.g. to involve the team in the planning and scheduling of work, because of a lack of trust about how well things would be done.

At the beginning of June 1997, the steering group reviewed the experiences of the pilot self-managed team and decided to introduce self-management more widely in the Blade Assembly/Packaging area. Although it was difficult to ascertain the tangible benefits of the self-management from the pilot team, there was a belief that the initiative had had some successes. The pilot team had maintained their level of efficiency (albeit at a low rate), whilst initiating changes in their work environment and whilst team members became more multi-skilled. It was also widely believed that now some of the problems associated with the introduction of teams had been identified, these could be tackled quite readily when teams were implemented in new areas. In this sense, the pilot study was deemed to have been beneficial.

4.5.6 The Introduction of Self-Managed Work Teams

In September 1997, on the basis of the outcomes from the pilot self-managing team, the steering group decided to introduce self-management more widely in the Blade Assembly/Packing Unit, but with a different underlying set of parameters. For operational reasons, it was agreed that there would be no further development of self-management in the Packing area. The original pilot team had been split between shifts and new self-managing teams would need to be developed. There were still considerable problems with efficiency in the Packing area and it was considered counter-productive to try to develop new teams under these circumstances, as the emphasis would inevitably still be on performance problems.

It was decided that self-managed work teams would be introduced in the Blade Assembly section. This section was divided into approximately 30 cells of three or four operators, with each cell working interdependently to assemble different windscreen wiper blade products. In this section, as in Packing, the operators had little control over their work (timing and method), and the variety in their jobs was very limited. Feedback on work performance was also very limited, although, unlike in the Packing area, most of the cells operate consistently at a high level of efficiency. The distinctions made between the different jobs in the section were quite similar to those made in the Packing area. Team leaders were responsible for planning the work, recording and analysing team-related data, allocating jobs and liaising with internal and external customers. The technicians were responsible for machine changeovers and maintenance and the line feeders provided the cells with components. Again, the cells were an appropriate size to become self-managed teams and it was clearly possible for the cell members to take more control over, and responsibility for, their day-to-day activities.

Unlike in the Packing area, inclusion in self-managed teams in the Blade Assembly area was voluntary. The Manufacturing Unit Manager placed notices around the section describing the initiative and held an informal "Information Session", which included team-building activities for people interested in pursuing the idea. On the basis of this session, 24 operators volunteered and six self-managing teams were created. The Training Manager had devised a training plan and the objective was that the self-managing teams would go through a fairly extensive three-month period of training. The training started with sessions on problem-solving techniques, including calculating

efficiency and downtime, monitoring scrap costs and rejects and planning works orders and arrears. The team members were trained in technical skills, to enable them to complete changeovers and solve simple machine problems. A training matrix was developed for each cell team to monitor the multi-skilling of the team members. Finally, there were training sessions in team working techniques e.g. leadership skills, meeting skills, decision-making skills and team development. In short, there was a clear action plan for the introduction of these teams, including a detailed training plan for each team, a description of when responsibilities were to be transferred from team leaders to team members (including, for example, involvement in day-to-day manufacturing decisions, such as planning and scheduling orders) and a summary of achievement targets. The action plan was quite detailed to remove some of the uncertainties that were outlined by the team leader and team members in the pilot team.

The cells took on the mantle of self-management towards the end of September 1997. A natural team leader was elected in all the teams within a matter of weeks and team meetings took place on a regular, weekly basis. These meetings were used to discuss the team data on efficiency and downtime and also to address the continuous improvement projects. In the first few weeks of their development, each team was asked to decide on a topic for a project. The idea was to tap into the teams' potential for identifying and solving their own problems, with the teams being asked to tackle important issues in their own environments in the first instance. The teams were provided with appropriate materials and resources. Not only was this initiative designed to encourage teams to take more control of their work environment and provide them the opportunity to start to act more autonomously, but it was also believed that initial successes were important for team development. The types of projects initiated included, for example, designing a new tray for assembly components, as team members considered there was a problem with parts spilling out of existing trays, and designing a chart of product characteristics to help teams with changeovers.

At the outset of the initiative during September and October 1997, interviews with the team members and team leaders revealed a great deal of enthusiasm for self-managed team working. Many of the team members felt comfortable taking on their new responsibilities and welcomed the opportunity to take more control of their work environment and solve some of the problems that had been niggling them. Also, some of

the team members were already confident in calculating team-related performance data and completing changeovers having spent five years watching the technicians do this task.

During October and November 1997, the team leaders began to train team members in problem-solving techniques and the teams created charts showing efficiency, downtime etc for display in their cells. The technicians began to train the team members in technical skills to complete changeovers. The teams were also carrying out their continuous improvement projects. The teams were given time to tackle their projects and an engineer from the Production Unit provided technical support. This engineer also tried to act as a facilitator and monitor the progress of the projects on a regular basis. Two of the groups completed their projects within about six weeks, although they did not then initiate new projects.

In January and February 1998, interviews with the team members and managers revealed that the teams were now completing routine changeovers and were monitoring their efficiency and downtime on a daily basis. They were also maintaining their high output and efficiency rates. Prior to the start of the move to self-management, team members had been responsible for allocating tasks within the cells and for quality control and inspection and, as such, it was now evident that the changes made to date had resulted in job enlargement and job enrichment (e.g. Badham, Couchman and McLoughlin, 1997). It was also evident from the interviews that, at this stage, team members had little involvement in decision-making, even when decisions directly affected their particular team. Team leaders seemed reluctant to involve team members in these activities, either through lack of time or trust.

It was apparent through observation that with regard to the performance data, although the teams collected and plotted the data effectively, they did not take ownership of any problems identified nor did they initiate problem-solving projects on the basis of the data. The facilitator tried to encourage these activities, but the teams were very similar to the pilot team in this respect and continued to wait to be told what to do and how to do it rather than starting to take ownership and responsibility for the problems affecting their work area. This was, in part, a legacy of the prevailing tell and direct supervisory culture of Clearwipe plc over the previous five years, but also an artefact of the production

system, in that the manufacturing process required tight links between cells. In such an environment, it was difficult for one cell team to act as an independent unit in tackling a particular problem. The production processes were so tightly linked that any changes made in work processes in one cell team had a wider impact across other cell teams and required extensive co-ordination across cell team boundaries.

Indeed, partly because of this problem, and partly because of the attitudes of the team members, building on the job enlargement and enrichment to the next phase of the transition towards self-management proved a difficult step for the cell teams in Clearwipe plc and affected their development from January 1998. As already stated, there was an unwillingness on the part of the team members to take up responsibility for initiating continuous improvement projects based on their analysis of performance data. There were also practical difficulties with team members from each cell taking control of work scheduling and work methods, the next stage in the plan for transferring responsibilities. The practical difficulties related to the manufacturing process. More than one cell was responsible for building each product type and, as a result, meeting works orders required the sharing of information and co-ordination between cells.

This role had traditionally been undertaken by the team leaders, who were in a position to take an overview of the workload of all the cells. In the transition to self-management, the aim was to enable team members to become involved in work planning and scheduling. However, as the design of the self-managed work teams in Clearwipe plc was based on existing cell units, the requirement for co-ordination across team boundaries for planning and scheduling purposes mitigated against self-management in each cell. Given the pace and timing of work in each cell, it was impossible for team members from a particular cell to be in a position to take an overview across a number of cells and inappropriate for them to direct the work of other cell teams. The basic principles of sociotechnical systems and self-managing teams require the maximisation of the autonomy of each group and the minimisation of co-ordination across group boundaries (Niepce and Molleman, 1996). The self-managed work team design in Clearwipe plc did not fit this parameter and this limited team development in this respect.

This question of the design of the teams in relation to the existing production environment was, perhaps, the most fundamental and essential issue faced by Clearwipe

plc in the implementation of self-management and the associated problems were having a major impact on the team working implementation process by January 1998. Trying to create self-managed teams from existing, interdependent cells in a lean production environment posed its own particular problems, two of which are described above. Whilst it undoubtedly seemed more practical to initiate such a programme of change on a small scale using existing work units, there were inherent obstacles to success in such an initiative because of existing organisational and operational parameters. In this case, this was particularly apparent as the intervention was being piloted with a small number of the operational cells. Disrupting the entire work force was impractical for the introduction of a pilot scheme, but there were built-in barriers to success for a new work design in an existing framework. Organisational practices and systems had been created to fit with and support the old work design. It seemed the most obvious and logical idea to create self-managed work teams based on existing work units. However, in this case, teams members were not really able to take more control of their work area, in terms of planning, scheduling and liaising with customers, as was intended in the design process.

The nature of the change and its effects on the people involved complicated the intervention further. There were three team leaders in the Blade Assembly area and each had responsibility for two self-managed work teams. The team leaders were responsible for training the teams to collect and monitor performance data and for guiding them towards the solution of problems. However, in supervising all the other cells in their section, the team leaders were expected to operate in a very traditional manner and direct all work activities. In a very busy manufacturing environment, the effective maintenance of the two roles was very difficult, especially as the facilitator/coach role was a new one and problems regarding production were always pressing and demanding. The team leaders found it difficult in a very reactive environment to guide teams to solutions and facilitate decisions with some teams and to direct other teams in their actions. The team leaders also found it difficult to manage the process whereby they let go of some of their responsibilities to self-managed work team cells but withheld them from the other cells. This resulted in limited transferral of responsibilities.

The development of the self-managed work teams was also affected by the attitudes of the team members. Interviews in January and February 1998 revealed that the team members had expectations about autonomy and control over their work from the

introductions to self-management given by the senior managers prior to the start of the initiative. These expectations proved hard to meet in practice. The self-managed work team members believed that their jobs had been enlarged and enriched, but were still very constrained by the production system and the work pace, methods and standards set by management. The system did not enable them to become increasingly self-managing and interviews revealed that some team members were frustrated by this, fuelling speculation about the viability of management's ideas.

Between January and April 1998 negative feelings towards the change became increasingly apparent. In the interviews at the outset of intervention, self-managed work team members had been very positive about taking on additional responsibilities, especially as many of them were already confident in handling these tasks. However, feelings seemed to change amongst the team members once they had started to take on the new tasks (e.g. changeovers). The sentiment developed that self-managed team members should be paid more because they were doing more.

Comments to this end from the interview programme included:

> *".. we are doing more work than the other cells, so we should have more money. Otherwise, it is not worth it. People doing less than us get the same money as us."*

> *"..and it's not fair to expect us to keep on doing more things without us getting something for it."*

Senior managers had explicitly stated from the outset that there would be no immediate financial rewards for making the change to self-management. Financial rewards would only be forthcoming in the long-term if the change was successful and resulted in financial savings for the company.

This issue proved to be quite a big stumbling block and by March 1998 some of the initial enthusiasm for self-managed team working was wavering amongst team members. By this point, two of the teams had withdrawn their support for the initiative, saying they were no longer interested and had ceased to work on their projects. In many ways, the issue faced by the company with regard to the organisational systems (e.g. rewards) reflects the same problem faced by the company in the context of the manufacturing

systems. That is, as already described, Clearwipe plc did not wish to make substantial changes to existing manufacturing systems and fundamentally redesign the cells until there was evidence that the intervention was successful. By not making these more radical changes however, the company was creating barriers to the success of the new initiative. Similarly, the company did not want to make changes to the organisational support arrangements until there were seen to be financial returns. However, maintaining these systems whilst implementing a new work design initiative again proved to be an obstacle to success. In this case, maintaining the existing reward system while implementing work design changes to enrich and enlarge operators' jobs created resistance.

By the early part of 1998, the technicians had also started limiting their co-operation, resenting the extra work entailed in training operators to complete changeovers and feeling in some way that this should not be operator work. Technicians believed that they were more skilled than operators and had more status. Interviews revealed they preferred a situation in which there was a clear demarcation between operator and technician roles. By not making themselves available to train the operators, their support for the initiative was tacitly withdrawn.

By June 1998, it was widely accepted that the cells were no longer operating as self-managed teams. The production- and system-related problems encountered in the work redesign remained unresolved and the transition to self-managed team working was no longer possible. An analysis of the final situation shows that some progress had been made in the transition to self-management in Clearwipe plc. Team members maintained targeted levels of output and efficiency whilst taking on new tasks and responsibilities i.e. changeovers, analysis of performance data and continuous improvement projects. Clearly, team members' jobs were enlarged and enriched.

Team members seemed to view these as additional tasks to do as part of their jobs but there did not appear to be a change in mindset about their roles. Whilst being quite positive about the changes initially, team members did not seem to want to take control of their work areas, for example, by initiating changes in response to production problems highlighted by their data analysis.

The analysis of the change process also revealed barriers in the existing production and organisational systems that limited progress in the transition to self-management. The design of the teams to fit existing cell structures mitigated against the successful transition to self-managed work teams in some ways. Understandably, in initiating the change senior management wanted to see whether the idea of self-management worked in the company in principle before making more radical and far-reaching changes to work design. However, to enable team members to become self-managing in the longer-term, there needed to be a team design in which teams could become involved, or take control of some of the production-related decisions in their work areas.

Similarly, piloting a radically different work design raised issues of fit with existing organisational systems and arrangements. In this case, reward systems and supervisory style were particular issues. Team members and team leaders were making significant changes to the way they worked, within the context of old patterns of behaviour from the other people with whom they worked. For example, the team leaders were facilitating and coaching the team members in two of their cells and telling and directing the operators in their remaining seven or eight cells. In practice, their position was quite untenable and unsustainable given the pressures of a high-volume production environment.

4.6 Discussion

By June 1998, all of the cell teams had given up working towards self-management and the managers decided to stop the initiative and review the situation. The introduction of a self-managed team-based work design had not been successful in Clearwipe plc.

This case focuses on three key aspects of the early stages of the introduction of self-managed team working in a brownfield manufacturing organisation and provides an insight into the problems encountered in this change process. Specifically, the case highlights the implications of implementing self-managed work teams in an existing assembly line and cell-based lean production environment and explores in depth the practical limitations of different team design characteristics. The case also examines contextual and organisational factors in the change to team working, including the importance of the informal organisation (power and politics) in complex and radical change processes and the congruence of organisational arrangements between existing

and new systems. In addition, this case highlights the problems in a radical work redesign initiative of using a pilot study as part of the implementation strategy. Each of these themes will be examined more fully in the final chapter of this thesis.

These themes are also explored further in the following cases. Issues surrounding the fit between manufacturing strategy and team design are considered from a different perspective in the next case. This case also examines in some depth the problems of team leaders' and team members' uncertainty about their roles, responsibilities and expectations in such a complex, radical and vulnerable change as the one to team working. In this second case however, the outcome is somewhat different. The importance of the congruence between old and new organisational systems and arrangements in team development is explored in detail in the third case in this thesis and the final case considers the nature of the operational and change agent roles in the transition to self-management.

CHAPTER FIVE

Case Study Two: Berg Transmissions

5.1 Synopsis

In 1995, this UK-based manufacturing company decided to introduce self-managing work teams. The senior management team within the company was committed to changes geared around the production system and considered that a team-based organisation would provide the structure to enable significant improvements in quality, productivity and efficiency.

To establish a focus on the key issues in this case, it is important to note early in this narrative that from the outset of the change process the company's aim was to implement self-managing work teams. In practice over the four years of the researcher's involvement, Berg Transmissions was successful in implementing lean production teams. During the transition process, the company encountered difficulties in the change to self-management as a consequence of which they changed direction. Essentially therefore, this case tells the story of the transition to lean production teams, acknowledging the company's view that this is a step on the road to self-management. This case narrative considers the nature of lean production teams and the influences on the team development and change process that resulted in this outcome. As such, theoretical and practical considerations from this case provide insight into the nature of team development and associated change processes.

Specifically, this case focuses on three key aspects of the introduction of a team working in this company. Firstly, the case explores the interrelationship between the nature of the production environment and team design, with particular emphasis on self-managing work teams, lean production teams and the Toyota Production System. Secondly, the focus is on the transition to team working and this case considers whether the team members' roles and responsibilities were up-skilled or de-skilled with the development of team working. Finally, the case discusses the deep structure changes and the importance of introducing new organisational support systems and arrangements in establishing team working. In this company, these changes included the introduction of an open-book policy, revised contracts for process operators, role re-definitions, training and employee development activities and the streamlining of the selection, grading and reward systems.

A key issue in this case relates to the fit between the existing production system and team design. A key implication from this case is that deep structure changes are fundamental in the successful transition from traditional work environments to collaborative, team-based work designs.

5.2 Introduction

Workers' roles and responsibilities in industrial organisations have been a consistent theme in the studies of industrial sociologists and management theorists (Rose, 1975). For example, a major concern of Taylorism in the early part of this century was the breaking of the power that work groups were able to exercise. For the later human relations movement the issue was how the same power could be harnessed in management's interests (Procter and Mueller, 2000).

The recent focus on team working draws on two main traditions. The first of these is sociotechnical theory and the idea of self-managing work teams and the second is Japanese-style work teams or lean teams (Benders and van Hootegem, 2000). One unifying feature between the different styles of team working, which is apparent in the current wave of interest in teams, relates to the strategic nature of team-based work designs and the accompanying emphases on performance, organisation and culture. However, considerable operational differences exist between the self-managing teams of the sociotechnical tradition and the lean teams of the Japanese model (and these are discussed in detail in Chapter One).

Team members' autonomy, control and responsibility for their work plans, schedules and operations and internal leadership are the defining features of self-management. Researchers have intimated similarities between self-managed teams and lean teams with respect to some of these features. For example, Womack et al (1990) claim that in the lean team plant the maximum number of tasks and responsibilities are transferred to the team members. However, these claims have not been substantiated by recent research. Indeed, this research suggests that worker autonomy in lean team plants can be highly circumscribed by tight supervision and the close coupling of teams in the production process (Delbridge, Lowe and Oliver, 2000). This research has also cast some doubt on the extent of the multi-skilling which some commentators claim underpins lean teams. If this is the case, there would appear to be a down- rather than an up-grading of the skills utilised by team members. The transition to both self-managed work teams and lean teams does entail, however, a shift of

focus from individual tasks to collaborative team work.

These findings emphasise the differences in team-based work designs and the importance of the fit between the production system and the team design. In some production settings, for example those operating the Toyota Production System with its high dependency between different stages of the production process and the rigid standardisation of tasks and processes, some collaborative work designs will be more appropriate than other designs.

The importance of the congruence between different parts of a system is also apparent with regard to a company's deep structure or organisational support systems and arrangements. In the transition to any style of team working, the shift in focus from individual tasks to collaborative team work necessitates changes in the organisational support systems and arrangements. Systems within a more traditional company structure tend to be based on the individual as the key organisational unit. With a team-based work design, the organisation needs to facilitate employee interaction and information exchange, and reward team involvement, team decision-making and interdependence. The fundamental, underlying philosophy and premises behind team working are completely different to those behind more traditional forms of working.

As such, traditional organisational systems focusing on the individual may pull the organisation back to its old structure. Research by Pullen (1976) confirms this assertion in a study which found that there were long-term problems for work teams in which team members were paid on an individual basis. Organisational arrangements and support systems that fit a new work design are fundamental to a successful change process and the development of team working and reinforce the new work design through mutual feedback loops.

The following introductory section of this case explores the nature of the Toyota Production System and the implications for team-based work designs. It then goes on to consider the level of skill and autonomy inherent in lean team settings, before focusing on the key characteristics of organisational systems in a lean environment.

5.2.1 Just-in-time and the Toyota Production System: Implications for Team Design

Just-in-time is the Western embodiment of a philosophy and series of techniques developed by the Japanese. The Toyota Motor Company has led the development of just-in-time in Japan and Toyota's version of just-in-time is called the Toyota Production System.

The philosophy behind just-in-time is founded on doing the simple things well, on gradually doing them better and on squeezing out waste every step of the way. Just-in-time literally means producing goods and services exactly when they are needed, not before they are needed so that they will have to wait as inventory, nor after they are needed so that it is the customers who have to wait (Slack et al, 1995). In addition to this "time-based" element, there are the requirements of quality and efficiency.

Bicheno (1991) considers the aims of just-in-time are to meet demand instantaneously, with perfect quality and no waste. A fuller description from Voss (1987) states that just-in-time is a disciplined approach to improving overall productivity and eliminating waste. It provides for the cost-effective production and delivery of only the necessary quantity of parts at the right quality, at the right time and place, while using a minimum amount of facilities, equipment, materials and human resources. Just-in-time is dependent on the balance between the supplier's flexibility and the user's flexibility. It is accomplished through the application of elements which require total employee involvement and team work. A key philosophy of just-in-time is simplification. This last point is key in considering the implications of just-in-time for team-based work designs, suggesting a Tayloristic approach to this issue.

The adoption of a just-in-time approach to organising operations does not imply that the stated aims will be achieved immediately, rather, it describes a state which a just-in-time approach helps to work towards. The just-in-time approach places important new demands on to the operation's functions. In fact, ideally, just-in-time requires a high standard in all an operation's performance objectives including, quality, speed, dependability and flexibility.

At the core of just-in-time philosophy of operations, there are three key principles. The first is to eliminate waste, or any activity which does not add value (e.g. over-production, waiting time, transport, process, inventory, motion and defective goods). The second is to involve

everyone and just-in-time philosophy is often put forward as a total system. Its aim is to provide guidelines which embrace everyone and every process in the organisation. An organisation's culture is seen as being important in supporting these objectives through an emphasis on involving all of the organisation's staff. Just-in-time encourages (and often requires) team-based problem solving, job enrichment (by including maintenance and set-up tasks in operators' jobs), job rotation and multi-skilling. The intention is to encourage a high degree of personal responsibility, engagement and ownership of the job.

The third principle is continuous improvement (the Japanese word for which is kaizen) and this concerns moving closer to the idealised state of meeting demand instantaneously with perfect quality and no waste (Bicheno, 1991). Continuous improvement involves everyone, managers and workers alike and stresses adaptability, team work and attention to detail through small incremental steps.

Continuous improvement focuses on improving performance through more and smaller incremental improvement steps. For example, modifying the way a product is fixed to a machine to reduce change-over time is an example of an incremental improvement. While there is no guarantee that a small step towards better performance will be followed by other steps, the whole philosophy of continuous improvement attempts to ensure that more improvement will follow (Slack et al, 1985).

Indeed, in continuous improvement it is not the size of each step which is important. Rather it is the likelihood that improvement will be ongoing. Similarly, it is not the rate of improvement which is important, it is the momentum of improvement. It does not matter if successive improvements are small, what does matter is that every month (or week or whatever) some kind of improvement has actually taken place (Slack et al, 1985).

These three basic tenets of just-in-time philosophy can be used to guide the actions of operations managers in many different activities and many different contexts. There is also a collection of tools and techniques associated with just-in-time which promote the operational conditions which support this philosophy and are a means for cutting out waste (Slack et al, 1985). These focus on basic working practices, design for manufacture, operation focus, small simple machines, layout and flow, and total people involvement and include:

(a) Discipline – work standards, which are critical for the safety of company members and the environment, and for the quality of the product, must be followed by everyone all of the time.

(b) Flexibility – it should be possible to expand responsibilities to the extent of people's capabilities. This applies equally to managers as it does to shopfloor personnel. Barriers to flexibility, such as grading structures and restrictive practices, should be removed.

(c) Equality – unfair and divisive personnel policies should be discarded. Company uniforms, consistent pay structures and open-plan offices, which do not differentiate between full-time and hourly-rated staff, are examples of this.

(d) Autonomy – to delegate increasing responsibility to people involved in direct activities of the business, so that management's task becomes one of supporting the shopfloor. Such autonomy is manifest in a just-in-time operation in activities such as the following, line stop authority, material scheduling, data gathering, and problem solving, which become the responsibility of the shopfloor personnel.

(e) Development of Personnel – over time the aim is to create more company members who can support the rigours of being competitive. This ensures a richer mix of people working on improvement activities than the average company. Partly, this is achieved by long-term personal development of company members.

(f) Quality of Working Life - many just-in-time concepts fall into this category, for example, involvement in decision making, security of employment, enjoyment and working area facilities.

(g) Creativity – not just to do the job successfully, but to improve it for the next time.

Just-in-time is also a method of planning and control e.g. pull scheduling, kanban control etc. One explanation of just-in-time relates to the notion of high dependency i.e. take away the inventory and the mutual dependency of the different stages of the production process increases. High dependency is also apparent in the just-in-time practice of empowering shopfloor staff and the use of the internal customer concept, making the organisation dependent on their actions.

The total people involvement aspect of just-in-time sees shopfloor staff taking on much more responsibility to use their abilities to the benefit of the company as a whole. They are trained, capable and motivated to take full responsibility for all aspects of the work they do. In turn, they are trusted to carry out these responsibilities with autonomy for their own work

area and expected to participate in such activities as the following:

- the selection of new recruits
- dealing directly with suppliers over schedules, quality issues and delivery information
- the self-measurement of performance and improvement trends
- spending improvement budgets
- planning and reviewing work done each day through communication meetings
- dealing directly with customer problems and requirements.

In the context of this archetypal Japanese production system, described as lean production by Womack et al. (1990), the basic work group is identified as a team. Although the emphasis is very much on the advantages of running production with the lowest possible level of inventories, on a just-in-time basis, it is also claimed that "it is the dynamic work team that emerges as the heart of the lean factory" (Womack et al., 1990:99).

In their recent research, Benders and van Hootegem (2000) examine the nature of this type of Japanese production team, drawing on Dore's (1973) and Cole's (1971) classic studies. They identify the key characteristics of the Japanese model as the focal position of the foreman; the minute description and rigorous regulation of work through standard operating procedures; and the use of continuous improvement (kaizen) techniques to effect marginal improvement in these standard operating procedures rather than more radical innovation. The nature of these Japanese- style work teams will be discussed in the next section.

5.2.2 The Transition to Lean Teams: Up-Skilling or De-Skilling Jobs?

The focus on all aspects and types of teams, including Japanese-style work teams, has been extensive in recent years (Procter and Mueller, 2000). Indeed, a body of literature has emerged, which has made increasing worker autonomy and flexibility, coupled with increased involvement through team working, central to discussions of high organisational performance, particularly in manufacturing organisations (e.g. Osterman, 1994). Generally, the change to team working is seen to represent a shift towards a collaborative system of working, with a reduction in the level of direct supervision and devolution of control responsibilities for elements of shopfloor work. The primary mechanism for control stems from the creation of a new set of values and beliefs (cultural control) which serve to

reinforce co-operative team work and group regulation. This restructuring is believed to improve the quality of working life for employees and increase management's ability to adapt production to changing market conditions.

The recent popularity of team-based work has been prompted by a series of model plant case studies, examples include NUMMI (Adler, 1992), Saturn (Rehder, 1994) and Nissan (Wickens, 1987). The survey findings of the International Motor Vehicle Survey (Womack et al., 1990) have been especially influential. This work alleged the advent of post-Taylorist work organisation and claimed substantially superior performance for manufacturing plants using shopfloor work teams. Womack et al. (1990) identify team-based work organisation with flexible multiskilled workers as central to the lean factory and through the active involvement of workers, "the truly lean plant ..... transfers the maximum number of tasks and responsibilities to those workers actually adding value to the car on the line"(Womack et al., 1990:99).

However, more recent research suggests that the link between the introduction of team working and the transference of autonomy, responsibility and new skills to team members is not altogether straightforward. Indeed, there is an ongoing debate about the nature, process and consequences of introducing new production and service arrangements for the organisation and control of work (Dawson, 1994). This debate is being supported by empirical evidence which seeks to identify the uneven and dynamic relationship between integrated automation and work organisation (Webster, 1992); the consequences of change for work intensification (Turnbull, 1988); and the limits to flexible work and employment practices (Dawson and Webb, 1989).

On the one hand, there are those who consider the main thrust of the change to team working has been to replace Tayloristic or Fordist type work structures with a more flexible model of management practice. For example, Piore and Sabel (1984) advocate that modern industry is replacing Fordist and neo-Fordist organisational structures with more flexible multi-skilled forms of specialist craft production. This movement towards "flexible specialisation" is seen to provide a new industrial strategy which is enabling firms to accommodate continual change and innovation on the shopfloor (Piore and Sabel, 1984). It also marks the end of the detailed division of labour with the emergence of a more worker-oriented approach to factory organisation (Mathews, 1989). The general characteristics of

this emerging form of work organisation are seen to comprise a broadening of job categories; the formation of work teams; decentralised decision-making; skill-based reward systems; increased training schemes; and better selection procedures. On the other hand, not all researchers consider these changes represent a movement towards new forms of production arrangements. Dawson (1994), for example, considers the current transformation in work is occurring within an existing Taylorist or Fordist framework.

As a result, a debate has emerged and arguments have become polarised. For example, Piore and Sabel (1984) consider that the new production arrangements are a qualitative shift in the way production is organised and signal a movement away from the detailed division of labour associated with Tayloristic and Fordist type production systems and a general upgrading of skills. Other researchers (for example, Dawson, 1994: Thompson, 1990) consider the current transformation in work is occurring within an existing Fordist or Taylorist framework and argue that the current changes represent more sophisticated techniques for reasserting managerial control. Specifically, these researchers question whether the adoption of Japanese production methods and labour management practices really results in an upskilling of work for team members.

Recent research evidence from detailed empirical investigation of the process of creating work teams and the organisational ramifications of the associated change in the nature of shopfloor control provides some insight into this issue (Dawson, 1994). Case study data suggest that worker autonomy in lean team plants can be highly circumscribed by tight supervision and the close coupling of teams in the production process (Delbridge, Lowe and Oliver, 2000). These authors suggest that worker autonomy is limited in lean team working in the autocomponents industry. Workers have very little responsibility for managing a variety of issues concerning production, maintenance or people issues within the team. Delbridge, Lowe and Oliver (2000) state quite clearly that "there is no support for the notion that the adoption of lean team working leads to greater worker autonomy." (p. 139).

These authors go on to say that, on the surface, lean teams have greater responsibility for production-related tasks, but when the distribution of this responsibility within the team is examined the lion's share remains with the team leader. Responsibilities that have been delegated to the shopfloor for activities such as the allocation of work, the pace of work and production scheduling appear to lie in the hands of the team leader. The role of operators is

minimal in lean teams (Delbridge, Lowe and Oliver, 2000). This lack of autonomy is further evident in the case of responsibilities that relate to the management of the team. It appears that while team leaders have some involvement in settling grievances, the shopfloor has very limited involvement in other activities such as hiring and firing.

Moreover, tasks that could be described as off-line and skilled (e.g. maintenance activities) have not been transferred to the team to the same extent as routine activities such as inspection and rework, and they remain the prerogative of specialist skilled workers. Delbridge, Lowe and Oliver (2000) conclude that these findings cast doubt on the extent of the multi-skilling which some commentators claim underpins lean teams.

Delbridge, Lowe and Oliver (2000) comment further on this difference between lean team and other work groups regarding the distribution of responsibilities to the team leaders rather than the team members. Team leaders play a pivotal role in co-ordinating activities in Japanese manufacturing facilities. In effect, team leaders represent an additional tier within the management system. A good deal of the role involves disturbance handling, such as coping with uncertainty and co-ordinating operational activities following fluctuations in workload, shortages of parts and so on, and team leaders play a significant role in process and quality improvement. These findings are consistent with case study research that suggests team leaders act as the "eyes and ears" of management, since they are responsible for the process by which workers volunteer knowledge about their work. For example, Fucini and Fucini (1990) and Graham (1995) report team leaders actively incorporating workers' tacit knowledge via problem-solving activities.

The case study data also reveal some interesting findings with regard to the involvement of workers in problem solving and continuous improvement. In plants with lean teams, managers report a significant role in both quality and process improvements for their shopfloor operators. This is consistent with those who have advocated a recombination of "thinking" and "doing" in contemporary manufacturing (e.g. Kenney and Florida, 1993). These activities do represent a fundamental shift in the division of labour and have been at the centre of the arguments of proponents of team working as the "best way" to organise work (Womack et al., 1990).

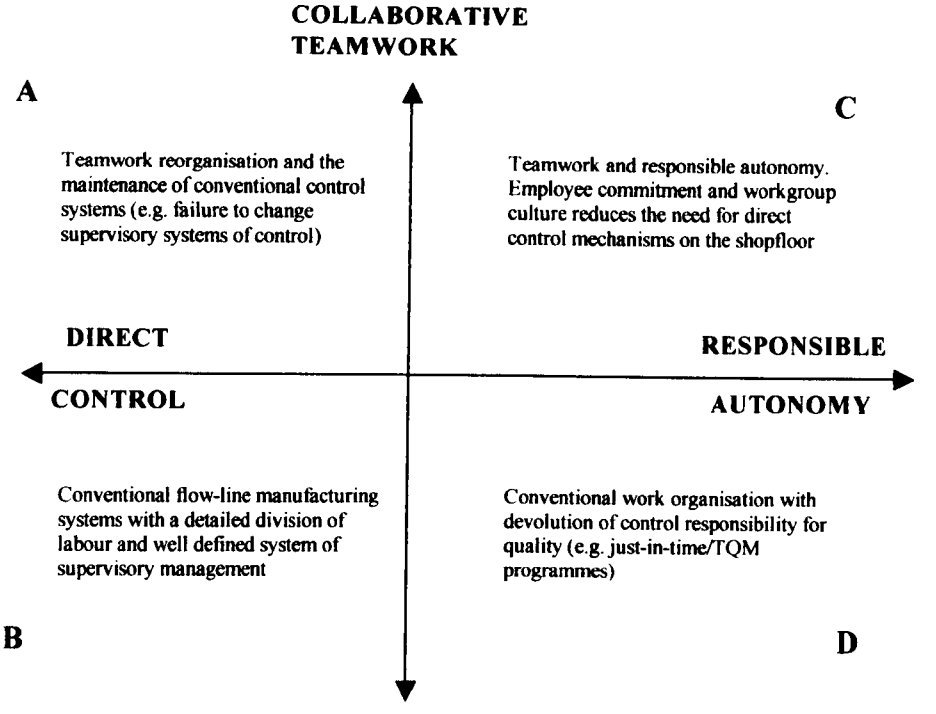
In summary, research findings from Delbridge, Lowe and Oliver (2000) confirm that lean

team working does not represent an advance in worker autonomy. The data from these researchers reinforce the idea that lean teams are management's response to the need for greater operational flexibility. Workers may be involved in production-related tasks and have a considerable onus placed on them for improvements, but this occurs within a highly standardised and routinised work regime.

The research evidence also suggests that management have been conscious of the need to seek fit between existing systems and the shopfloor structures they adopt. Some of these systems and structures are culturally determined. There are, for example, differences between lean teams in Japan and lean teams in the UK. Lean teams in Japan have less responsibility than those in the UK for improvement activities and team leaders in Japan have greater responsibility than those in UK for controlling and appraising workers and representing workers' grievances (Wood, 1990).

This debate raises some interesting questions about the relationship between factory layout and strategies for increasing employee involvement in the work process. For example, Friedman (1977) has concluded that there are two ends of a continuum of strategies open to companies in the pursuit of profit. There is direct control as found under Tayloristic forms of work organisation, and responsible autonomy, where an individual or group of workers is given discretion over the direction of work with a minimum of supervision for the purpose of maintaining managerial authority. By combining Friedman's (1977) characterisation of managerial strategies for control with an understanding of the mechanisms for achieving shopfloor control, Dawson (1994) argues that a useful categorisation of the choices open to practitioners in the management of change can be constructed (see Figure 5.1).

Figure 5.1 The organisation and the control of work



(Source: Dawson, 1994: 33)

The horizontal dimension refers to shopfloor control responsibility in the form of Friedman's (1977) responsible autonomy/direct control continuum and the vertical dimension refers to the division of labour from single operator tasks to collaborative team work. This framework allows for the co-existence of personal, structural and cultural control mechanisms with individual and work group arrangements. By using these dimensions, it is possible to chart four quadrants of possible changes in the organisation and control of work following the introduction of new production concepts.

Quadrant B represents the conventional flow-line manufacturing systems with a detailed division of labour and well-defined system of supervisory management. Under this system, control over pace and pattern is built into capital equipment (technical control) and little attention is given to employee commitment and collaboration. In contrast, quadrant C represents a harmonious and collaborative system of industrial relations under new production arrangements. These new arrangements are seen to signal an end to Taylorist forms of work organisation and include a commitment to participative decision-making, an emphasis on team work, a culture rooted in the ideas of flexibility, change and collaboration and the replacement of supervisors with facilitators. A new set of beliefs and values supported by a language of co-operation (cultural control) and a system of rewards

(structural control) acts as the primary mechanism for controlling employee behaviour on the shopfloor.

Quadrants A and D represent variations on these types. Quadrant A refers to a change in work organisation towards team work without restructuring supervisory management or conventional production control systems. Quadrant D refers to the introduction of new ways of working, such as just-in-time management, which involves a devolution of control responsibility to the shopfloor without any major adjustments to the structural layout of the plant (Dawson, 1994).

This framework for analysing shifts in the organisation and control of work under new production arrangements emphasises the importance of organisational values and belief systems for creating, developing and sustaining collaborative team work practices on the shop-floor. It also raises the critical questions of how these transitions are being managed and what they mean for conventional workers who are expected to change their beliefs and values towards the nature and purpose of work.

In this case, the framework will be used to explore and help categorise the changes introduced in this company. It is evident that considerable differences exist between the sociotechnical tradition of self-managed teams, the lean teams of the Japanese model and other types of work teams in terms of autonomy, responsibility, control and collaboration. The implementation of some teams may fit a post-Taylor framework, this will not be so apparent in the development of other teams.

As Mueller (1994) argues "companies design team work not according to some best model, but according to their objectives" (p. 399). In this respect Bratton (1991), in his study of cellular work structures on manual engineering skills, concludes " the direction of change is not a simple one of upskilling or deskilling. Skills have political dimension; they are shaped and determined by social choice and complex configuration of opportunities and constraints (p. 393)."

The third area of focus in this case relates to the organisational support systems and arrangements appropriate for a team-based work organisation and these will be considered in the following section.

5.2.3 Organisational Support Systems and Arrangements

Procter and Mueller (2000) state that there is a widespread recognition that team working will or should entail changes in organisational systems. This is in line with the sociotechnical principle of support congruence, which states that "the systems of social support should be designed so as to reinforce the behaviours which the organisation structure is designed to elicit" (Cherns, 1976:790). Cohen et al (1996), drawing on Lawler (1986, 1992), find that among the four basic sets of explanatory variables they use, it is those relating to organisational context that have the strongest relationship with team effectiveness. They argue that the strengthening of this context should be the first task for organisations embarking upon team working. In examining the importance of context, four key areas will be considered here.

5.2.3.1 Recruitment and Selection

The change to team working creates the need for different skills and attributes in employees. As such, appropriate recruitment and selection programmes that emphasise attracting and developing individuals with appropriate technical, problem solving and interpersonal skills become instrumental in achieving the strategic goals of the team working intervention.

With the introduction of teams and the creation of a collective approach, groups and individuals are required to work closely together and to depend on each other in ways in which they are traditionally unaccustomed. When jobs and functions become integrated, an individual's co-ordination with others becomes critical. Teams of workers become responsible for productivity, quality etc. and the team decides who will perform what work on a given day and how individuals will rotate among the various jobs.

The team replaces the individual as the primary work unit. As such, it is no longer feasible to select people on the basis of their individual behaviour and performance to work in a collective, interdependent situation. In fact, individual selection and assessment may attract people who are not team players, which may inhibit co-operation and team work and detract from the overall system (Snell and Dean, 1994). A collaborative work design requires appropriate selection procedures emphasising problem-solving and interpersonal skills.

5.2.3.2 Training and Development

Dunphy and Bryant (1996) consider that there is still a tendency to underestimate the implication team working has for training. Moreover, in looking at team working's implications for training and development, it may not simply be a case of providing more. As Buchanan (1994) argues, given the emphasis on the organisation and the constant need to change, a functional, task-based form of training needs to give way to more general concerns about personal development and competencies. These in turn will be designed to feed in to the individual's contribution to, and identification with, the team and the organisation as a whole.

In their two case studies, Findlay et al (2000) found that training in the "soft skills", with their emphasis on attitudes, which are preferred by many employers to more formally acquired, technical skills, had effects in an indirect manner. The training legitimised change and strengthened the normative aspects of team working.

5.2.3.3 Grading Systems and Role Profiles

Job classification practices are an important organisational system used to measure and determine employees' contributions. The practice of job classification implies that the characteristics of employees' jobs capture differences in their contributions and that differences in pay reflect differences in skill, effort, responsibility and the working conditions inherent in those jobs.

In a team situation the distinction between job classifications becomes blurred, and, as a consequence, arbitrary distinctions in job classifications need to be eliminated. If organisational arrangements appear to favour one function or role over another, there is likely to be a reduction in collaboration and co-operation (Snell and Dean, 1994).

It is also important to recognise in traditional work practices that job classifications are assumed to capture the differences in employee contributions and that performance is largely determined by the production system. In team working, employees' contributions transcend the job per se to substantially affect output. As such, distinctions between classes of employment must be diminished to encourage interaction and co-ordination and appropriate assessment and reward systems established to recognise this.

5.2.3.4 Reward Systems

Finally, compensation systems may also have an impact on co-operation and co-ordination in team working initiatives (as illustrated in the Clearwipe case, for example). Adjusting compensation systems may be one the most instrumental methods for eliciting, reinforcing and sustaining behaviour required for the success of this work design initiative. There is often an implicit assumption that the rewards of team working will or should be intrinsic to the job itself and that extrinsic reward, especially financial reward, is not such an issue (e.g. Manz, 1992). Indeed, Knapp et al (1996) found that firms introducing team working in the Australian automotive industry were much quicker to introduce non-monetary forms of recognition than they were monetary ones.

This notwithstanding, it is apparent that some forms of payment systems are better suited to team working than others. Indeed, the types of compensation systems common to many traditional work environments are based on individual performance and can provide powerful disincentives for co-operation. The change to team working affects task uncertainty, which increases with complexity, variety and task interdependence, and there is need for individuals to rely on or collaborate with others to complete work. Harvey and von Behr (1994) found that the individual piece rates operating in both Germany and the US had the effect of encouraging workers to stay on one machine in order to maximise earnings and this hampered moves to greater flexibility.

While simple piece rate systems have become less common in recent years, one of the major trends in payment systems has been the adoption of performance-related pay based on individual appraisal (Kessler, 1994). The likelihood is that such systems will work to undermine the principles and objectives of a team-based organisation. Lloyd and Newell (2000) show how among a pharmaceutical sales-force the operation of team working was severely hampered by the fact that evaluation and pay continued to be based on individual objectives and performance, rather than individual contribution to team objectives and team performance, or indeed team performance itself.

Similarly, if the organisation rewards seniority, this may also have an adverse effect on team working initiatives. In traditional work practices, seniority pay rewards experience as a surrogate for knowledge and skill in a stable environment and rewards loyalty to reduce uncertainty within the system. Organisations based on team working require continuous

learning and value flexibility. As systems change, new skills and procedures supplant old methods and skills and the value of seniority may be diminished. In team working, rewards must emphasise continuous learning and the value-added derives from increased flexibility in a dynamic environment (Snell and Dean, 1994). Employees must be motivated to acquire new skills and to have the flexibility to apply those skills in a timely way (Snell and Dean, 1992).

As such, skills-based or team-based payment systems would seem particularly appropriate for the development of team working (Lawler, 1991). With skills-based pay, employees are rewarded for learning new jobs and developing a broad array of talents. For example, if task complexity, variety and uncertainty increase with self-direction, skills-based pay may reinforce employees' efforts to understand new aspects of the production system, and enhance their ability to solve non-routine problems (Lawler et al, 1992).

Several authors (e.g. Pearce, 1987; Coombs and Gomez-Meija, 1991) have also noted that team incentives are based on the assumption that task uncertainty, interdependence and complexity require co-operation among employees. Team-based rewards promote an environment in which individuals' goals are intertwined and these rewards are more than motivational. Wagner, Rubin and Callahan (1988) found that workers soon learned how various activities fit together and made process and quality improvements as a team. In traditional work practices, for example, the focus is on individual incentives, reflecting division of labour and separation of stages and function. With team working, it is essential there are at least elements of team incentives to encourage co-operation and joint problem solving.

In team-based working, employers must facilitate employee interaction and information exchange and researchers (e.g. Pearce, 1987) have contended that group-based performance incentives promote these behaviours in production environments characterised by a high degree of interdependence where no clear identification of individual contributions can be made. Similarly, a shift from hourly to salaried compensation tends to promote egalitarianism, which facilitates group information sharing and problem solving (Pfeffer, 1994).

All told, organisational systems are held in place by written records, organisational

traditions, corporate regulations, administrative systems, employee expectations and precedents etc. and it is often difficult to align these systems to new work designs. They are part of the deep structure. However, the underlying philosophy, premises and working practices behind teams are completely different to those behind more traditional forms of working. As such, during the transition to team working, traditional organisational systems may work against the change and pull the organisation back to its old structure. In the team implementation and development process, it is essential if teams are to develop and mature that appropriate team-based organisational support systems and arrangements are implemented to support the initiative and maintain the force for change. New organisational arrangements reinforce new structures as a whole through mutual feedback loops. Arrangements appropriate for collaborative team working will be explored in this company.

5.3. Aims of the Case

This case follows the implementation of a team-based work design (initially self-managed work teams, later lean production teams) over a four-year period in an UK-based manufacturer of automotive components.

There are three key aims in this case. The first aim is to examine the congruence between production systems and team design. The hypothesis is that the team design must fit the existing production environment for the successful transition to team working. The second aim focuses on the characteristics of lean production teams and explores whether team members' roles and responsibilities are up-skilled or de-skilled with the transition to lean teams. The final aim is to consider the idea that appropriately aligned human resource systems are essential for the successful development and maintenance of team-based work designs. The hypothesis is that organisational arrangements that fit the new work design are fundamental to the successful transition from individual tasks to collaborative team work.

The author has observed the introduction of team working in Berg Transmissions since 1995 and has gathered data on the implementation process and the development of new organisational arrangements through observational methods and interviews with senior managers, employee representatives and team members. This information will be used to describe the production system, the nature of the teams and the organisational arrangements and systems implemented to support the transition from a traditional manufacturing work design to a collaborative, team-based work design.

5.4. The Design and Methods of the Case

This particular case was designed as a longitudinal study investigating the implementation of team working over a four-year period from its conception in late 1995. In the main, the detailed information used in this case comes from observational methods and structured one-to-one interviews with senior managers, in particular the Plant Manager, the Human Resources Manager, team members and employee representatives. All interviewees were long-serving members of staff, with a minimum of two year's experience within the company.

The interviews started before the initial changes took place in the transition to team working and continued throughout the research period. Where possible, the interviews were conducted away from the interviewee's workstation. Interview protocols were used to record comments. Details of the interview programme are included in the following table.

Table 5.1 Interview Programme: Schedule of Interviews within Berg Transmissions (numbers of interviews in brackets)

Design Phase: November 1995–February 1996	One-to-One Interviews: Plant Manager (1); Human Resources Manager (1); Employee Representative (1); Team Member (1)
Self-Managed Work Teams: February 1996–February 1997	One-to-One Interviews: Plant Manager (1); Human Resources Manager/Team Members (1); Employee Representative (2); Team Leaders – 2 repeat interviews with 2 Team Leaders (4); Team Members – 2 repeat interviews with 2 Team Members (4) Group Interviews: Shopfloor Self-Managed Work Team (1)
Toyota Production Teams: February 1997 – April 2000	One-to-One Interviews: Plant Manager (1); Facilitators/Team Leaders – 2 repeat interviews with 2 Facilitators/Team Leaders (4); Service Operators (1); Team Members – 2 repeat interviews with 2 Team Members (4) Group Interviews: Toyota Production Team (1)

5.5. Company Background

5.5.1 Company Profile

Berg Transmissions is part of a North-American corporation, with sales worldwide in 1998 worth $2.1 billion and net earnings of $95 million. The organisation is a technology-driven supplier of highly engineered components and systems, primarily for automotive drivetrain applications. The corporation, which operates in 13 countries serving the North American, European and Asian automotive markets, employs about 10,000 people worldwide and is an original equipment supplier to every major automaker in the world. Its products provide key technology for engines, transmissions and 4WD. The organisation recognises manufacturing as key to product leadership, with the emphasis on implementing the "best-of-the-best" practices.

Berg Transmissions's factory in South Wales was set up over thirty years ago with a design capacity of 100,000 units per year and predicted workforce of 3,000. New industry was being encouraged to move to South Wales at the time to compensate for declining employment opportunities in the coal and steel industries. Berg Transmissions's decision to go for a new factory was clearly influenced by the optimistic forecasts for the future.

In fact, the reality has fallen short of the expectations, and the company has faced periods of large-scale redundancies and, at times, imminent closure. The new plant reached a peak of 80,000 units and generated 1,400 jobs in 1974 but, over the years, has been affected by the oil crisis, market changes e.g. the influx of Japanese suppliers, and problems in the motor industry e.g. British Leyland in the 1970s. In 1998, when this research was being conducted, the plant employed 340 people and had a turnover of £35million.

5.5.2 The Work Environment before Team Working

The research for this case started in late 1995, but a review from the mid-1980s (Mayon-White, 1984) provides some understanding of the company's background and history as well as an insight into some of the ongoing issues facing the company. This review reveals that some of the problems in the early 1980s included:

a) a factory that was too large for the scale of manufacturing in operation, with the result that the operation could be improved by consolidation
b) low productivity compared to some other similar plants owned by the corporation

c) high scrap rates and quality problems
d) limited market for their line of products in Europe
e) a danger of the product becoming obsolete.

Knell (1999) also comments that the industrial relations climate in the company by the late 1970s was characterised by a lack of respect for management and low morale and motivation.

There were several important plus-factors balanced against these, however, including:

a) a relatively new, well-equipped factory
b) the determination of the workforce to make a go of this (many having previously lost jobs in the mining and steel industries)
c) the belief of the management team that a well-equipped factory with a loyal workforce must be able to find products to manufacture at a profit.

Mayon-White (1984) notes that in the mid-1980s, management decided to tackle the problems of quality and productivity through an approach which valued openness between management and staff. The management team looked at other companies, including Japanese-owned operations, and recognised that communication and employee involvement were keys to the future and were the best route to quality control, reduced wastage and higher productivity. As such, quarterly communication reviews with groups of employees, consultative meetings with the unions, quality circles and productivity improvement groups were amongst a range of measures introduced to improve productivity and reduce wastage.

Throughout this period and until the mid-1990s, the structure of the organisation remained very traditional however, with a hierarchy of operators, foremen, inspectors, chief inspectors, supervisors, managers etc. There was a single piece flow production system, inherent in which was a great deal of interdependence between the different groups on the shopfloor. Machines were operational all the time and the operators ran the machine tools, only stopping to react to breakdowns and for tool changes. From the mid-1990s, the senior managers started to focus very heavily on the implementation of a just-in-time production system.

Until the introduction of team-based working, the management style was very much "*command and control*", and "*old-fashioned*" according to the interview data, in the sense that operators spent eighty per cent of their time doing their jobs and twenty percent of their time solving associated problems. The operators' jobs were largely product assembly and very routine. There was some skills training, which allowed for limited rotation between jobs but, on the whole, operators had limited autonomy and responsibility. Clear distinctions were made between different roles and functions on the shopfloor.

5.5.3 The Rationale for Team Working

The drive to improve quality and efficiency through employee involvement continued into the 1990s, with the focus eventually shifting to the implementation of team working. In the early 1990s, other companies within the corporation were also beginning the team implementation process. Within Berg Transmissions at this stage, the business strategy was aimed at growth in volume and new single style products, rather than diversification. Technology was changing rapidly and older business was being phased out. Senior managers considered these changes, along with the legacy of employee involvement initiatives over the previous ten years, provided an appropriate and logical background for the introduction of a team-based work design. In 1996, after several months of research by a design team, self-managing work teams were introduced. The goal of this work design initiative was very specific, namely to improve quality and efficiency.

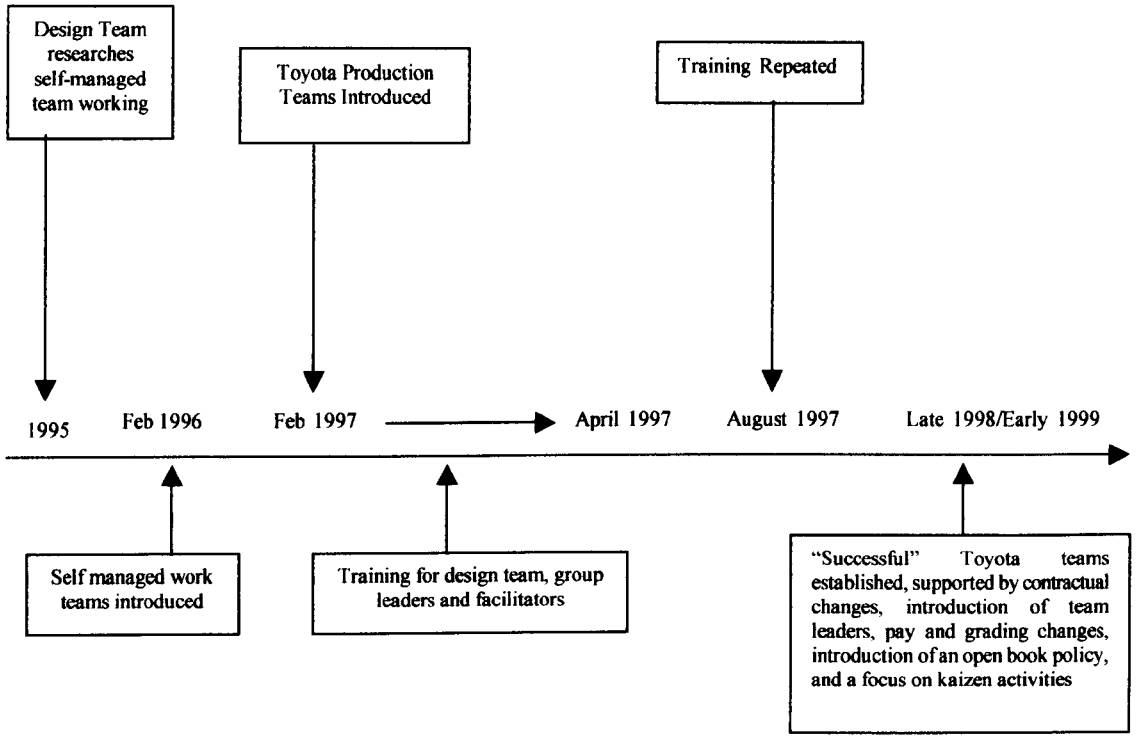
In many ways, the introduction of a team-based approach was born out of a crisis, and was an attempt by senior managers to break a cycle of adversarial, low-trust relationships. Also, between 1993 and 1999, the company was faced with increasing demands for higher quality and flexibility and reductions in costs, in an environment of faster rates of change, increased competitor base and global supply. To compete and win, the company needed the skills, knowledge and the determination of everyone and worked hard to sustain the team development initiative, particularly during periods of adverse trading conditions.

The team working values at Berg Transmissions were encapsulated in the following extract from their vision statement: *"Through team work we will identify the necessary and best methods to make things happen. We will share information, resources, ideas and develop the skills necessary to meet the challenges of the future, maintaining an exciting work environment where decisions are made by the appropriate team"*.

5.5.4. The Implementation of Team Working

Key stages of the implementation process and the timing of the different interventions during the team implementation period are recorded on the time line below.

Figure 5.2 The timing of events in the move towards a team-based work design



5.5.4.1 Self-Managed Team Working

In 1996, Berg Transmissions introduced self-managing teams. The senior managers were committed to changes geared around the production system and there was a widespread belief at this time that in a team-based organisation it would be possible to make significant improvements in quality, productivity and efficiency. Indeed, senior managers considered that the introduction of process-related teams would enable them to deliver their strategies for continuous improvement and problem-solving and to focus on supply chain and time to market issues. Teams would also enable the company to meet the demands of the Toyota Production System, also being introduced at this time. The company had some experience of team working, in that cross-functional teams already existed in the company for particular projects. These teams were formed to address one-off events, to kick-start major change or to review changes. Membership of cross-functional teams was optional and such teams were part-time and disbanded upon completion of the task. There was no apparent awareness within the organisation at this time that the goals of self-management and lean

production were in any way conflicting.

The design team had gathered data and established an understanding of the nature of self-managed teams and how to implement them e.g. types of structure, training etc. The aim was to organise the teams around product assembly, and for the teams to increase their ownership of the production process, by taking responsibility for their own planning, and for organising their own activities.

The senior management team made the appropriate structural changes e.g. designating the teams, providing guidance to team members on the nature of team working and encouraging them to take more responsibility for the production process. They also provided training for managers, group leaders, and team leaders, focusing on the nature of team working and problem-solving techniques.

The teams were small, comprising between five and eight permanently designated members. Each team was expected to take responsibility for a defined part of the process. The team leaders were to act in the role of serving the team. They did not have supervisory duties. Specifically, their role was to check that team members adhered to the systems and standards, to help prepare for changeovers, and to ensure work was carried out at the right speed. They were also responsible for carrying out training and team briefings, and to check on performance, policies, plans etc. Team leaders were expected to hold briefing sessions for the teams, focusing on what was happening, how the teams were doing, deadlines, reminders etc.

The design team and the senior managers were keen to instil an attitude in the workforce, that if something needed doing, it was the teams' responsibility to do it immediately. Indeed, the senior managers were keen for self-management to work *"straight off"*, i.e. for the teams to adopt these ideas immediately, take control and responsibility for their areas of the production process and to use their initiative in solving problems, deciding what to do etc. In some ways, this attitude presented an impediment to the implementation process. Interviews with team members at this time revealed feelings of *"we are a team, but what is it we are supposed to do, how do we get on with the work, how do we create time and space to do improvements?"* The team members did not understand the practicalities, challenges, targets, and goals inherent in self-managed team working and were reluctant, at this stage, to take

responsibility for, and control of, their own work areas. Senior managers became increasingly frustrated that the teams were having problems with implementing the concepts of self-management. For example, if there was a problem with a machine resulting in downtime, then the team members were expected to take responsibility for not only solving the problem, but also for using the downtime time productively. They were expected, for instance, to help out other teams/team members in the intervening period. This did not happen and senior managers did not guide the teams over this hurdle. They expected the teams to take on the mantle of self-management, and use their collective initiative to come up with such solutions.

Another example of the problems encountered with self-management at this stage concerned planning activities. The teams were given targets e.g. to reduce scrap by x%, but again nothing happened. The team members simply did not seem to know "how" to plan to make things happen. There did not seem to be a mechanism for turning their understanding of the principles of self-management into practice. Again, analysis of the data from the interviews reveals that managers believed that now the teams were self-managing, they should know what to do, and how to do it, after all they were closest to the tasks and activities on the shopfloor. The team members, however, despite the newly established team structures and environment and the talk about team working, did not really consider this a new way of working or feel any differently. Comments from team members reveal that although they were now called self-managing, essentially, in their view, not much else was different.

Another problem encountered by the teams related to their interdependence. The team members worked in a continuous production environment and the teams were highly interdependent. As such, the team members felt there was pressure on them not to take time out for continuous improvement activities. The interviews with team members reveal that they simply did not know how to schedule these activities into their work and, again, they felt because they were self-managing, they received no support or guidance.

5.5.4.2 Toyota Production Teams

The drive to create self-managing work teams continued for about six months. During this time, senior managers became increasingly concerned that the teams were not taking on the mantle of self-management i.e. that they were not taking control and responsibility for their part of the process, and as such the initiative was not working. As a result, towards the end

of 1996, their attention turned to the concept of Toyota teams, based on the Toyota Production System and time-based improvements. Toyota teams were receiving very positive reports from other companies within the corporation in the United States and this type of team working seemed to address some of the problems associated with self-management in Berg Transmissions.

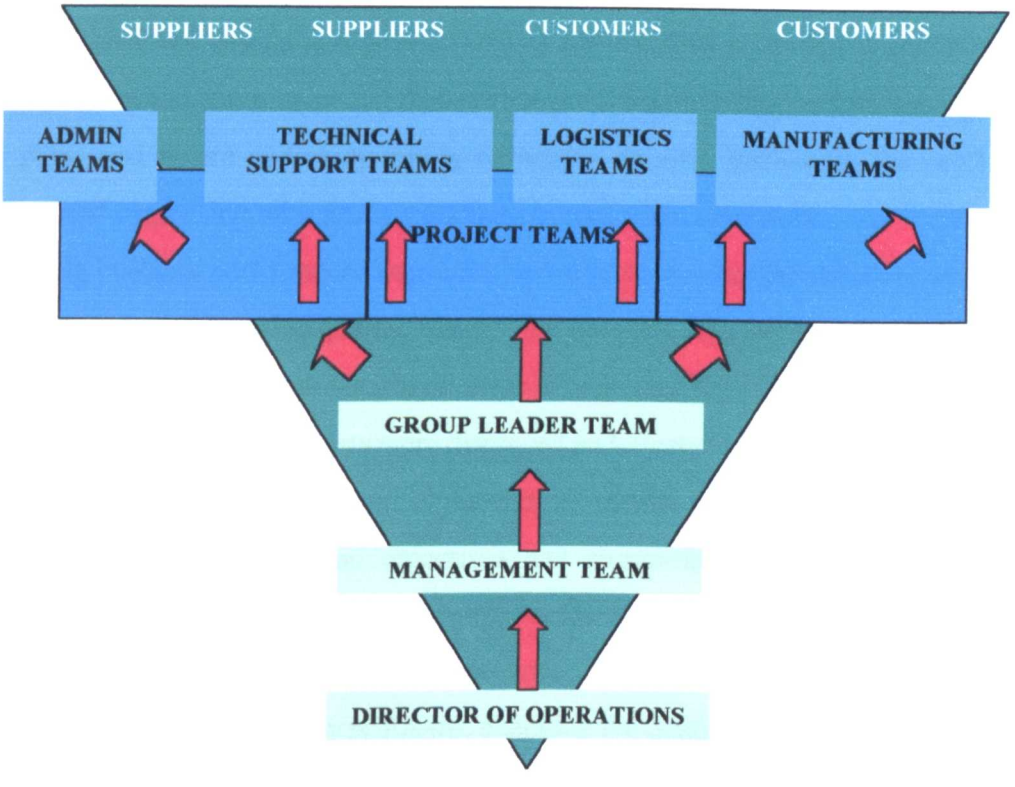
Toyota teams are production-oriented, designed to deliver improvement strategies and imbued with the discipline of the Toyota Production System. During an interview, one of the senior managers within Berg Transmissions commented that he was attracted to this type of team because it *"adds in aspects of understanding"*, that is, all aspects of team working are defined in detail. This includes the structure of the team, the number of team members, where team members should be and when, who does the different tasks, when they should be done and how long they should take and this is all linked to improvement strategies. This form of team design addressed some of the key stumbling blocks of self-management within the company, particularly the practicalities of how the teams should handle some of their new roles and responsibilities.

In February 1997, senior managers in Berg Transmissions decided to establish Toyota teams across the whole organisation. By November 1997, there were 47 teams in all, including a Management Team, a Group Leader's Team, 3 Logistics Teams, a Finance Team, 6 Engineering Teams, 26 Production Teams, 6 Technical Teams, a Human Resources Team and 2 Production Services Teams. This research focuses on the production teams. The senior managers' ultimate goal remained the creation of self-managing teams, and they firmly believed that the move to Toyota Production teams was one way to achieve this.

Some of the basic structures of the Toyota production teams in Berg Transmissions were similar to those established for the self-managing work teams. The teams comprised between five and eight people, but one operator took on the role of facilitator. The teams were designed around single piece flow, with machines being operational all the time. The nature of the production process meant that all the teams were tightly linked to each other. As such, the process operators were largely interdependent. The teams were also designed such that they had a defined part of a process, a challenge, a leader and an outcome or goal to drive improvement. Teams were permanently designated, and where they included temporary workers, these people were dedicated to particular teams.

The organisational structure was changed to considerably reduce the hierarchy and comprised only four layers, namely director, manager, group leader and operator. Effectively, there was one Manufacturing Manager and Group Leader for each product department, responsible for about 60 process operators across shifts. Skilled technicians were assigned to product departments as well as to the central facility.

Figure 5.3. Team organisation within the company.



(adapted from figure provided by the Plant Manager)

To enable the workforce to make the transition to Toyota teams, training was provided between February and April 1997 for the design team, group leaders and facilitators on teamwork and improvement. This included eight days in total dedicated to courses and workshops on principles of total quality, problem solving, performance and measurement, Q.O.S. and 8D corrective action, production system (awareness), team work, leadership, team building, team briefing, internal customer concept and benchmarking and policy deployment (awareness).

The roles and responsibilities of group leaders, facilitators and operators were defined in great detail with the move to Toyota Production teams. The group leader or coach was

chosen by management and was responsible to management for the performance of the teams. The group leader created and maintained links between teams and provided cross-functional support for the teams. The group leader had some traditional supervisory tasks and acted as a conduit for information flow to and from the teams. More specifically, the group leaders were involved in many key activities, including:

(a) determining business goals for the departments, including planning the business objectives into departmental objectives annually and setting targets and goals to achieve the overall business targets and goals; carrying out monthly planning of activities to meet objectives and communicating these to the group; monitoring performance against these plans and where necessary taking corrective actions; evaluating the need for overtime and organising with group members as and when necessary.

(b) establishing business performance measures including reviewing the skills of the teams every three months; ensuring quality, quantity or progress was measured at the end of operations; selecting data sources (for all areas of responsibility) that show performance and ensuring that these data charts were displayed and presented (QCDSM); explaining departmental quality improvement objectives to group members and facilitators; summarising team activities and objectives and comparing them with the overall departmental quality objectives; monitoring progress to objectives and reporting at departmental meetings and management meetings; allocating responsibility for process improvements to correct quality problems; checking the detail of teams' cost reduction schedules and comparing them with the overall target for the department; and, directing and leading activities to achieve cost reductions.

(c) communicating on a wide range of issues, such as, group and team performance and where performance was poor in meeting targets, directing necessary countermeasures; presenting monthly costs to the department and in doing so promoting and directing cost and waste reduction activities; explaining the company's policies, values and business situation to group members and facilitators on a monthly basis; understanding and implementing work regulations and rules and counselling/disciplining group members who broke the rules; ensuring work-related complaints are dealt with without delay; encouraging group members to generate ideas, big and small, to eliminate waste, for example, and promoting this activity by showing the number of ideas generated by the department and their affect upon the reward scheme; planning and acting to ensure training of group members; leading departmental meetings; carrying out employee

development reviews with group members at least once a year; promoting health, safety and environmental policies; reporting departmental safety statistics and ensuring relevant countermeasures were in place; and, providing time and direction for facilitators to undertake their activities and brief their teams.

The leadership of the teams was by a facilitator who was part of the team. The facilitator worked with the group leader to plan improvement activity events and agree goals. The facilitator helped ensure the team's plans and planning activities were capable of meeting agreed targets of improvement and organised the team to carry out these improvement activities to reach the agreed targets. The facilitator also helped the teams organise and make decisions about day-to-day activities, e.g. helping to contain problems when they arose and decide if the resolution of a problem was within the team's capabilities. The facilitator referred difficult issues to the group leaders. Communication was a key feature of the facilitator's role, as it was the facilitator's responsibility to carry out team briefing sessions on a regular basis to keep the team informed about their progress and help eliminate conflict within the team. The facilitator also communicated with the group leader and with other facilitators on a regular basis about team activities and team issues. The facilitator identified training needs with team members, planning with the group leader when training was to take place and monitoring progress. At this time, facilitators received a £500pa supplement for taking on this role.

The role of the service operators was to support or fill in for team members undergoing training; organise off-line gauge checks; keep records of output, defects and breakdowns; maintain stocks of process consumables; cover short-term absences of team members; support/fill in for team facilitators and carry out their activities; check/fill machines with lubricant/coolant/cutting fluid; support/fill in for team members carrying out tool changes and changeovers; move parts in and out of cell e.g. to heat treat, from heat treat, to assembly; maintain 5S standards. Where an operator's role included this service factor, it was worth £698pa.

The operators/team members received on-the-job training designed to make them more multi-skilled. With the guidance of the facilitators, they were responsible for allocating process tasks, but not defining targets and goals. The company assigned breaks and allocated specific times, and it became the team members' responsibility, again with the

guidance of the facilitator, to organise themselves around these schedules. The team members operated across cells to enable time-based operations to work.

The service operators were responsible for delivering raw material to the teams and the team members finished and packed goods for the dispatch area. Team members were responsible for changeovers and set-ups, and if they needed engineering support they were responsible for requesting it through the group leader. The service operators helped solve problems, and it was the team members' responsibility to manage waste. SPC documented instructions were prepared for team members. Team members were responsible for quality assurance in the process cycle time and for the housekeeping in their work areas.

The activities and tasks of the teams were designed around standardised workflow methodology. A cross-functional team dedicated time to gaining knowledge from external training events about Toyota best practices and then worked with the teams on kaizen events. The cross-functional team worked with the teams for a week, standardising and documenting operational processes and exposing problems. The idea was that the processes were established in this way and then the teams took responsibility for making them work and ensuring they did not revert back to old practices.

As such, everything was timed and scheduled for the team members. Every second of the day was accounted for, with the objective of exposing problems. Waste was removed e.g. stretching, twisting, bending and lifting. Time out was planned for meetings, breaks and improvement activities. The aim was to drive out variation and discover how to improve, to reduce costs and to meet market place prices. The team design and activities focused on quality, systems, standardisation, and documentation and these enabled team members to identify variations and problems to be documented and then tackled. Essentially, the teams were in place to implement the Toyota Production System and to remove all wastes associated with under-productivity or over-productivity. One result of this standardisation and documentation was that new team members could join teams at any time and easily pick up the routine. Another was that limited communication was needed between shifts. With the work standardised to this extent, no hand-over period was required.

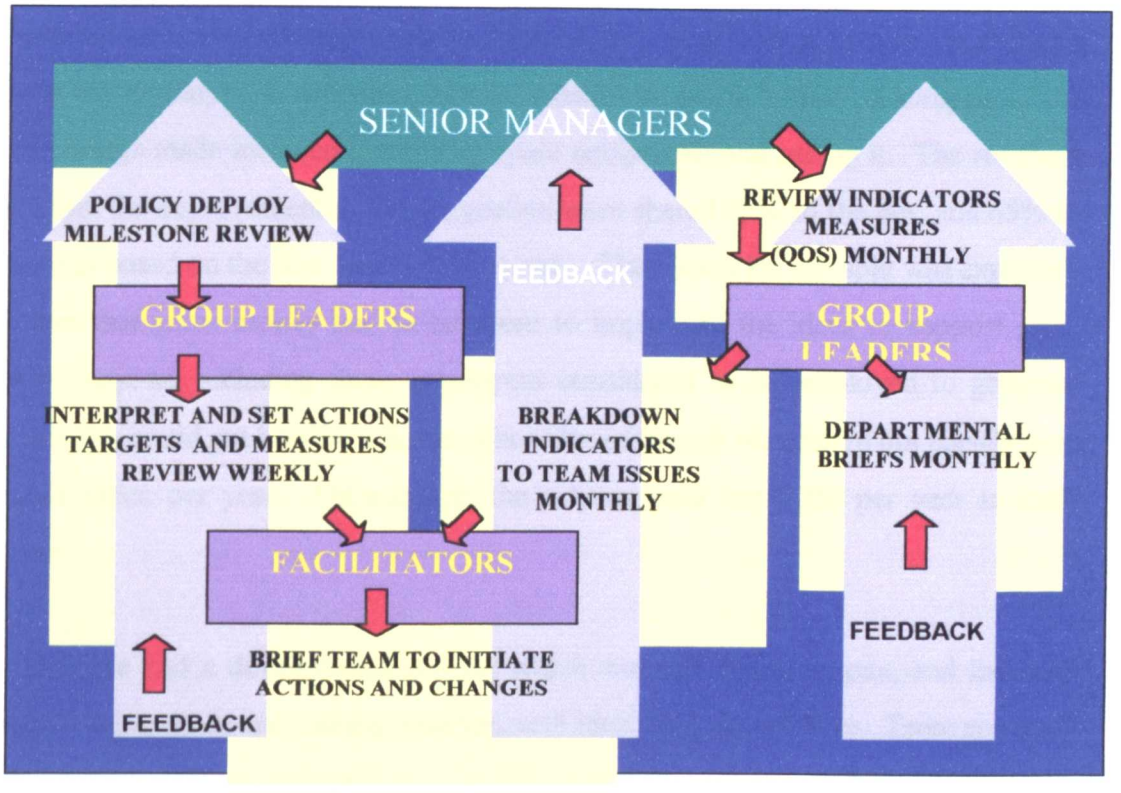
All told, the principles and practices embedded in the Toyota teams were far-removed from the original framework driving the earlier transition to self-management. The Toyota team

design removed much of the decision-making central to the concept of self-management. Interviews with senior managers in the company revealed that the standardisation *"made the life of the operator easier, because it took work out, rather than added it in"*. In the effort to remove the blocks, which had prevented self-management, the managers considered *"prescribed roles for team members and facilitators would make the teams work. Targets for improvement were cascaded into departments"*. The managers felt that despite the standardisation and exact definition of the process, the operators still had *"some discretion and control in terms of time to carry out non-standard tasks (improvement activities)"*.

This standardisation was enabled, at least in part, by the engineering teams, which designed processes appropriate for a Toyota Production System. These design processes included standardisation of aspects, such as, walk time, load/unload, feeds/speeds, and types of machine tools for single piece flow e.g. points for putting things down, inspection etc. Another requirement was that the engineering teams designed machine tools not to be too highly specialised, to enable team members to understand and fix them. Automation was another key feature, to take out the boring parts, but conveyors were not put in unless they delivered single piece flow. Maintenance technicians and operators put preventive maintenance schedules in place across 80% of the plant to give teams more ownership of preventive maintenance. The team members and technicians became increasingly familiar with the equipment and, as a result, more able to come up with preventive measures themselves.

There were no role demarcations in the production teams and team members rotated between roles. If an operator went off the line, then another team member took on his/her role. The operators stopped the machines for breakdowns and changeovers and it was the teams' responsibility to resolve any problems. If, for example, a machine was down, the team was expected to address the problem and in the intervening period e.g. whilst waiting for parts, to go and help out other team members/teams. This was now prescribed practice for the teams, whereas under self-management, the team members were expected to use their initiative to establish a similar course of action.

Figure 5.4. The communication and briefing system.



(adapted from figure provided by the Plant Manager)

Team members were encouraged to learn from each other and to try to avoid establishing "*pecking orders*". They were also encouraged to handle their own grievances within the team and not to spend time in team briefings griping about each other and any problems. Team members were involved in within and between team meetings, and meetings with managers, suppliers and customers and encouraged to use their skills and knowledge to find appropriate solutions to problems. For example, with regard to breakdown problem areas, team members were expected to get involved, measure what was happening, and target what needed to be done. If team members took time out, they were now supposed to understand the impact of this on the team and workflow.

Process operators were recruited with assembly skills or taken on young and trained. The selection process placed emphasis on technical skills (how to assemble things) and team work and involved an assessment centre approach, using tests and practical games. The employee representatives were involved in the process, but management made the final decision.

Team members were not paid for skills. In early 1997, a Self-Financing Reward Scheme, based on a design by a cross-functional team, was implemented to encourage the sharing of new ideas and was based on improvements to drive out waste. Any suggestion, activity, or idea from any employee, if accepted, got £5, which was put in a "pot". Examples of the types of savings made included identifying spare equipment, and selling it. The resultant savings from the improvement of the suggestion were shared 35% to the pot, and 65% to the company based on the first year's savings only. The reason for this split was explained by the fact that some money had to be spent to implement the ideas to support price pressures. Anyone, including those employees considered to be employed to generate improvements, could put into the scheme. The value of the pot was shared out equally to all employees twice per year. On average, the scheme paid out £500 per year to each employee.

Each employee had a development review, which was not linked to pay, and included assessing training needs and training received, attitudes, likes, and dislikes. Team appraisal focused on key business measures e.g. quality, quantity, delivery, cost, safety, morale, turnover, and attendance.

Much of the progress the company made in implementing Toyota teams during 1997 and 1998 involved designing these new structures, procedures and methods of working. The senior managers decided on the structure of the teams e.g. operators, service operators, facilitators, group leaders and departmental managers, defined these roles in some detail and introduced relevant training courses. The senior managers also made considerable progress in standardising workflow methodology. However, in terms of team development, and the adoption of team working practices by the teams themselves, the transition to Toyota teams was not particularly smooth during the first year.

In fact, the stumbling blocks in the transition process were remarkably similar to those encountered during the introduction of self-management. These included the teams showing theoretical understanding of team working, mainly derived from the training courses, but not delivering in practice, and team activities being haphazard rather than consistent. Some of the training was repeated (e.g. with Group Leaders in August 1997) but significant changes had not yet occurred and the team spirit was still not apparent during 1997 and the early part of 1998.

Data from the interviews revealed that some of the problems were cultural, in the sense that the Toyota team design is based on Japanese principles, and is "*severe*", whereas accepted Western work practices in the company have tended to be more "*flexible*". In the early stages of its introduction, this was a big issue and created conflict, realised in a rather antagonistic attitude towards the new ways of working. However, the senior managers focused on the detailed "*end of the process*" and the workflow methodology, and the teams began to recognise there was a lot of waste. The company had always been very open in its communication of information, a legacy of the earlier employee involvement initiatives and the partnership-based approach developed by the company, and employees were aware of the company's difficult financial and market position. As such, the teams began to recognise that they could reduce waste and costs, and this had an impact on their willingness to adopt these standardised procedures. As one interviewee revealed, "*the team members want job security, pensions are important*". The fact that the team members were prepared to follow the standardised procedures, however, did not result in teams. Indeed, as one senior manager explained, after almost one year, "*the teams seemed to have just entered storming phase, and not understood the real challenges yet*".

This notwithstanding however, senior managers did note improvements on some of the key measures. One observation made by a senior manager during an interview was that "*under the traditional work structure the operators spent eighty per cent of their time doing their jobs and twenty per cent of their time solving problems. Now it is changing, and this makes problems simpler*". Through the teams' work in supply chain activities, supply rejects were reduced from 1500 parts per million to 547 parts per million. Other activities to drive out waste include switching to a single carrier, reducing costs by £100,000 per year, reducing suppliers of electrical spares components 33 to 3, and suppliers of oils, lubricants and components from 24 to 2. Attendance rates remained the same at 97%-98% and there was no increase in turnover, which was already low at 0.5%.

These results suggested the improvement and waste reduction activities were having a positive impact on business performance during 1997 and 1998. Team development, however, was not regarded in such a positive light. Interviews revealed that the team members adapted to their prescribed roles, but still "*only did what was asked of them.*" Overall, the senior managers considered there was no evidence of team spirit.

5.5.4.3 Infrastructure Changes

During 1998, the senior managers became increasingly aware that the Toyota teams were not developing, nor were they as dynamic as expected. Towards the end of 1998, the Plant Manager again decided to change the emphasis of the initiative, to reinforce the business objectives at team level, and to continue with performance improvements.

One of the changes in emphasis made by the Plant Manager at the end of 1998 related to the term "facilitator", which had been introduced to describe the internal leadership role within the team with the implementation of Toyota teams in 1997. These facilitators were extensively trained and very capable. However, the Plant Manager considered that the term conveyed the wrong message about their function and ultimately did not believe team members would follow a facilitator. As such, the Plant Manager changed the title to team leader.

The company provided the following description of the expectations and accountabilities of this team leader role from a Manufacturing perspective. The role was designed to assist in 'driving' continual improvement. The team leader was expected to become the primary leader on a day-to-day basis, whilst remaining part of the operator group. Key accountabilities included: liaising with the group leader; organising and directing day-to-day activities to manufacture parts; adjusting manning, builds etc.; participating in the development, co-ordination and evaluation of training within his/her group; documenting data pertaining to key measurements as identified by the group leaders; and providing the primary leadership in problem solving.

Also, at this time, and reinforcing the above role title change, the company implemented new "Process Operator Role, Terms and Conditions of Employment Working Practices". Team members were required to sign a contract to say, amongst other things, that they would follow the team leader. The following points are extracts from this contract, which required operators to:

- totally accept the changes required in working practices and behaviour to operate within the Toyota Production System as required by the Company e.g. not just making bits, but actively participating in 5S (housekeeping), process mapping, standardising work, kanban, and kaizen activities.

- be totally active in the participation in continual improvement as required by the Company e.g. kaizen or other improvement techniques and exercises, and problem-solving teamwork.
- participate in total productive maintenance as required by the Company, carrying out operator tasks as scheduled e.g. keeping clean, lubricating, performing checks etc. and confirm on checklist.
- have total acceptance of team leaders and the direction by team leaders e.g. including, but not limited to, allocation of tasks, and people to those tasks, training and working methods.
- be totally involved in providing performance data, measurement, and monitoring progress, hourly/daily, as requested e.g. output, feed/speed, quality/scrap, breakdowns, changeover timing, tool life etc.
- be totally flexible to adapt to the changes required to grow the business for the future e.g. operating machines/equipment/cell manufacturing and/or service operating (lubricants, support changeovers, spare tooling, production material, first-off checks, etc.), supporting teams/cells. Adopting different/additional tasks and responsibilities as may be expected/dictated by customers. (Past experience: SPC, gauging, health and safety activities etc.)

All told, team members were expected to follow their team leader's direction in terms of work structure, but the team leader had no disciplinary power.

The changes to the role title, the expectations and accountabilities of the team leaders and the introduction of the new terms and conditions were all completed amicably at the end of 1998. There was no payment differential for team leaders, but with the new contract of employment the whole operator group moved up one level in the pay system. The Plant Manager commented during an interview that *"it was always the company's vision to make a fair exchange i.e. as the team members' roles expanded, they would receive additional pay"*. Indeed, the objectives of changing the pay and grading system included simplification, eliminating anomalies, and recognising flexibility. All employees received the same incremental increase as a result of pay talks and this increase was based upon the plant performance and not on the individual, appraised performance.

There were no other changes to the reward systems during this time and the Self-Financing Reward Scheme continued to reward improvements as it had done since 1997. The Plant Manager commented, however, that any improvements based on kaizen activities, which had increased rapidly as a standard part of all jobs during this period, also went into the "pot", e.g. kaizen activities resulted in improved performance through reducing overtime. Such improvements resulted in reduced wages and there was a need to reward people as an incentive to continue with these changes to ensure they did not lose out financially.

The Plant Manager believed that with the new grading system, team members on the same pay rate and with the same status norms, the team spirit was better. He also believed that the new role profiles introduced in early 1999 further reduced anomalies and status differences. Instead of a precise job description for each job within the organisation, groups of jobs were positioned into roles and a wide banding used for the grading and resultant pay. This system emphasised the nature of the different roles in the organisation, taking the focus off individuals and their particular knowledge and skills and engendering more emphasis on team roles and responsibilities. These role profiles included a description of the main purpose of the job, subdivided into key accountabilities (what has to be done, main areas of accountability and responsibility), competencies (how things are achieved), success criteria (what's expected to be achieved – results/objectives), and knowledge and skills (needed for the jobholder to do the job at that time).

The specific key accountabilities were a list of statements, identifying the purpose of the job, along with the end results required in order to achieve this purpose. The characteristics of these accountabilities included details of all the key outputs of the job and end results (not duties or activities), with the emphasis on actions that led to an end result. Typically, the company expected to see between four and eight accountabilities. The knowledge and skills section listed the knowledge and skills the job holder needed to do the job and was technical in the broadest sense e.g. commercial, health and safety, engineering and administrative. The focus in all areas of the role profiles was on the job, not the individual, and this emphasised the contribution of the different roles and not the different individuals in the team.

In early 1999, the Plant Manager also reassigned the teams, with the total number of process teams decreasing from 26 to 24. The teams became slightly larger, usually comprising six or

seven members, with a maximum of ten. Each team was responsible for part of the production process, with a number of team leaders working on each shift with the group leader. Team leaders were responsible for holding short, regular team meetings at which production issues were discussed. The focus in these meetings was on improving performance and team leaders established their own patterns e.g. holding meetings weekly (for about fifteen to twenty minutes) or daily for about five minutes per shift. The team meetings were complemented by departmental level meetings once a month at which group leaders led discussions about business/operating matters and presented plans, performance data, deadlines etc. In these meetings, group leaders also cascaded business objectives to the teams.

Throughout 1999, as at all other stages of team development since 1996, the company continued to focus on performance improvement. Kaizen activities were one facet of this, representing a team approach to, and structured way of, solving problems. Senior managers also considered training was important in making team work more concrete and in improving performance and five days training was provided for process operators in kaizen activities. Prior to this, at the start of the transition to Toyota teams in 1997, the company had tried to get volunteers for kaizen activities. In 1999, participation in kaizen activities became part of the process operators' contracts and, subsequently, kaizen events were organised once a month. Eight process operators at a time were taken from their work areas for a week to focus on improvement. They received a day-and-a-half training on kanban signals, how to measure process inventory, and one-piece-flow. For the following three-and-a-half days, two groups of four went out to resolve issues pertinent to their areas, with the support of kaizen group leaders. As a result, team members established a better understanding of problem-solving, innovation, structure, best practice, and where the business was going. To date (early 2000), one hundred people have been involved in these events. Interviews indicated that the biggest concern of team members related to *"their fear for jobs through kaizen, and that workers were being exploited"*. In response to this, senior managers firmly believed and stated that *"the company's aim was to drive out waste, not people"*.

At a more general level, the company established a training plan for employees. During 1999, there was emphasis on training, not just for kaizen activities, but also training on products, machine tools, problem solving, teamwork, leadership and team building, team briefing, internal customer concepts and benchmarking and policy deployment awareness,

which senior managers considered had a major impact on performance. Data from interviews revealed that among a minority of the operators, there was still *"some suspicion of a hidden agenda i.e. people were being selected for redundancy. And operators didn't all want to develop"*. Some operators did *"not see the point of becoming involved in the process"*, commenting that they *"happy with what they were doing, and considered they were already making a contribution."*

The company also implemented an employee development programme for all employees, to enable the company to compare the training and development needs of individuals with business needs. Group leaders worked with individuals on their development needs and every employee had an employee development review at least once a year to discuss development, building it into the objectives of the organisation. On the basis of these reviews, plans were put in place to improve individuals' abilities to do their jobs and to meet both company and personal objectives. Nobody was forced into being developed, but the company's support extended to cash funding and day release for those wanting to participate in further education. The principle underpinning the organisation's employee development philosophy was to make full use of the intellectual ability of all employees.

The Toyota Production System provided a structure and a strict code for all activities on the shopfloor in Berg Transmissions. By 1999, performance was measured every hour and any problems identified. If the teams were not able to solve the problems in half-an-hour, they escalated to the group leader, after half a shift they went to the management, and after one shift to the Plant Manager. This was part of the strict code.

This strict code was also part of the team development initiative to help teams clarify and understand their purpose. The strict code provided a discipline for the teams. At the outset of the overall team development initiative in 1996, the teams did not know how to behave and what to do. The Plant Manager now considered that the Toyota Production System provided the teams with this knowledge about the business.

The company also had an open book policy and there was constant and consistent communication to the teams, sharing information through briefings about the business and people, question and answer sessions, involvement in monthly quality meetings, weekly unit meetings, planning meetings and by the provision of feedback. Operators were able to see the minutes of meetings published on the information boards and to review actions of

minutes. Data on all aspects of business performance were available in charts and through meetings, including information on the financial performance of the company, relating to costs, profits and sales. Also, the union representatives were included in every discussion about business performance, about the teams, issues relating to overtime, overall financials, quality, etc.

The recruitment policy and procedure were also driven by a strict code. The procedure included three structured interviews, with the same twenty to twenty-five questions on ambitions, technical skills, problem-solving etc. asked of everybody. Different interviewers handled different sections of the interview and asked the different questions. As such, an objective score defined acceptance or rejection. Potential recruits also took part in an assessment centre, with included psychometric tests, technical tests, team activities and individual activities. The recruitment procedure continued to include employee representatives and team leader input.

In early 2000, towards the end of the researcher's involvement in the company, the Plant Manager believed that the company had succeeded in creating effective teams. The team members now had pride in their work and team spirit. Team members were involved in continuous improvement activities and had access to the business and financial data. The teams were performance/success driven and team members had the opportunity for personal growth and improvement.

The company also claimed that team working practices had contributed to clear improvements in business performance and enabled the company to reposition itself in the market quickly. For example, accidents decreased from sixteen per month in September 1998 to seven per month in September 1999. Warranty costs decreased from £160,000 in 1997 to £24,000 in 1999, and in the first quarter of 2000 they were £1200 (annual costs were not available at the time of completing this case in September 2000). In 1999, employee turnover was below 0.5%, and employee attendance was 98%. The company also started to enjoy sustained growth through new products and an increased customer base and experienced the longest period ever without compulsory redundancies. In 1993, the company's turnover was £20m, with products nearing the end of their life cycle. In 1998, turnover had increased to £35m, with new products in expanding markets.

In summary, the situation in Berg Transmissions in early 2000 was such that production was carried out by twenty-four teams, each with a team leader, divided into groups under group leaders. The teams were there to improve the performance of the company by challenging the status quo and improving the process. Teams in cells carried out the assembly process, which was organised on a single piece flow as far as possible. Team leaders decided on job assignments within teams, organised the work schedules and measured team performance. As a consequence of this system of work organisation, operators took on more functions, in the sense that they were able to rotate between different roles, and their jobs were enriched by their involvement in continuous improvement and problem-solving activities.

In 1996, the senior managers in the company had had a vision, to generate performance improvement by organising the process operators into self-managing work teams. The company had not achieved this vision by early 2000. Rather, the company had created what they deemed to be effective Toyota teams, and the Plant Manager retained the aim of working towards self-management. The Plant Manager believed that the strict code and structure inherent in the Toyota Production System was enabling the tasks and responsibilities in the process to become second nature to team members. However, he still maintained that the teams had some control and responsibility over their work, in the sense that the teams could decide, for example, when and whether to improve the system e.g. by lowering inventory, or taking time out of the cycle. It was also the team members' responsibility to recognise and solve problems. The Plant Manager considered that the introduction of Toyota teams eradicated some of the stumbling blocks to the creation of self-managing work teams, e.g. team members' uncertainty about what to do and how to do it. As such, the Toyota teams provided a platform for further team development towards self-management.

In terms of the change process, the creation of Toyota teams was deemed to be successful by the senior managers within the company. The Plant Manager considered the initial structural redesign into teams had been effectively supported by the changes that had been made to the infrastructure since late 1998. Initial attempts in 1997 to create Toyota teams had not been successful without this supporting framework. These changes included the introduction of an open-book policy, contractual changes for all process operators, the redefinition of the team leader's role, kaizen training events and activities, employee development initiatives and streamlining the recruitment, reward and grading systems and

the introduction of role profiles to eliminate the focus on the individual and demarcation issues. The Plant Manager considered these changes have helped build respect, open and honest communication and the involvement of people and, as such, enabled the effective development of Toyota teams.

5.6 Discussion

In 1996, this company set out to introduce self-managing teams. As the case discussion shows, senior managers within the company faced barriers during the implementation of self-managing teams and in 1997 the emphasis switched to the creation of lean production teams. By early 2000, senior managers considered these lean teams were working effectively and having a positive impact on business performance.

This case highlights similar problems to those encountered in Clearwipe plc in terms of the fit between the team design and production system characteristics. These findings build on recent research (e.g. Cutcher-Gershenfeld et al, 1994) on the incompatibility of self-managed work teams in lean production environments. In the change to team working, this case also considers the shift in focus from individual tasks to collaborative team work and from doing to thinking, and raises issues about the de-skilling, rather than up-skilling, of team member's jobs. Indeed, in this company, delegation of team-related tasks did not increase the autonomy of team members. In fact, team leaders effectively took on a more pivotal role and assumed these responsibilities. Finally, this case discussion reinforces earlier work (e.g. Cohen et al, 1996, and the findings reported in the previous case) with regard to the importance of congruence between new patterns of working and organizational systems and arrangements. For the successful transition to, and maintenance of, collaborative team working, a company must ensure the appropriate alignment of its human resource systems. Each of these issues will be considered in more detail in the final chapter of this thesis.

One particularly interesting aspect of this case is the process by which teams adopted, adapted, and developed. The team idea evolved in this organisation. At the outset, there was a focus on implementing self-managing work teams. Factors inherent in the design of the production setting provided obstacles to the success of this initiative (Buchanan, 2000). This was especially problematic in the adverse economic climate faced by Berg Transmissions, which created the impetus for a sharp focus on the operational issues of productivity, efficiency and effectiveness.

The teams in this company have evolved into lean production teams and the case analysis suggests they are operating successfully and effectively. It is impossible in this thesis to predict how the evolution of the teams will continue in this company. The data from this case does support the notion that the longevity implied in the literature for the life cycle of team working is not a true reflection of what really happens in team development initiatives (Buchanan, 2000). Indeed, team working developments would seem to have a much shorter life cycle. The Plant Manager in this company confirms this with his view that *"team working is a constantly evolving vision"*. Indeed, the Plant Manager retains the goal of the teams reaching level of self-management. Whether this is achievable with the existing production strategy and the impact of Toyota teams in de-skilling certain aspects of team roles essential to self-management, e.g. team autonomy and responsibility for planning and scheduling etc., remains to be seen.

The third case in this thesis explores further the importance of congruence between new work designs and their supporting organisational arrangements and systems. This case also considers the scale of the change to team working, contrasting radical and incremental approaches.

CHAPTER SIX

Case Study Three: Optel Corporation

6.1 Synopsis

On 9 September 1994, Optel Corporation switched overnight to self-directed team working. Initially, self-direction was chaotic, but as problems were resolved and appropriate support frameworks established, it came to be recognised by senior managers as the best way to organise the company's production processes. Notwithstanding the difficulties of attributing success directly to team working, the company has won four Queen's Awards to Industry in the past ten years, increased output and expanded the workforce in the last three years, and regularly cites improvements in employee satisfaction over the same time period (i.e. 1995 – 1998). The company believes team working has played a large part in these successes.

There are two key areas of focus in this study. The first concerns the nature of the change process which, in this case, was a revolutionary transformation. The second concerns the organisational arrangements and systems successfully established to support this transformation to self-directed team working. These include a twelve-strong resource support team to facilitate the move to self-direction and to help resolve team-related problems, the establishment of prime roles within each team, making individual team members responsible for specific functions and activities, a new career development structure, team-oriented recruitment and selection procedures and team-based assessment and reward systems.

One key issue in this case relates to the brief period of intensive and pervasive change, which culminated in the formulation of new strategies, structures and systems within the company. Another issue concerns the establishment of organisational support systems congruent with the new organisational design, which were important in reinforcing a new deep structure in the organisation and a new period of equilibrium. A key implication is that organisational arrangements and support systems that fit a new work design are fundamental to a successful change process, in this case the transition to self-directed team working, and reinforce the new work design as a whole through mutual feedback loops.

The difficulties inherent in attributing success to, and measuring success of, team working initiatives, are also discussed.

6.2 Introduction

Traditional assumptions about change have been based on the concept of incremental, cumulative change. By contrast, the Punctuated Equilibrium Model (Gersick, 1991) is based on the idea that relatively long periods of stability (equilibrium) are punctuated by short periods of qualitative, metamorphic change (revolution). The interrelationship of these two modes is explained through the construct of a highly durable underlying order or deep structure. This deep structure is what persists and limits change during the equilibrium periods, and it is what disassembles, reconfigures, and enforces wholesale transformation during evolutionary punctuations (Gersick, 1991). The new activity patterns of an organisation's deep structure reinforce the new system as a whole.

The punctuated equilibrium paradigm proposes that fundamental change cannot be accomplished piecemeal, slowly, gradually and comfortably, and indeed case histories have supported the idea that fundamental transformations occur according to the patterns predicted by the model. For example, Tushman, Newman and Romanelli (1986) examined the life histories of four organisations, AT&T, General Radio, Citibank and Prime Computers, and described a progression of equilibrium periods during which organisational systems, structures and strategies were consistently reinforced toward increasing coherence with the organisation's basic missions. The equilibrium periods were punctuated by very brief periods of intensive and pervasive change, culminating in the formulation of new missions and the initiation of new equilibrium periods. More significantly perhaps, for organisations contemplating change, empirical studies (e.g. Miller and Friesen, 1984) have shown that organisations that radically and quickly alter their formal structures, decision-making routines and information-processing devices perform better than organisations that change gradually and incrementally.

In line with this, but with the focus at an individual rather than organisational level, Beer, Eisenstat and Spector (1990) also question traditional views of change. They believe that many change programmes are flawed because they begin by trying to change the knowledge and attitudes of individuals, which they consider will lead to changes in individual behaviour. A common assumption is that changes in individual behaviour, repeated by many people,

will result in organisational change. Beer, Eisenstat and Spector (1990) believe that this understanding of the organisational change process is "exactly backward" and that "individual behaviour is powerfully shaped by the organisational roles that people play" (p.99). The most effective way to change behaviour, therefore, is to put people into a new organisational context, which imposes new roles, responsibilities and relationships on them. This creates a situation that, in a sense, forces new attitudes and behaviours on people. Two of the key assumptions behind this approach include firstly, the notion that individual knowledge, attitudes and beliefs are shaped by recurring patterns of behavioural interactions and secondly, the notion that the effects of the organisational system on the individual are greater than those of the individual on the system. In a new organisational context, such as that created by a revolutionary change for example, new ways of working and new roles, responsibilities and relationships are orchestrated for individuals within the system and force new behaviour.

The following, introductory section of this case explores in some depth, firstly the Punctuated Equilibrium Model, then goes on to consider the characteristics of organisational systems in maintaining a self-directed team working environment and finally examines the evaluation of this type of work design

6.2.1 The Punctuated Equilibrium Model

The punctuated equilibrium paradigm has three main components: deep structure, equilibrium periods and revolutionary periods. Deep structure is the set of fundamental "choices" a system has made about (1) the basic parts into which its units will be organised and (2) the basic activity patterns that will maintain its existence. Deep structures are highly stable for two general reasons. Firstly, the trail of choices made by a system rules many options out, at the same time as it rules mutually contingent options in. Secondly, the activity patterns of a system's deep structure reinforce the system as a whole, through mutual feedback loops (Gersick, 1991). Tushman and Romanelli (1985) describe five kinds of structural and performance choices that make up organisations' deep structures. These include (1) core beliefs and values regarding the organisation, its employees and its environment; (2) products, markets, technology and competitive timing; (3) the distribution of power; (4) the organisation's structure; and (5) the nature, type and pervasiveness of control systems.

Within equilibrium periods, the second component of this paradigm, the system's basic organisation and activity patterns stay the same; the equilibrium period consists of maintaining and carrying out these choices. Tushman and Romanelli (1985) believe that human systems make refinements and incremental steps during equilibrium periods, as they work to achieve goals built into their deep structures. These authors believe these convergent periods are " ... relatively long time spans of incremental change and adaptation which elaborate structure, systems, controls, and resources toward increased coalignment, [which] may or may not be associated with effective performance (p. 173). [They are] characterised by duration, strategic orientation, [and] turbulence ..... (p. 170). During [these] periods ... inertia increases and competitive vigilance decreases; structure frequently drives strategy" (p.215).

Tushman and Romanelli (1985) define these equilibrium periods as phases during which organisations become more internally consistent and suggest that "selection processes favor ... organisations whose strategic orientations are consistent with internal and external environmental demands" (p. 195). When the environment is reasonably stable, organisations that maintain equilibrium should become more and more thoroughly adapted to carry out their missions. By sticking to a course, a system can become skilled at what it does (Gersick, 1991).

The third major component of the punctuated equilibrium paradigm is the revolutionary period. Revolutions are relatively brief periods when a system's deep structure comes apart, leaving it in disarray until the period ends, with the "choices" around which a new deep structure forms (Gersick, 1991). Revolutionary outcomes, based on interactions of systems' historical resources with current events, are not predictable; they may or may not leave a system better off. Revolutions vary in magnitude (Gersick, 1991). In Tushman and Romanelli's (1985) terms " .. reorientations are relatively short periods of discontinuous change where strategies, power, structure, and systems are fundamentally transformed toward a new basis of alignment (p. 173). Recreations are reorientations that also involve discontinuous change in core values which govern decision premises ... [They are] the most radical form of reorientation (p. 179). During reorientations, organisation inertia decreases, competitive vigilance increases; strategy drives structure" (p. 215).

During equilibrium periods, organisational systems may make incremental changes because

members want to try something new. This is not the case for change of revolutionary dimensions. System members begin revolutionary periods because their equilibrium has been broken. Since they are no longer directed by their old deep structures and do not yet have future directions, systems' members experience uncertainty, often accompanied by powerful feelings. For example, Tushman et al (1986) described organisational reorientations as inescapably risky and painful to participants, yet potentially exhilarating too. This emotion often plays an important motivational role in the transition. Articulation of a new vision is central to organisational reorientation (Tushman and Romanelli, 1985). The sheer urgency and discomfort of being without a functioning structure lends intensity to the search for new solutions. As Tushman et al (1986) point out, an organisation in transition is unstable on a number of fronts. If a new order does not take control relatively quickly, numerous vested interests may pull it toward its old structure; transition periods may end quickly by default.

Punctuated equilibrium theorists typically contrast their prediction of discontinuous and pervasive transformation with a view of nonrevolutionary, or gradual, incremental transformation (Gersick, 1991). The punctuational paradigm challenges traditional assumptions about how change works and the discussion to this point helps explain why from this perspective, incremental changes in a system's parts would not alter the whole. As long as the deep structure is intact, it generates a strong inertia, first to prevent the system from generating alternatives outside its own boundaries, then to pull any deviations that do occur back into line. According to this logic, the deep structure must first be dismantled, leaving the system temporarily disorganised, in order for any fundamental changes to be accomplished. Next, a subset of the system's old pieces, along with some new pieces, can be put back together into a new configuration which operates according to a new set of rules.

Also according to punctuational paradigms, when basic premises change, all the premises contingent on them are affected. This idea contradicts the gradualist view of systems as never moving (or having to move) very far from their status quo during any one step. Systems in transition periods undergo a breakdown of the old equilibrium and a period of uncertainty about the future, before choosing a new basis around which to crystallise a new deep structure.

One of the basic premises of punctuated equilibrium model is that the pattern of fundamental

organisational transformation is one of radical, brief and pervasive change involving most or all key domains of organisational activity. On the other hand, non-revolutionary views of organisational transformation emphasise the relative independence of organisational subunits as managers seek to adapt to changes in their local internal and external environments. Over time, as subunits repeatedly alter their goals and relationships to local environments, the organisation as a whole becomes transformed.

Punctuated equilibrium theorists stress the interdependence of organisational subunits. Following Mintzberg (1979), Miller and Friesen (1984) argued that organisations must be constructed so as to ensure a complementary alignment among structural variables. Tushman and Romanelli (1994) conclude that organisations develop "webs of interdependent relationships with buyers, suppliers and financial backers .... and patterns of culture, norms and ideology" (Tushman and Romanelli, 1985: 177) that legally and normatively constrain organisations to an ongoing commitment to established activities and relationships. Gersick (1991) describes organisational deep structure as a system of interrelated organisational parts that is maintained by mutual dependencies among the parts and with competitive, regulatory and technological systems outside the organisation that reinforce the legitimacy of managerial choices that produced the parts.

According to this view, the result of interdependence is not cascading adaptation over related organisational subunits, but rather resistance to change as subunit managers seek to maintain a complex network of commitments and relationships. Resistance to change is critical to punctuated equilibrium theory in that it establishes the key condition that supports revolutionary transformation as the principal means by which organisations can accomplish transformation. Resistance to change prevents small changes in organisational subunits from taking hold or substantially influencing activities in related subunits. As such, small changes in individual domains of organisational activity will not accumulate incrementally to yield a fundamental transformation, as suggested by gradualist views of change.

Indeed, results of empirical research by Romanelli and Tushman (1994) demonstrate that revolutionary transformation, as predicted by the punctuated equilibrium model, is a principal means by which organisations fundamentally alter their systems, strategies and structures. They found no evidence in their research to support the argument that very small changes in organisational characteristics accumulated over longer periods accomplish

fundamental transformation. Revolutionary changes were shown to be positively and significantly influenced by major changes in environmental conditions and successions of chief executive officers.

On a rather less positive note, Tushman and Romanelli (1985) suggested that revolutionary transformation may constitute a dangerous endeavour for organisations, increasing their risk of short-term failure. Revolutionary transformation fundamentally disrupts established activities and understandings, and nothing guarantees that the resulting configuration of activities will be better than the previous configuration.

6.2.2 Organisational Strategy, Systems and Arrangements

Contextual and organisational factors have a direct and important impact on the successful implementation of self-directed team working. Organisational strategy outlines the organisation's goals and the means for attaining those goals. In the 1990s, self-direction is seen as a strategic intervention, which will improve organisational flexibility and product quality for competitive advantage.

More generally, the 1990s has also brought recognition that effective management of human capital, not physical capital may be the ultimate determinant of organisational performance (Adler, 1988). Many manufacturing initiatives (for example, advanced manufacturing technology and statistical process control) depend heavily on employee skills and commitment as key components in the value creation process (Snell and Dean, 1992). It is therefore, instrumental for manufacturing firms to harness the productive potential of their employees to achieve superior performance. Human resource activities are frequently acknowledged to play a central role in linking employee capabilities with the performance requirements of the firm. Research in this area (e.g. Snell and Dean, 1992) has focused predominately on manufacturing strategies, such as advanced manufacturing technology, just-in-time and total quality. However, the findings would seem to be equally pertinent in the context of the implementation of self-direction. This is partly because at a strategic level this initiative is concerned with the effective management of human capital, and partly because at a practical level there are similarities in some aspects of the interventions. For example, self-direction has a similar impact on job characteristics and places a similar emphasis on collective performance as some manufacturing strategies.

An example of research in this area is Youndt, Snell, Dean and Lepak's (1996) work exploring the relationship between human resource management, manufacturing strategy and firm performance. Their findings relate to the contingency view of the human resource management - performance relationship in manufacturing settings and are of direct relevance in the context of this case. The contingency perspective posits that an organisation's strategic posture either augments or diminishes the impact of human resources practices on performance. For example, at a basic level the argument might be that human resource management is superfluous to performance in manufacturing firms unless human capital is somehow a central component of the firm's manufacturing strategy. That is, if a firm's approach to competition depends on, or makes use of, the talents and capabilities of employees, then human resource management practices would be more likely to have an impact on performance, otherwise the connection between human resource management and performance might be minimal.

Youndt, Snell, Dean and Lepak (1996) argue that the three primary manufacturing strategies of cost, quality and flexibility each imply something different about the potential role of human resources in improving firm performance, suggesting that the best human resource system is contingent on the manufacturing strategy of a firm. In support of this, Wright et al. (1995) found that organisations exhibited higher performance when they recruited and acquired employees possessing competencies consistent with the organisation's current strategies.

The most relevant finding of Youndt, Snell, Dean, and Lepak's (1996) research in this context concerns the implementation of quality strategies in manufacturing organisations. The authors comment that quality strategies, which focus on continually improving manufacturing processes to increase product reliability and customer satisfaction, require employees to make the transition from an environment in which their responsibilities are limited to only the physical execution of work to one in which their responsibilities are expanded to include for example, planning, troubleshooting, problem solving, quality assurance, scheduling, and maintenance. Skill acquisition and development are essential in the implementation of quality strategies, which emphasise the technical, problem solving and interpersonal skills of employees.

Organisations must also provide the context to facilitate employee interaction and

information exchange. As such, human-capital-enhancing human resource systems, those with such features as selective staffing, selection and training for technical and problem solving skills, developmental performance appraisal and group reward and incentive schemes, are consistent with the performance requirements underlying a quality strategy. The findings from Youndt, Snell, Dean and Lepak's (1996) study of 97 plants suggest that the apparent main effect of human-capital-enhancing human resource management on performance is predominately a function of the performance enhancements obtained when firms link human-capital-enhancing human resource systems with quality manufacturing strategies.

Whilst Youndt et al's (1996) research specifically focuses on quality strategies, the findings are directly relevant to the strategic use of self-directed work teams in organisations. Changes to the nature of jobs and job characteristics in the transition to self-direction are very similar to those described above in relation to the implementation of quality strategies. In this change, production employees are also expected to make the transition from having limited responsibility for only the physical execution of work to a situation in which their responsibilities are considerably expanded to include, amongst other things, planning, problem solving, quality assurance, scheduling, and maintenance. Self-directed team working also emphasises group interaction, interdependence and information sharing.

Self-directed work team settings depend on upskilling approaches to human resource management (Youndt, Snell, Dean and Lepak, 1996). In a self-directed work team environment the strategy might be to improve quality, although there are many alternative reasons for introducing self-direction e.g. to improve productivity, increase flexibility, reduce lead times etc. Whatever the reason for the introduction of self-direction, the responsibilities of employees are expanded greatly. These changes create the need for different skills and attributes in employees. Appropriate recruitment, assessment and training programmes that emphasise attracting and developing individuals with appropriate technical, problem solving and interpersonal skills are essential and become instrumental in achieving the strategic goals of these interventions. Employee interaction and information exchange must also be facilitated through appropriate structural and appraisal and reward systems changes to promote, for example, a high degree of interdependence and group problem solving.

In brief, the findings from the research cited above suggest that for the successful implementation and maintenance of strategic manufacturing interventions there must be appropriate alignment of human resource systems. In the past, human and technical aspects of manufacturing have operated in relative isolation, but evidence suggests that when firms fail in their adoption of new technologies, the major stumbling blocks tend to be the human resource management issues rather than difficulties with the technical systems per se (Adler, 1988). For example, Lawler (1981) warned that when a firm's pay system is not aligned with organisational changes it may not reward behaviour that is needed to make new systems work. Worse yet, existing reward systems may actually elicit and reinforce behaviour that is opposite to what is needed to make the changes work.

With these principles in mind, the following section explores human resource systems at a practical and detailed level, considering the link between changes in work design and job characteristics and their direct impact on human resource systems. As already described, the change to team working alters the nature of employee contribution and in the process, requires different organisational systems to manage performance (Snell and Dean, 1994). Employees operating in self-directed teams are no longer machine operators, but have become creative, adaptive, multi-skilled problem-solvers. Groups and individuals are required to work closely together and to depend on each other in ways in which they are traditionally unaccustomed. When jobs and functions become integrated, an individual's co-ordination with others becomes critical. Teams of workers become responsible for productivity, quality etc. and the team decides who will perform what work on a given day and how individuals will rotate among the various jobs. The team replaces the individual as the primary work unit and this has an impact on all aspects of the human resource cycle, from selection through training to reward systems. Organisational arrangements, such as assessment and compensation systems, need to recognise and reward collective effort and flexibility (Snell and Dean, 1994). It is not feasible, for example, to select people on the basis of their individual behaviour and performance to work in a collective, interdependent situation. In fact, individual selection and assessment may attract people who are not team players, which may inhibit co-operation and team work and detract from the overall system.

Job classification practices are an important organisational system used to measure and determine employees' contributions. The practice of job classifications implies that the characteristics of employees' jobs capture differences in their contributions and that

differences in pay reflect differences in skill, effort, responsibility and the working conditions inherent in those jobs. All employees performing the same job are viewed as equal contributors. In a traditional factory, individuals do not have discretion over their performance. In self-directed team working, individuals have more involvement with the production process and problem solving and have more responsibility for work activities. To fulfil these responsibilities, employees use diagnostic, interpersonal and problem-solving skills. In this situation, the distinction between job classifications becomes blurred and at a simplistic level, it is not just managers who think and workers who do. As a consequence, arbitrary distinctions in job classifications, payment systems etc. e.g. hourly vs. salary pay need to be eliminated. If organisational arrangements appear to reward one function above others, there is likely to be a reduction in collaboration and co-operation.

Other aspects of organisational arrangements, such as rewards for seniority in traditional settings, may also have an adverse effect on team working initiatives. If the organisation requires continuous learning and values flexibility, and as systems change, new skills and procedures supplant old methods and skills, the value of seniority may be diminished. Instead, firms may require a reward system that motivates employees to acquire new skills and to have the flexibility to apply those skills in a timely way (Snell and Dean, 1992). To do this, some firms have introduced skill-based pay (Lawler, 1991). With skill-based pay, employees are rewarded for learning new jobs and developing a broad array of talents. For example, if task complexity, variety and uncertainty increase with self-direction, skill-based pay may reinforce employees' efforts to understand new aspects of the production system and enhance their ability to solve non-routine problems (Lawler et al, 1992).

Finally, compensation systems may also have an impact on co-operation and co-ordination in team working initiatives. Adjusting compensation systems may be one of the most instrumental methods for eliciting, reinforcing and sustaining behaviour required for the success of this new work design initiative. Compensation systems based on individual performance can provide powerful disincentives for co-operation. The change to self-directed team working requires individuals to rely on or collaborate with others to complete work. Several authors (e.g. Pearce, 1987; Coombs and Gomez-Meija, 1991) have noted that team incentives are based on the assumption that task uncertainty, interdependence and complexity require co-operation among employees. Team-based rewards promote an environment in which individuals' goals are intertwined and these rewards are more than

motivational. Wagner, Rubin and Callahan (1988) found that workers soon learned how various activities fit together and made process and quality improvements as a team.

All told, the required contributions of employees change significantly with the introduction of self-directed team working. In traditional work practices for example, the focus is on individual incentives, reflecting division of labour and separation of stages and functions. With self-directed team working, it is essential there are at least elements of group incentives to encourage co-operation and joint problem solving. In traditional work practices, use of hourly wages assumes that the differences in employee contributions are captured in job classifications and that performance is largely determined by the production system. In team working, employees' contributions transcend the job per se to substantially affect output. Distinctions between classes of employment are diminished and assessment and reward systems must recognise this. In traditional work practices, seniority pay rewards experience as a surrogate for knowledge and skill in a stable environment and rewards loyalty to reduce uncertainty within the system. In team working, skill-based pay rewards continuous learning and the value-added derived from increased flexibility in a dynamic environment (Snell and Dean, 1994).

It is also important to recognise that in the context of organisational change processes it is assumed that managers will develop organisational arrangements, e.g. assessment and reward systems, to fit new work designs. This is often not the case however, as once in place, administrative systems are notoriously intractable (e.g. Gerhart and Milkovich, 1990). Organisational systems are held in place by written records, organisational traditions, corporate regulations, administrative systems, employee expectations and precedents etc. and it is often difficult to align these systems to new work designs. They are part of the deep structure. Also, it is widely accepted in change situations (e.g. McCalman and Paton, 1992) that people have a vested interest in maintaining the existing arrangements, and hence maintaining the status quo. This may effectively be considered part of the inertia within equilibrium periods.

The fundamental, underlying philosophy and premises behind self-directed work teams are completely different to those behind more traditional forms of working. As such, old organisational systems may pull the organisation back to its old structure. Indeed, research supports this assertion with, for example, Pullen (1976) finding that in a situation in which

workers were organised into teams but paid on an individual basis, there were long-term problems for the work groups. Similar issues and problems were encountered and described in the first case. In Clearwipe, members of the developing teams were expected to work interdependently, but continued to be selected, assessed and rewarded on an individual basis. This continuation of old systems and arrangements in the context of a new work design presented one of the barriers to the successful development of teams in this organisation.

In the team implementation and development process, it is essential if teams are to develop and mature towards self-direction that appropriate team-based organisational structures, systems and arrangements are implemented to support the initiative and maintain the force for change. For example, the organisation will need to facilitate employee interaction and information exchange and reward team involvement, team decision-making and interdependence. New organisational arrangements reinforce new structures as a whole through mutual feedback loops.

The second aim of this case is to explore the relationship between human resource management practices and self-directed work teams and to examine the organisational arrangements required to support self-directed team working. It is acknowledged that changes to organisational systems and arrangements take years rather than months to develop and implement within companies. As such, the focus in this case is on the later stages of the team development process.

6.2.3 Evaluation of Self-Directed Team Working

The imperative for implementing team working has changed over the years. As such, the determination of appropriate strategies for evaluating the success of self-directed work team initiatives has not been a straightforward undertaking. Reports on self-direction in the 1990's (e.g. Buchanan, 1994) unanimously conclude that these initiatives, unlike the early socio-technical interventions, are not concerned with combating absenteeism, labour turnover and the monotony associated with segmented and repetitive tasks. Rather, an increasingly competitive business environment has forced organisations to rethink their work design in an effort to promote quality, flexibility and greater customer responsiveness. High performance work systems that put autonomous team working in centre stage have emerged as an effective way of achieving these goals.

The experiments in autonomous group working pursued by adherents of sociotechnical systems theory and the quality of working life movement in the 1960's were concerned with the creation of a more humanistic approach to work design in order to provide a more fulfilling work experience for employees. Measures of the success of these initiatives related to withdrawal behaviour, job and employee satisfaction and organisational commitment. These "soft" factors have now been replaced by "hard" business realities. The current focus on self-directed teams in organisations is based on strategic, rather than operational considerations, with the ultimate aim of securing competitive advantage through greater flexibility and adaptability. Measures of success in this context relate to operational efficiency, productivity and profitability.

Notwithstanding the different focus of the measures of success of self-directed work teams over the years, there are still two key difficulties in the evaluation of such initiatives. The first concerns the measurement of the impact of self-directed team working initiatives. As Goodman, Devadas and Griffith Hughson (1988) state "... there are not many well-designed studies that evaluate the impact of self-managing groups" (p. 307). The second relates to the fact that those studies that do exist provide conflicting results. Survey data (Industrial Society, 1995) suggests that the introduction of self-managed work teams can result in better customer service, problems solved more quickly, better motivation and improved quality. However, rigorously researched studies produce more ambiguous results.

Indeed, the results of this more rigorous research were considered extensively in Chapter One (Section 1.9 Work Teams and Manufacturing Performance) with a full discussion of the studies by Wall, Kemp, Jackson and Clegg (1986), Cordery, Mueller and Smith (1991), Banker, Field, Schroeder and Sinha (1996), the meta-analysis by Goodman et al (1988) and the more recent and holistic approach taken by Patterson, West, Lawthom and Nickell (1997).

Of particular interest in relation to this case are the aspects of Patterson et al's (1997) work relating to job design and the demonstration of the link between the management of people and the performance of companies. Their research comprises a ten-year longitudinal study (1991-2001), which examined market environment, organisational characteristics and managerial practices in over one hundred UK manufacturing companies. Their findings support the notion that firms can make full use of a skilled and motivated workforce by

promoting job designs which provide enriched jobs for employees in terms of variety, skill flexibility and increased autonomy. In these jobs, employees have responsibility for such activities as problem solving, maintenance, scheduling and quality assurance and work teams are seen to positively affect productivity. Whilst this research does not specifically mention self-direction, it is clear that this type of work design initiative creates the kind of enriched jobs that positively affect productivity.

The final aim of this case is to consider the evaluation and measurement of self-direction and human management practices in the Optel Corporation.

6.3 Aims of the Case

The case described in this chapter follows the implementation of self-directed work teams over a four-year period in a UK-based company that manufactures components for telecommunications equipment.

The author has observed the development of team working in the Optel Corporation from its infancy in 1994 and has gathered data on the implementation process and support systems through interviews with senior managers, production managers and team members. This information has been used to describe the transformation process and the human resource practices implemented in the subsequent years to support the change from a traditional manufacturing work design to self-directed team working and has enabled the researcher to address the key aims in this case i.e. to examine the revolutionary nature of the change process to self-direction in this company and to explore the idea that a company must ensure the appropriate alignment of its human resource management systems for the successful development and maintenance of self-directed work teams. (These aims are described more fully in the Introduction to this case in Section 6.1.)

The final part of this case will examine the difficulties inherent in attributing success to, and measuring success of, the self-directed team working initiative in this UK-based operational unit of a global company. The company considers the transition to team working to be a success, both in terms of improvements in employee satisfaction ratings and in business performance. The change to self-direction took place in September 1994 and results from the company's own Employee Satisfaction Surveys completed between 1995 and 1998 are available; however, there is no hard, causal data to support the link between team-based

work design and improved performance. This chapter discusses the barriers faced in trying to establish the causal links between the changes in work design and business performance in this company.

6.4 The Design and Methods of the Case

This particular case was designed as a longitudinal study, investigating the implementation of self-directed work teams over a four-year period from their infancy in 1994, with particular focus on the factors key to the successful development of teams in the later stages of the implementation process. In the main, the detailed information used in this case comes from structured interviews (both individual and group), although some reference is made to in-house survey data in the evaluation section.

6.4.1 Interviews

The researcher conducted a programme of interviews to collect data on the implementation of team working. The interviews started in the first year of the intervention and continued twice yearly throughout the research period. Both one-to-one and group interviews took place, face-to-face and, where possible, away from the interviewee's workstation. All interviewees, except for the successive Operations Directors, had a minimum of six months experience with the company. Successive Operations Directors were interviewed as soon as possible after their arrival in the company, partly, at least out, of courtesy and to ensure continued access within the company for the researcher, and partly for the purposes of the research. Details of the interview programme are included in Table 6.1 below.

6.4.1.1 One-to-One Interviews

The researcher was able to interview all key players in the intervention, including successive Operations Directors and Production Managers, resource support team members, team members and Human Resource Management and Training personnel. The one-to-one interviews were used to gather detailed information about the implementation process and the changing support systems. Interview protocols were used to record comments.

6.4.1.2 Group Interviews

Group interviews were conducted, where appropriate, with people who formed natural work groups and who were involved in the change process. These included group interviews with resource support team members, who tended to work in groups of two or three on particular

projects, and with groups of Production Managers, who managed the teams on the shopfloor and frequently encountered similar issues and problems across the different teams as they developed. Group interviews were also conducted with team members.

Table 6.1 Interview Programme: Schedule of Interviews within Optel Corporation (numbers of interviews in brackets)

Director of Operations (2): 1994 – 1996	One-to-One Interviews: Director of Operations (2); Production Managers (2); Human Resources Manager (2); OD Manager (4); Training Team Members (2); Resource Support Team (RST) Members – 2 repeat interviews with 2 RST Members (4); Clean Room Manager (2); Production Controllers/Product Centre Co-ordinators (2); Team Members (4) Group Interviews: Training Team (1); Production Managers (1); Resource Support Team (2- repeat); Self-Directed Work Team (1)
Director of Operations (3): 1996 – 1998	One-to-One Interviews: Director of Operations (1); Production Manager (2); Human Resources Manager (2); Training Team Members (2); RST Members – 3 repeat interviews with 2 RST members (6); Clean Room Manager (3); Product Centre Co-ordinators (2 - repeat); Team Members (4) Group Interviews: Production Managers (1); Resource Support Team (2 - repeat); Self-Directed Work Teams (2 – repeat)
Director of Operations (4): 1998 – 1999	One-to-One Interviews: Director of Operations (1); Production Manager (2); Human Resources Manager (1); Training Team Members (2); RST Members (1); Clean Room Manager (1); Product Centre Co-ordinators (1); Team Members (2) Group Interviews: Resource Support Team (1); Self-directed Work Teams (1)

6.4.2 Survey Data

In October 1994, the researcher obtained agreement from the senior management team within Optel Corporation to survey a cross-section of employees (team members, resource support team members, managers and administrative staff) on an annual basis, using a questionnaire specifically designed for this research. The senior management team also

agreed to allow the researcher access to the relevant financial information from the company and management accounts. The researcher's intention was to examine team development and employee satisfaction through the questionnaire and to relate this information to the company's financial performance. At this stage, the company were keen to monitor and evaluate the intervention in an objective way.

In early 1995, the new senior management team decided there were too many similarities between the in-house survey they were now intending to use and the researcher's questionnaire and withdrew their original agreement. It was felt that the employees would be overburdened by, and become fed up with, completing two questionnaires each year. However, members of the senior management team were keen for the researcher to continue examining the link between team development, employee satisfaction and company performance. As such, the researcher was encouraged to use the data from the in-house survey for the same purpose.

The survey used in 1995 (and in subsequent years, albeit in a different form each year) was an "Employee Opinion Survey" administered by the Gallup Organisation in Optel Corporation, as well as within other parts of the organisation worldwide and in similar organisations. On the basis of the results, Optel Corporation was able to make comparisons with other organisational groupings within which the particular work unit resided, with company employees at other locations and with a select group of peer companies engaged in a variety of types of business. The senior managers at Optel Corporation considered the annual surveys provided an "*insight in to the company's effectiveness in creating a work environment that enables employees to contribute to their full potential*" (Senior Production Manager, 1997). The company always considered the survey results a starting point for dialogue, action planning and follow up and believed the results provided the opportunity to identify and address issues within the organisation.

Some of the scales included in the original (1995) Employee Opinion Survey were broadly comparable with those included in researcher's intended questionnaire. For example, in Optel Corporation, job satisfaction and organisational commitment were measured by scales widely used in organisational research (Cook and Wall, 1980; Warr, Cook and Wall, 1979). Job satisfaction was assessed by employees rating their level of satisfaction with features, such as fellow team members, autonomy to choose work method, job variety, physical

working conditions, immediate boss, pay, etc. Organisational commitment was measured by a scale which tapped three interrelated components of employee commitment: identification with, involvement in and loyalty toward the company. On this basis, and with a new agreement from the company for access to all the survey results, the researcher decided to continue with the attempt to evaluate the team working initiative, despite reservations about lack of control of the data handling. Once again, the senior management team was keen to support the researcher's involvement, believing the results would be useful within the company.

What the researcher (and perhaps, the company) did not know at this stage in 1995 was that, in fact, different surveys would be used each year. This was despite the original assurances of the senior management team that the company would ask a sample of employees to complete the same survey on an annual basis, which would enable the senior managers to chart the progress of team development and monitor employee satisfaction. There was some comparability between the surveys in 1995, 1996 and 1997, but subsequent versions have differed substantially.

The use of different questions over the years prevents direct comparisons between the years and does not allow a clear picture of the nature of employee satisfaction within the company to be established for the transition period. However, some survey results will be presented in the case to illustrate a few of the measurement problems associated with the change processes and the introduction of self-directed work teams. As far as is possible, conclusions will be drawn about the results in the context of the concurrent changes taking place in the implementation of self-direction within the company.

6.5 Company Background

6.5.1 Company Profile

Optel Corporation is a Canadian-owned manufacturer of semiconductor lasers and receivers for telecommunications equipment and is located in the South - West of England. The company designs, builds and integrates digital networks for customers in the information, communication, entertainment, education and commerce markets.

This particular manufacturing site is recognised by the company as a global centre of excellence in optoelectronics and boasts one of the largest "Clean Rooms" in Europe. The

company's European operations generated revenues of $3.03 billion in 1996. At the current time (mid-1998), Optel Corporation employs over 1300 people, including about 1000 shopfloor staff.

6.5.2 The Work Environment before Self-Directed Team Working

Staff employed by the company prior to the transition to self-directed team working in September 1994 were interviewed in early 1995 and asked to describe the organisation and its structure before the change process. The shopfloor was divided into product areas and the interviews revealed that, prior to the change, the shopfloor hierarchy had a traditional structure organised around the product lines and consisting of a manager, a superintendent, supervisors, team leaders and operators. In many ways, it was a command and control structure. The supervisors controlled what the operators did, and how and when they did it.

Many of the operators' jobs involved product assembly and were quite routine, but there was training to enable operators to become multi-skilled and to move between machines within the product areas. It remained the supervisor's decision who received training and who operated which machine. Essentially, this multi-skilling increased the variety in the jobs and enabled operators to rotate between jobs on the product lines. This was seen as important because many of the operators' tasks required precision and had a tendency to be repetitive. Operators were involved in quality control and inspection, but had no autonomy and limited feedback on their performance. Clear distinctions were made between different roles and functions on the shopfloor.

The interview data indicated that in the work environment before the implementation of self-directed work teams the operators' jobs involved job rotation and material handling within the cell, and some responsibility for quality control and inspection. In terms of the different levels of team work described by Badham, Couchman and McLoughlin (1997), the operators' jobs were at Step 1(job enlargement) and were moving, at least to some extent, towards Step 2 (job enrichment). The supervisors, however, maintained firm control over work activities, such as scheduling, planning etc.

The interviews also revealed that the organisational arrangements and systems were designed to fit this traditional structure and reflected the hierarchical nature of the work design. Communication tended to take place vertically, mainly from top to bottom. Human

resource personnel and production managers were solely responsible for the recruitment and selection of shopfloor staff, who were assessed on their individual abilities and their potential and willingness to learn some technical skills, such as soldering and microscope work. Staff were appraised annually by their supervisors and managers on their individual behaviour and their contribution to the product areas and they were paid on the basis of their individual performance. Career development was hierarchical with staff progressing from band one to band two as an operator, then to team leader, to supervisor, to superintendent, and so on. All told, the organisational systems and arrangements were very individual-orientated, reflecting the traditional, hierarchical nature of the organisational structure.

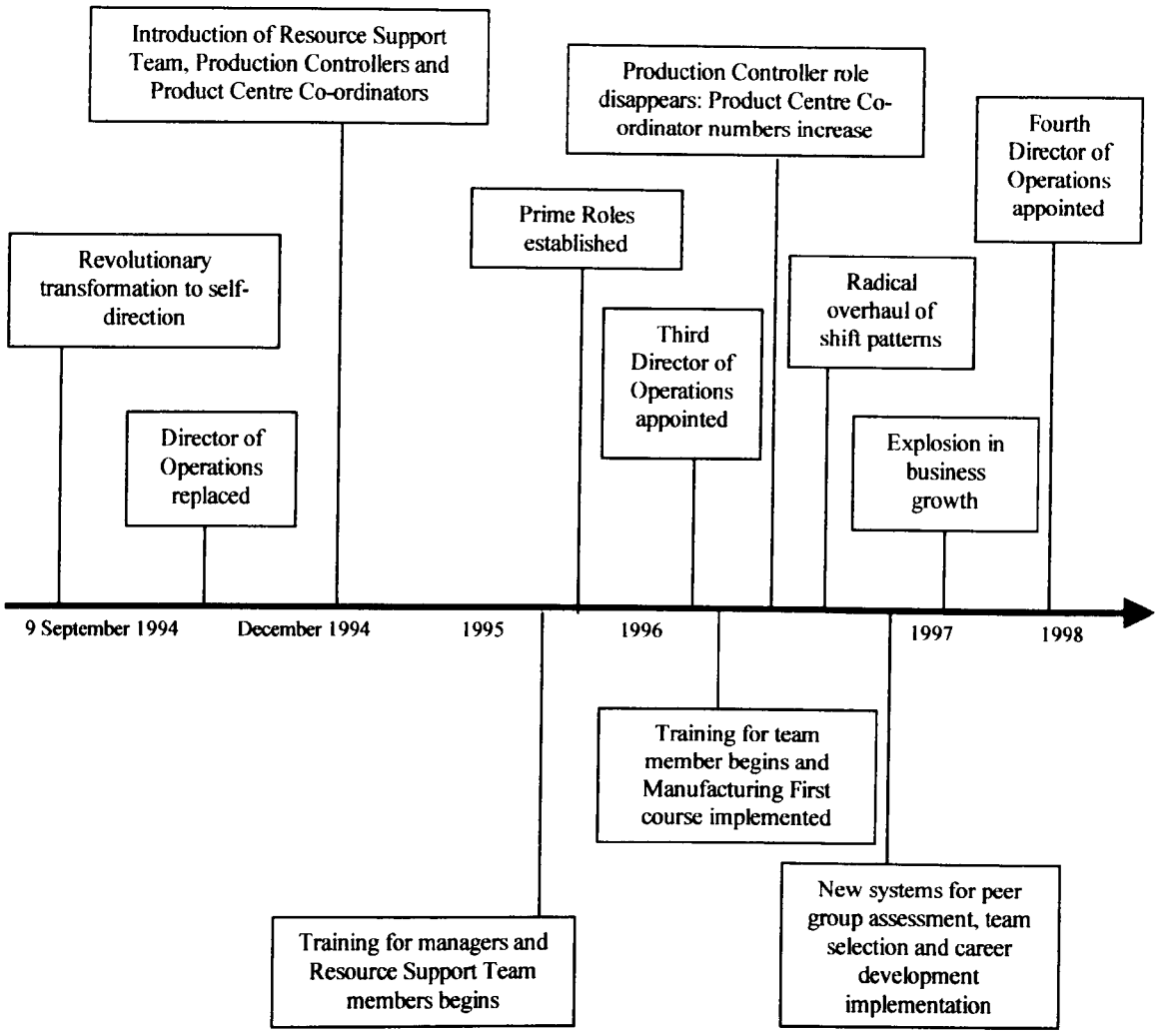
6.5.3 The Rationale for Self-Directed Work Teams

The rationale behind the move to self-direction was that the company wanted to empower people to make their own decisions and to take responsibility for their own actions, in order to maximise results in the production area, in terms of productivity, quality and lead times. Optel Corporation had already set up self-directed work teams in factories in North America and Canada and were intent on introducing the same approach at this site. Also, the previous owners of the company had introduced team working with team leaders in selected areas of the plant. Extending team working, in the shape of self-directed work teams, was seen as the best way to organise the company's production processes to increase productivity and improve quality and lead times.

6.5.4 The Implementation of Self-Directed Team Working

The researcher was involved with the company between 1994 and 1999 and the key stages of the implementation process and the timing of the different interventions during this period are recorded on the time line below.

Figure 6.1 The timing of events in the move towards self-direction



On 9 September 1994, Optel Corporation shopfloor employees switched to self-directed work teams. After several weeks' discussion, the Director of Operations at that time made the change to self-directed work teams overnight. This was a revolutionary transformation and the existing shopfloor hierarchy, consisting of managers, superintendents, supervisors, team leaders and operators was swept away and replaced by a two-tier structure of production manager and operator.

Before the self-directed work teams were introduced, the Director of Operations had spoken to groups of shopfloor staff to sell them the concept. Interviews with staff reveal that "*he was a good communicator*" and that "*a lot of staff went for it*". The Director's rationale behind the overnight switch to self-direction was that if you give staff weeks of training beforehand, it is simply another case of telling people how to act. If people are left to their own devices, they will eventually establish their own direction. One comment from an interview with a new team member expresses this well: "*If you leave people to their own devices they will find their own*

direction and make their own plans as to how to organise work."

The first day of self-direction is described as having been fairly chaotic. In the interviews, staff describe their uncertainty about what was expected from them and their concerns about planning their own workloads. Initially, the new shopfloor structure consisted of one manager in charge of each of the three main production facilities, with a combined workforce of 700. It was impossible for so few managers to control the day-to-day activities of so many employees. As a result, even members of staff who were not attracted by the idea of self-direction, although many were, really had no option but to try to get used to it.

The Clean Room was organised into three main production facilities and the teams were designed to fit this layout, with specific teams designated to specific product lines on specific shifts. From the first day of self-direction, the teams had to take control of their day-to-day work activities including planning work, deciding on work methods, organising team members etc. At this stage however, there was an internal rather than an external focus and team members did not have contact with customers.

Interviews with the managers revealed that productivity and quality both dipped to begin with, but this did not last long. One manager present at that time commented in an interview "*the change hit output hard, customers were unhappy*" and that "*people were not happy, not with what the Director did, but the way that he did it*". These comments were based on the fact that initially the change had an immediate, negative impact on productivity and quality. A few weeks after he orchestrated the change to team working, the Director responsible for the change was moved to another job.

9 September 1994 represented a revolution in Optel Corporation, leading to a period of disarray when the organisation's deep structure came apart. Optel Corporation's strategies, structures and systems were fundamentally transformed. The new self-directed work teams were not left without direction or support for too long. With the arrival of a new Director of Operations towards the end of 1994, the organisation entered a new period in which the organisation sought to become more internally consistent, to work to make choices around the new deep structure and to achieve associated goals. In order to facilitate the move to self-direction, the company formed a twelve-strong resource support team, made up of

former managers, superintendents, supervisors, operators, schedulers and some office staff. Its purpose was to help in solving team-related problems and the selection of resource support team members was made on the basis of whether they would be "*good at smoothing the way to self-direction*". The resource support team role was purely advisory, with no supervisory remit. In the short term, the role of the resource support team members was to:

- facilitate the transition to self-directed team working, and
- counsel and guide the self-directed work teams on any team-related issues.

In the longer term, the role of the resource support team was to help design and implement new organisational systems and arrangements, for example, to:

- design and administer the team review process
- educate and train the self-directed work teams in the prime roles (described later)
- provide recruitment process support
- facilitate the band three (promotion) process.

Interviews with a range of people across the organisation reveal that the resource support team was widely believed to be effective in dealing with people-related issues. The resource support team members helped the teams to solve problems, organise their workload and deal with other work-related issues.

The role of the resource support team changed significantly as the self-directed work teams became stronger, more able to solve their own problems and find their own direction. Indeed, within a few months, the resource support team was reduced to five members, partly because some of the original members felt uncomfortable in this new role and partly because the initial chaos was abating. By 1998, the resource support team had only three members, who were available to help the teams if required, but their role was largely administrative and involved facilitating the peer group assessment.

The new Director of Operations implemented other structural changes in late 1994/early 1995. Four new managers were introduced to run the product lines and two new roles were introduced. Six production controllers were selected as "master schedulers" and six product

centre co-ordinators were selected to work on the production lines to ensure that the schedule was met. Production controllers and product centre co-ordinators did not have a supervisory remit or control over the teams.

General training in self-directed team working started for managers and resource support team members during 1995 and training for operators started in 1996. Further reorganisation took place in mid-1996 when a third Director of Operations arrived and the number of production managers was increased to eight. The new Director implemented a training programme on team working for all operators, including modules on the nature of team working, communication and handling conflict. There was some resistance to the training from some people "*as a waste of time for all operators*" and, after a break of nine months, the training programme was reorganised. Twenty modules on all aspects of team working were prepared and were available to the teams. All team members had to buy into the package to access the training. If one team member did not do so, then none of the team completed the training. About two hundred people in twelve months undertook this training. Over the same two-year period, the company ran a "Manufacturing First" course, looking at manufacturing, scrap, inventory etc. and this course was open to all areas of the company. Most of the staff went through this training programme.

In 1996, the role of production controllers ceased, but the numbers of product centre co-ordinators increased to sixteen. At this time also, there was a major change to the shift patterns, which had a significant impact on staff morale. Negative feelings towards the company were created by what was effectively a reduction in pay for some people as a result of changes to shift premiums and meant that some people were less willing to take on team responsibilities for a short period of time. This was damaging to the team development process for a while.

However, by March 1998, 75 self-directed work teams were established in total. Team size varied from a minimum of five people to a maximum of fifteen people. Teams were dedicated to product lines in the ten main product areas in the Clean Room. Each team had responsibility for a definable part of the production process and for test, assembly and alignment processes. By March 1998, through training and support activities, many of the teams had developed to the extent that they could take control of all their work activities and they had the skills, resources and materials to be self-directing. This work design

initiative did not change what the team members did in terms of making the products, but enabled the team members to learn how to manage the process.

At this stage, the interviews revealed there was some variation between the teams in terms of the level of empowerment and there were differences in terms of how the teams handled their autonomy. Well-established teams, for example, controlled their own holiday cover, overtime and scheduling, whereas some of the less developed teams did not exercise this same level of authority, relying somewhat more on the resource support team members and other support functions.

The structure immediately after the transition to self-direction comprised only three jobs, operator, technician, and production manager, with no real link between them. By contrast, the structure within which the teams operated in March 1998 consisted of six roles, operator, resource support team member, technician, product centre co-ordinator, nightshift co-ordinator and production manager. As well as the resource support team, a number of these other roles, such as product centre co-ordinator, had been created to help support self-direction. In the intervening years, staff in the different support functions had also been developing the skills necessary to help the self-directed work teams.

By March 1998, there were ten production managers, one manager for each product group. The reduction in the ratio of operators to managers (from 250:1 to 100:1) was enabling the managers to focus more fully on team development. This in turn enabled them to provide more support for the teams.

The significant growth in business experienced by the company in the intervening years led to an influx of new team members on the shopfloor during 1997 and 1998. As a result, many new teams were formed, and new team members integrated into established teams. Interviews reveal that the new roles and structures implemented to support team working e.g. prime roles and the resource support team, enabled such teams to develop and become established quickly.

All told, the transition to self-direction resulted in significant developments in team empowerment. Whilst there were still differences between teams in 1998, team members had considerably increased variety, autonomy and feedback in their jobs and control over their

work environment. Team members were responsible for housekeeping, safety, scheduling, quality, new product introduction, training, team discipline, team selection, team reviews and controlling holiday cover and overtime.

The teams created by Optel Corporation fit into the self-management classification of Banker et al's (1996) team autonomy continuum, although the terminology used by the company is self-directed work teams. The groups of workers self-regulate their work on interdependent tasks. They manage and execute an entire set of tasks, in this case a definable part of the production process, and they have responsibility for support activities, such as selection and assessment. Many of the teams also have direct customer contact.

In terms of the team development process, the overnight switch to teams was a revolutionary transformation and created a dramatic start to the initiative. However, team development has taken place very much in accordance with the models proposed in an earlier chapter by, for example, van Amelsvoort and Benders (1996) and Holpp (1993). These models suggest that teams go through a series of stages in this change process.

At the outset, training is introduced to enable operators to become multi-skilled, to improve the production processes, by enabling operators to cover for each other, as well as to improve the job design in terms of variety and autonomy. Meetings are introduced for performance feedback and discussion of operational problems. Team members then become involved in activities such as maintenance, quality control and planning, before taking on responsibility for working autonomously. This involves establishing performance levels, performance indicators and performance measures for the team, as well as solving team problems and conflicts. Finally, the teams become involved with customers and suppliers and administer functions like selection, rewards and discipline (e.g. van Amelsvoort and Benders, 1996; Holpp, 1993).

In many companies, the transition to self-direction is described in these terms and the different stages of development are seen as goals. The teams are established over time and development and training is focused on achieving these goals. In Optel Corporation, whilst the transformation to a team structure took place overnight, the change to self-direction within the teams was a much more gradual process and paralleled the stages described above.

Leadership and managerial roles have also been discussed quite widely in the context of their importance in the transition to self-management. Indeed, in the Industrial Society survey (1995), senior management was cited as one of the biggest difficulties in the implementation of self-managed teams. In Optel Corporation, the interviews revealed that successive senior managers had the overriding belief that this was the best structure for the organisation. Between 1994 and 1998, there were four new Directors of Operations, and, despite their different business priorities, all of them had an enormous commitment to the change and had expectations that their managers would support a self-directed team-based work design. As one interview revealed, there was in some ways *"a feeling that there was no going back"*.

Indeed, the nature of the change process in the form of a revolutionary transformation may have been fundamental to this feeling of *"no going back"*. The change in Optel Corporation was a short period of discontinuous change, in which the strategies, power, structure and systems were fundamentally transformed. Choices were then made around which a new deep structure formed. Over the intervening years, Optel Corporation established new patterns of activities and human resource systems based on the team structure. The company entered a new period of equilibrium. Subsequent changes within the organisation have been incremental changes to systems and structures. However, the organisation's new basic systems and activity patterns, based on this team structure, have remained the same, reinforcing the new work design.

The senior management team in Optel Corporation attribute much of their recent business success to the creation of self-directed work teams on the shopfloor. Indeed, senior managers within the company worked hard to ensure that factors key to the effective transition to team working were in place. For example, the senior management team maintained a clear strategy and vision of the end-state, ensured alignment between production strategy and team design and placed a great deal of emphasis on the implementation process itself, by facilitating a change in managerial/leadership style, supporting extensive training programmes, and communicating widely about the need for, and direction of, the change.

Indeed, one of the features of particular note and importance in this research relates to the organisational arrangements and systems, which were designed and implemented to reinforce the transition to self-directed team working and create the values essential to

maintaining a team working environment. As described in the literature review, congruence between the strategy, structure and systems is integral to the overall success of any change process. The structural changes that have been described in the implementation process in this case were reinforced by changes to organisational arrangements and systems. The researcher believes that these organisational arrangements and systems were an essential component of the successful transition to self-direction in this company.

Given the nature of the change process to team working, the introduction of new organisational arrangements and systems tends to be associated with the later stages of the transition to self-direction. The structural changes and the creation and establishment of teams essentially take place first, then the focus shifts to implementing appropriate support systems e.g. team-based selection, appraisal and pay systems. In many ways, this company has been quite unique within the overall framework of this research in reaching the stage of self-directed team development when it became appropriate to design team-based organisational arrangements and systems.

The second part of this case focuses on these team-based human resource processes and systems. The changes to the organisational arrangements and systems in Optel Corporation are described in some detail below. These will be used to help our understanding of the organisational and contextual aspects of the processual approach to change presented in Chapter Two.

6.5.5 Organisational Arrangements and Systems

The abolition of almost all managers after the switch to self-direction created an initial difficulty, in that there were no effective communication channels between the teams and between the teams and the other functions. This had a particularly negative effect on the crucial relationship between the teams and the engineers or technicians. There were no clear guidelines to indicate how the teams should relate to the engineers, or make clear the role of the engineers with the self-directed work teams. In the first few weeks of self-direction, the engineers, who interface frequently with the operators, did not possess the communication or persuasive skills required to support the teams. Engineers were used to telling people how to perform tasks, not persuading them to adopt what they believed to be the best course of action, or helping them if they had adopted a different approach.

The appointment of a new Director of Operations towards the end of 1994 led to some changes, with the belief that building support frameworks round the self-directed work teams would help reinforce the new work design and solve some of the initial problems with team working, including the communication issues.

Nadler and Tushman (1979) describe the need to support any change with the introduction of policies, procedures and structures to fit the new situation. In a similar vein, Gersick (1991) refers to the activity patterns of a system's new deep structure reinforcing the system as a whole, through mutual feedback loops. In this case, the transition had been made from an individual–oriented, hierarchical culture to an empowered, team culture and appropriate organisational arrangements and supporting frameworks were important to develop and sustain the initiative.

Organisations have properties of equilibrium (Nadler and Tushman, 1979). To make a change successful, the forces for change must outweigh the forces against change or the forces to maintain a steady state. It is essential to get the relationships amongst the organisational components right. Therefore, in a work redesign initiative, if changes have been made to the way in which tasks are completed and individuals start to work in a different way, it is necessary to change the organisational systems to support this new design and to maintain a steady force for change. The interdependence of elements in the organisational system means that congruence between the different parts is essential for change initiatives to be successful and for organisational effectiveness (Nadler and Tushman, 1979).

In this case, to change the culture and team members' attitudes from their individual and hierarchical orientation to an empowered, team-based one, the organisation needed to implement communication, information, selection, appraisal and pay systems that supported and rewarded autonomy and team working. As described earlier, the formal organisational arrangements in existence at the time of the transition to self-direction in Optel Corporation were designed to fit a traditional, hierarchical, and individual-oriented culture. They did not feature team working as a basic component and therefore the introduction of a team working ethos made some of the systems entirely inappropriate. For example, the recruitment and selection process in existence at the time of the transition did not include assessment of interpersonal, team working skills or style of work group behaviour and the

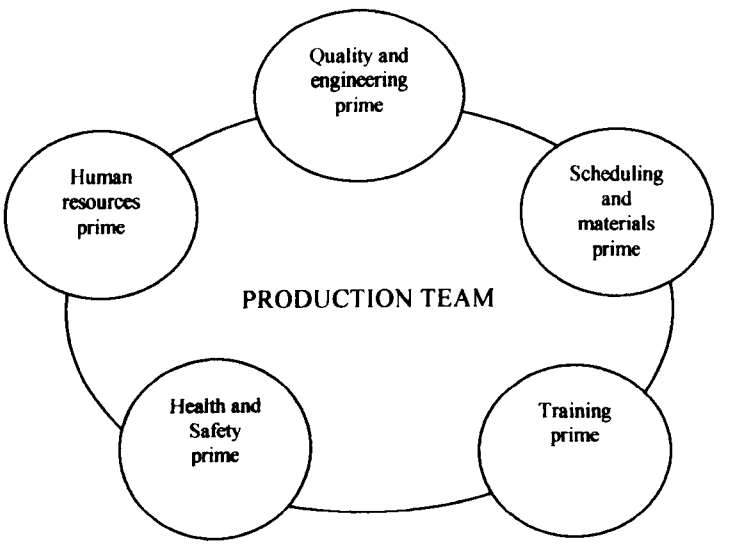
removal of the hierarchy during the change reduced upward career opportunities for the team members. New systems were needed to reward attitudes and behaviour congruent with the new team-based structure.

These new organisational arrangements included the introduction of prime roles, a new banding structure, and new team-based selection, assessment and discipline systems.

6.5.5.1 Prime Roles

The first step was to establish an element of structure within the teams, to facilitate communication and information exchange between the teams and with the support functions, whilst maintaining a clear sense of equality, co-operation and interdependence amongst team members. To do this, prime roles were created within each team, making individual team members responsible for specific functions and activities.

Figure 6.2 Prime roles within teams



A team had five prime roles: health and safety; human resources; quality and engineering; scheduling; and materials and training. The team members themselves decided who should fill the various prime roles and generally it was someone who was suited to the task or who had a particular interest in the area. It was also common for prime roles to rotate. They were the key communications link between teams and support functions.

Prime roles were not leaders by another name and, indeed, there was more than one prime role in each team to stop the role taking on a leadership function. Each prime was

answerable for his/her own area of responsibility, but it was the collective unit that was accountable for team performance. The training prime, for instance, "*fed back to the team all training-related information, maintained the skills matrix, and organised and monitored training*".

All told, the prime role was:

- a role not a job
- not a supervisory substitute
- usually for a minimum period of one year
- suggested by a manager, but could not be enforced by a manager
- agreed by the team
- responsible for training the replacement, and if the replacement was off sick or on leave for providing cover, and
- available for shift handover.

Prime roles did not attract any extra payment. Initially, this caused a few problems, as some people thought that they should be paid for taking on additional responsibilities. The question of payment was resolved however, by establishing another main element of the supporting framework, career development.

Interviews with team members revealed that a few still felt the role was under-valued and not worth the hassle. However, this was rather a minority view, and the introduction of the prime roles was more widely acknowledged as a success in terms of providing a strong communication link between teams and support functions.

6.5.5.2 Career Development

Shopfloor employees became very aware at an early stage of the change process that the eradication of many supervisory and managerial functions had destroyed the traditional career paths in the company. As a result, the ambitious were de-motivated by precisely the system that was supposed to maximise employee motivation. This proved only a temporary problem as a new banding system was introduced, which gave operators the opportunity to move to a newly created band-three grade, whereas previously they would have been limited to band two. The new band-three grade was a stepping stone to managerial, technical and

other positions.

There were three steps in the progression to band-three grade and team members were nominated for development by the team:

- **Step one**: an individual had to be a good performer in terms of time management and discipline, among other measures.
- **Step two**: the employee had to demonstrate good individual performance, and an assessment was made of this. Technical skills, such as microscope and soldering abilities, had to be of a high standard. Candidates also needed to possess good team and interpersonal skills, including the ability to make a presentation, to facilitate groups and to interact effectively with people at all levels of the company, and with external suppliers. Normally, someone at this stage would have taken on one of the prime roles, and, for this reason, prime roles were considered to be an important element of career development. Those unsuccessful at this stage had to be nominated again, while successful candidates moved on to a band-three assessment.
- **Step three**: this was a rigorous evaluation based on a one-day assessment programme that included group exercises and an interview with management and the human resources department. Employees at this stage received feedback and a development plan from an external consultant, regardless of whether they passed or failed.

One of the key features of the new banding system was the emphasis on team-related skills and behaviours, as well as the more traditional focus on individual abilities and technical skills.

6.5.5.3 Team Discipline

Teams also had the authority to deal with cases where individuals were regarded as "*not pulling their weight*" and teams could enforce remedial action. This authority was exercised through an employee improvement plan, which involved team members, a resource support team member and the individual concerned discussing the problem team member. The resulting plan gave the team member three months to improve his or her performance or then face disciplinary action. Employee improvement plans were the main mechanism by which the team could maintain effective control over individual team members.

6.5.5.4 Team Selection

By March 1998, the company had recruited an additional 200 operators since the introduction of self-direction and teams had taken on a role in the recruitment process. As well as being assessed on technical skills, there was a team exercise and a criteria-based interview with human resources staff and members of the resource support team. Candidates had to display appropriate group working skills and all potential recruits had to meet the other team members also. Team feedback was regarded as crucial in selecting operators and team members had the final say as to whether a person would fit in with the team.

6.5.5.5 Peer Group Assessment

Teams in each production area had targets covering productivity, recovered hours, output, quality and scrap. Pay was based on team and individual performance in achieving these targets. Consequently, there was peer group pressure to ensure the teams were performing effectively. Team metrics focused on the whole production line, not just on one team. There was, therefore, also outside pressure on the teams to meet their performance targets.

Three times a year, each team member underwent a formal peer assessment, facilitated by the resource support team. Individuals were assessed according to seven criteria, including teamwork, attitude and ability. Team members evaluated each other in turn and the confidential ratings were keyed into a computer database. Initially in 1996, the teams agreed that 40% of any future pay increase should be based on the peer assessment, with 60% determined by the manager's evaluation, based on overall team performance. The latter element was modified in 1998 to include an element of individual performance, although this only accounted for a very small percentage of the managerial rating.

Peer assessment was suggested by the nightshift teams themselves after complaints against the previous top-down appraisal system, particularly the fact that managers could not accurately evaluate the performance of 250 people (at that time, there was a ratio of one production manager to 250 operators). By 1998, it was considered to be an effective and fair tool. Team members had to justify the marks they awarded their colleagues. Aggrieved individuals could complain to their manager if they thought that their peer assessment result was unfair.

At the early stages of team development, peer group assessment was an emotional

experience for some team members. For example, interviews revealed that in some cases a team member marked low one year may have used the system to get back at work mates the next year. More generally, however, the interviews revealed that the peer group assessment system was believed to work well, particularly with well-established teams and it did succeed in reinforcing the team systems and values in place in the company.

The organisational arrangements and frameworks described in this case emphasise the importance of support factors in a successful organisational change process to team working. The findings from the case outline the importance in a work design initiative, such as self-directed team working, of what MacDuffie (1995) refers to as internally consistent human resource systems. Expanding on this idea further, using Hackman's (1982) model of work group effectiveness (described in Chapter One), the work redesign initiative at Optel Corporation brought about direct and congruent changes in group design and organisational context. The company designed the teams to facilitate work on the relevant production tasks and provided an organisational context to support and reinforce competent production work. In terms of group design, the tasks were structured around definable parts of the production process, the composition of the teams was thought through in terms of size and range of technical and social skills, and there were clear expectations with regard to performance. New organisational systems, such as selection and appraisal procedures, were introduced which reinforced team-based values and attitudes.

According to Hackman's (1982) model, changes to group design and organisational context are basic levers to create group synergy and to change the three process criteria of effectiveness i.e. effort, knowledge and appropriateness of task performance strategies. In turn, these changes should improve the overall effectiveness of the group, in terms of acceptable output, team growth and team member satisfaction.

At this point, therefore, it is appropriate to consider the effectiveness of the implementation of self-direction in this company. The changes to the structure of the organisation and supporting systems changes provided the framework for team effectiveness and there was certainly a belief amongst the senior managers that the company benefited from this initiative. Senior managers regularly commented, for example, that between 1994 and 1998 the company had increased output and expanded the workforce and there was a strong belief that team working had played a large part in this. This belief was reinforced, at least in part,

by the senior managers' observations of team development across the production area. Not only did the existing teams become well-established and assume responsibility for the production process, but newly-created teams developed quickly, supported by the new team-based organisational systems and arrangements introduced by the company.

However, Optel Corporation is not unusual in facing problems measuring and quantifying this success. The complexities of many large organisations tend to create problems in directly measuring and attributing success to a particular change initiative. In this case, there are difficulties with attributing success directly to team working and these will be discussed in the next section.

6.6 Measuring Success

6.6.1 Data Collection

The move to self-direction at Optel Corporation involved tremendous upheaval throughout the company. Nevertheless, successive Directors of Operations retained self-direction, partly because it was an organisation-wide initiative and commitment to team working was expected from senior managers throughout the company, and partly because it was generally *"deemed to be a successful initiative and to have contributed to the growth of the company"*. Interviews revealed that there was a belief amongst senior managers that people had adapted well to the new work design and environment and that the company had created a workforce, which not only *"had high expectations"*, but also provided *"a source of competitive advantage"*.

From a business perspective, one interesting aspect of the company's evaluation of team working was that it was largely intuitive. Successive Directors of Operations developed the initiative because they *"believed in its success"*, but on the whole, there was little quantitative data available to demonstrate this success, or to allow some element of causality to be determined. Some of the ambiguity in the evaluation process stemmed, perhaps, from the fact that there are many problems in attempting to measure the impact of work design initiatives on business performance generally, and these were not recognised by the senior management team at the start of the intervention.

Indeed, problems associated with evaluating the impact of self-direction are perhaps reflected in the fact that evidence cited by many organisations to support their claims for the success of the initiative is rather anecdotal. There is often a lack of scientific research to

support these claims.

These comments notwithstanding however, efforts were made in this company, by the researcher as well as the senior management team, to evaluate the impact of the change process. For example, it was agreed that an annual attitude survey would be implemented, that systems would be put in place to monitor "team metrics", such as team efficiency and productivity across the production areas, and that the outcomes of the survey would be related to team and company performance data. However, the collection of appropriate data was not sustained over the five-year transition period, in part at least, an artefact of the overwhelming number of changes that took place within the company during this time.

There were many organisational problems associated with measuring the effects of the change to self-direction on business performance in Optel Corporation. These problems included the constraints imposed by corporate headquarters when working with one work unit of a large, complex organisation, the long-term nature of the change itself and the fact that there were many concurrent changes to both the personnel involved in the change and the organisational arrangements and systems. For example, between 1994 and 1998, there were some significant changes in the senior management team in Optel Corporation. There were four different Directors of Operations and Senior Production Managers in four years, each with slightly different priorities and a slightly different perspective on the change. An upturn in product demand during this same time period led to a dramatic increase of approximately 33% in the operator workforce, with the numbers of operators rising from 700 in 1994 to over 1,000 by the end of 1998. This resulted in the creation of many more teams in the production areas. The introduction of these new teams in the production areas, working alongside the more developed and mature teams, made it difficult to monitor the impact of team development and its effect on team efficiency and productivity etc. Over the same time period, the attitudes of the teams were also affected by concurrent changes to organisational systems and arrangements. For example, in 1996, there was a radical overhaul of shift patterns, which created chaos for several months, and significantly lowered the morale of some team members because it resulted in the reduction of overall pay.

The original senior management team were very committed to the change process and the evaluation and measurement of the intervention. However, collecting meaningful quantitative data and making "hard" measurements against the ever-changing background of

people, structures and systems within the organisation proved very difficult. As a result, it was impossible to evaluate in any meaningful way the impact of the work redesign to self-directed work teams on the company's ability to successfully meet an ever-increasing demand for their products.

Further reasons why the researcher found evaluation of the process difficult are explored below. For example, the researcher could not make comparisons between different work areas with different work patterns because the whole company made the transition to self-direction simultaneously. The researcher also found it impossible to chart the impact of the different changes to the organisational systems and arrangements and explore their effect on business performance. This would have required detailed and consistent data collection, rather than relying on annual employee satisfaction data, as well as the identification of discrete actions and timings across the business. The problems of identifying discrete actions and timings of initiatives and evaluating their impact on performance are exemplified by two different events in 1996. It was widely acknowledged during the interviews that radical changes to the shift patterns and concomitant reductions in overall pay lowered some team members' morale and this was believed to have a negative effect on performance. At the same time, a training programme for team members also began, which was expected to have a positive effect on team performance. It was impossible on the basis of the data collected in this company to separate out the effects of shift pattern changes from the effects of the training programme and link these to the team working initiative. As Snell and Dean (1994) comment the interaction between the work design and the context may moderate the relationships in work design initiatives and there were certainly many complexities in trying to measure the outcomes in this case.

All told, because of the nature of the change to self-direction and its effects on all aspects of the organisational systems and arrangements, it is complicated for organisations to evaluate the impact of the change. In this case however, the complications were increased by the concomitant changes in the company, for example, the frequent changes to senior management personnel and the business growth resulting in the dramatic increase in the number of teams. These constant changes undermined the researcher's attempts to keep good quantitative records of, for example, team efficiency and productivity in the different production areas. The introduction of self-direction coincided with a period of phenomenal growth for the company. In part, the senior managers attributed some of this business

success to the intervention, especially as the rationale behind the change was associated with improving productivity, quality and lead times.

One measurement tool used consistently during transition period was the Employee Opinion Survey, which was undertaken on an annual basis within the company. However, this also had its problems.

6.6.2 The Employee Opinion Survey

To illustrate some of these problems, the following section will focus on the Employee Opinion Surveys used between 1994 and 1998. Data were collected for the survey from a sample of approximately fifty per cent of the workforce annually (between 400 and 550 people). However, although there was consistency in the use of the surveys annually, there was no consistency in their content. Despite assurances at the outset that the items in the surveys would be kept the same, this did not prove to be the case. This may be attributed in part at least, to the frequent changes in leadership and the fact that there were four Directors of Operations in four years, each with a slightly different vision and a slightly different set of objectives. It is also associated with the fact that the company is one work unit in a large global organisation, and some of the decisions about the measurement tools came from corporate headquarters and were outside the remit of the company.

To recap, the original aim in this part of the research was to use the survey data to explore the relationship between employee satisfaction, team development, human resource management practices and company performance (following Patterson et al's 1997 work). The in-house Employee Opinion Survey was an integral feature of this process. This aim seemed viable at the outset of the change process, given the senior managers' commitment both to the establishment of self-direction (and the fact they were some way along the road towards achieving this) and to the evaluation of its impact. However, the combination of the background of changes in the company, which prevented the collection of meaningful team performance data, and the many changes to the survey items each year, made this aim unattainable. Some of the issues associated with the survey are summarised below.

In 1995 and 1996, the same Employee Opinion Surveys was used and comprised 18 questions, which focused on employee satisfaction and organisational commitment. In 1997, the Employee Opinion Survey was expanded to 50 questions, with the intention of giving

senior managers more insight into *"the company's effectiveness in creating a work environment that enables employees to contribute to their full potential"*. This version included 11 of the 18 questions from the original survey and a series of thematic questions focusing on team working. The belief of the senior managers at this time was that the inclusion of thematic questions would enable them to make comparisons between the years as the teams developed.

The thematic items were categorised into eight areas, as follows:

Table 6. 2 Thematic item categories (1997)

Category	Definition
Collaboration	Employees co-operate across organisational boundaries and a "one team" orientation is encouraged and rewarded.
Customer Focus	Employees understand customers' needs and expectations and strive to exceed them.
Empowerment	Decisions are made at the most appropriate level, and employees are involved in decision making and have the freedom to act appropriately.
People Development	Employees have opportunities for formal and informal learning and development that enhances their careers and their contribution to the business.
Performance and Rewards Management	Managers ensure that employees know their job, that they are measured against defined expectations, and that they are rewarded equitably for bringing value to the organisation and customer.
Productivity Conditions	Information, processes and resources align to allow employees to do their jobs effectively.
Strategic Leadership	A strategic plan is clearly communicated, the actions and behaviours of leaders support the business plan and vision, and employees understand how they can contribute to the success of the business
Valuing People	Employees feel Optel Corporation encourages a work environment where they are valued and individuals are treated with fairness and respect.

The Employee Opinion Survey changed once again in 1998. There were still 50 questions, but there were only 5 questions from the original employee satisfaction/organisational commitment survey and 10 of the thematic questions from the 1997 survey. Interestingly, these 10 questions were scored and categorised in a completely different way to the previous year as a new model for analysing and interpreting the data was introduced along with a new series of questions. In 1998, the focus was on giving *"managers and employees more insight into specific areas that help create a high performance environment"* and a *"customised snapshot of employee*

engagement to help managers and teams plan improvements and target actions to optimise business performance".

The new scales included were grouped into four categories, as follows:

Table 6.3 The 1998 employee survey categories

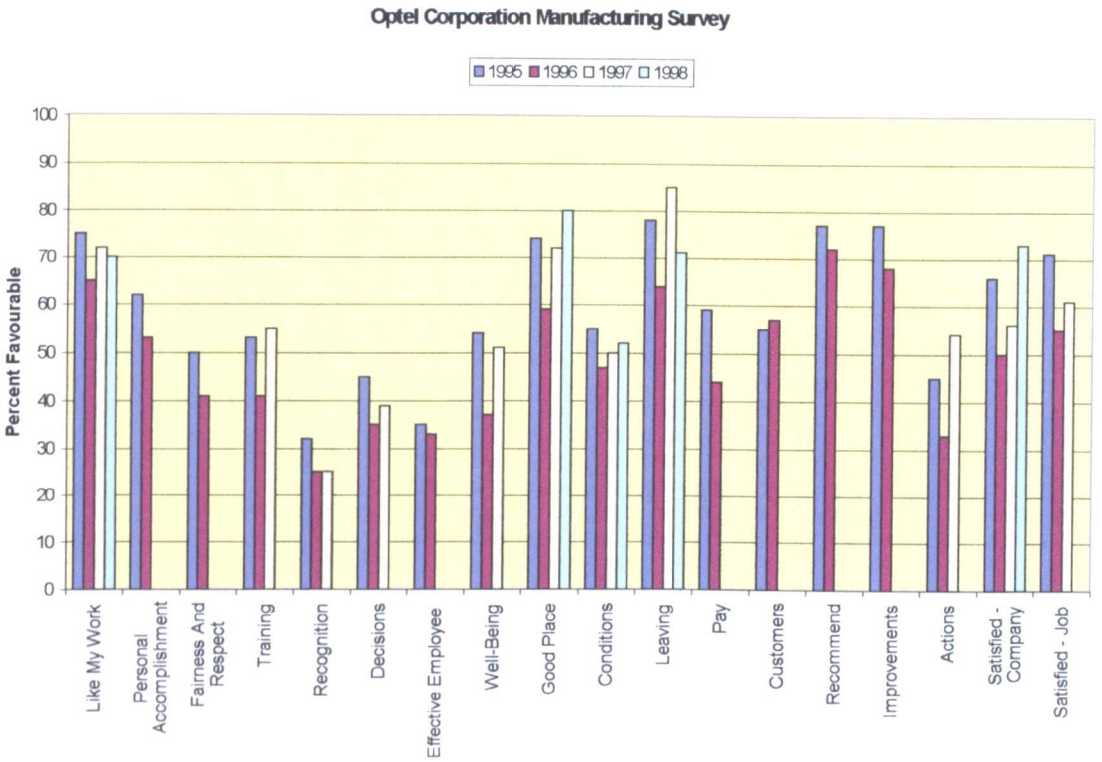
Category	Definition
Equipping	These questions assess whether employees have access to the foundational elements needed to accomplish work.
Motivating	These questions assess the level of support and encouragement employees have to achieve high performance.
Connecting	These questions assess the level of attachment employees have with each other and with Optel Corporation.
Developing	These questions assess the extent to which employees have opportunities to grow and improve at work.

As this brief summary illustrates, the objectives of the surveys changed from year to year. The original focus in 1995/1996 was on employee satisfaction/organisational commitment, moving onto employee potential and team working in 1997 and finally in 1998 the creation of a high performance work environment and the optimisation of business performance. These changes reflected the different priorities of the different Directors during this period.

There are few conclusions that can be drawn from such incomplete and inconsistent set of data, and it is not appropriate to carry out an in-depth analysis of the results because of the limited number of comparable scales across the years. However, the researcher undertook a very limited analysis to examine whether there was a trend towards increasing job satisfaction within the company. As such, two figures are shown below, with the relevant questions and raw scores included in Appendix 6.

Figure 6.3 shows the "Percent Favourable" scores for employee satisfaction/organisational commitment sections of the Employee Opinion Surveys between 1995 and 1998. "Percent Favourable" comprises the combination of "Agree" (4) and "Strongly Agree" (5) responses or the "Satisfied" (4) and "Very Satisfied" (5) responses.

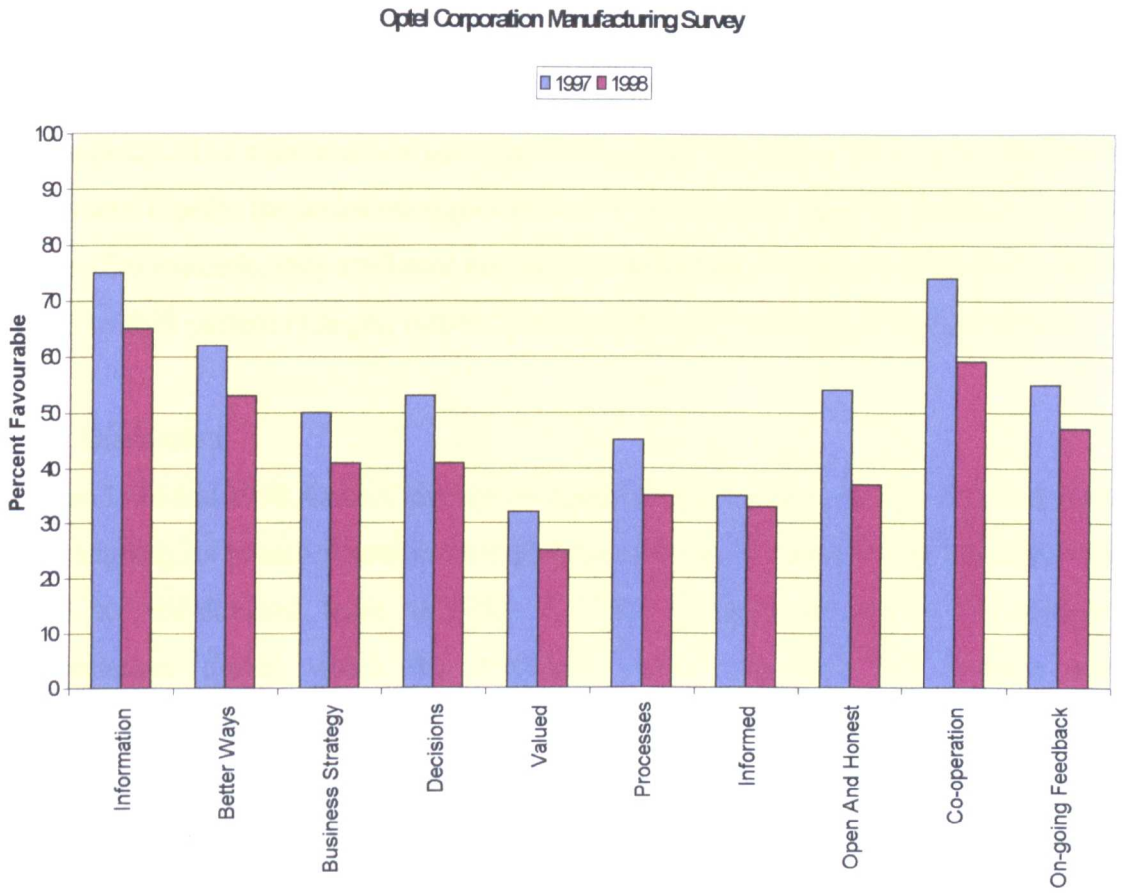
Figure 6.3 Employee satisfaction/organisational commitment scores (1995-1998)



Whilst no in-depth analysis of the responses across the years is appropriate because the number of the same items included year-on-year by 1998 was only five, one striking feature of the chart is the dip in all but one of the scales in 1996. The senior managers in the company strongly believe that was related to the radical overhaul of the shift patterns during this year, which reduced the shift premiums for a large number of staff and created a great deal of unrest and low morale.

Figure 6.4 shows the "Percent Favourable" scores for some of the questions on the extended survey of 1997/1998.

Figure 6.4 Scores on the 1997/1998 extended survey



Again, no in-depth analysis is appropriate because these scales represent only a small number of the total included in each year (ten out of approximately thirty-five). In 1998, all the scales show less favourable responses, and the company attributes this to the huge influx of new employees and the need to create new teams, which were still at the early stages of development when the survey was conducted.

This is a somewhat superficial exposure and analysis of the data, but there does not appear from this to be any evidence from the results that employee satisfaction increased between 1994 and 1998. Yet, the company has maintained throughout the transition period that self-direction has contributed to an increase in employee satisfaction (e.g. IRS Management Review, 1997), and the senior management team attributed this increase in employee satisfaction to team working and linked this to improved company performance.

Analysis of interview data reveals these attributions seem to be based on several different factors. Firstly, the initiative to create self-direction was an organisation-wide strategy, and

the senior managers in this company were keen to be successful, and to be seen to be successful in achieving this goal. Secondly, the senior managers were able to observe team development across the shopfloor and recognised the team members were becomingly increasingly responsible for the production process. They also recognised that new teams created from the huge influx of people from about 1997 onwards developed into effective teams quickly. The infrastructure and organisational arrangements and systems facilitated this process. Finally, the senior managers tended to discount any negative evidence from the surveys. For example, they attributed the decrease in satisfaction across all the survey items in 1996 to shift pattern changes, rather than any aspects of the team working initiative.

6.7 Discussion

Between 1994 and 1998, Optel Corporation succeeded in creating self-directed work teams and in aligning its human resource management practices to the new work design. The change to self-directed team working in Optel Corporation was a revolutionary transformation, during which the strategies, power, structure and systems were fundamentally changed overnight. The company made the transition from an individually-based, hierarchical structure to a team-based, empowered structure. The organisation then effectively entered an equilibrium period, during which incremental changes were made to the system and arrangements. These elaborated the structure, systems, controls and resources of the organisation to achieve the goals embedded in the deep structure.

The case findings contribute to our understanding of revolutionary transformation to self-direction and the importance of aligning human resource management systems with new work design practices. The research provides an insight into the types of arrangements that are appropriate for a team working environment. The case also highlights some of the difficulties encountered in evaluating the implementation of self-direction in a large and complex organisation. Each of these issues will be examined in depth in the concluding chapter of this thesis.

In the final case in this thesis, attention turns to the individuals involved in the change process and the case considers the operational and change agent roles held by internal organisational members.

CHAPTER SEVEN

Case Study Four: Nova Cosmetics

7.1 Synopsis

In 1993, this UK-based, brownfield manufacturing company decided to introduce self-managed team working as part of a wider work redesign initiative, the objective of which was to simplify the structure of the organisation to enable better operational problem-solving and to increase productivity within the manufacturing units.

This case focuses on two key aspects of the implementation of self-managed team working in the packaging department of this company. Firstly, the case considers the operational roles, behaviour and actions of individuals at different levels in the organisation who were involved in the transition to self-management. Secondly, the case focuses on the change-driver roles individuals adopted during the process of team implementation.

Vice President Manufacturing (1) initiated the work design changes in the packaging area, formulating a new manufacturing strategy and operational plan which included the implementation of self-managed work teams. Under his guidance, the senior management team took many positive steps to introduce self-managed work teams, including restructuring the area to create a flatter organisation and supporting a company-wide training programme for supervisors and operators to improve their understanding of manufacturing processes and the nature of team working.

However, the transition to self-management faltered after eighteen months with the arrival of Vice President Manufacturing (2) with different operational priorities. The initiative was resumed again two years later when a third Vice President Manufacturing came into office and the operational focus was redirected to team working. A key implication in this case concerns the operational involvement and commitment of senior individuals in this change process.

Acknowledging that the change process to team working transcends individuals' operational roles, this case also focuses on the team implementation process and the roles of change-drivers and different stakeholders and groups of stakeholders. During the long-term change

initiative to team working, change-drivers and stakeholders adopt multiple roles and different roles at different times. The actions of the different groups and individuals are not always consistent or supportive of each other. The findings from the case underline the nature and importance of different stakeholder and change-driver in this change process.

7.2 Introduction

In Chapter Two of this thesis, the processual approach for investigating the change to self-managed team working was described, one component of which referred to the politics of the change process. This case focuses on the internal politics of the change process and the roles of operational personnel and change agents in effecting a successful change. In this context, the Congruence Model of Organisational Behaviour (Nadler and Tushman, 1979) also described in some detail in Chapter Two, is considered. This model conceives of the organisation as comprising four major components. One component is the *task* of the organisation, or the work to be done and its crucial characteristics. Another component relates to the *formal organisational arrangements*, including various structures, processes and systems. The third component is composed of the *individuals* who are to perform organisational tasks, and the fourth input is the organisation's *strategy*, the set of key decisions about the match of the organisation's resources to the opportunities, constraints and the demands in the environment within the context of history.

In the transition to self-managed team working, modifications will be made to all the components and one basic premise of the Congruence Model is that organisations will be most effective when their major components are congruent with each other. This case will focus on the congruence between the individuals and the organisation's operations strategy. In a traditional manufacturing design, there is a clear division of labour, with the supervisors making the decisions for the group and employees having limited opportunities to bring in their own ideas and sort out their own problems. A traditional work design does not take full advantage of the members' expertise, knowledge and common sense. When senior managers within an organisation take the long-term, strategic decision to create a self-managing work team environment, the supervisors and managers are no longer expected to make the decisions, but to take advantage of the team members' talents, skills, abilities, ideas and experiences. As well as horizontal extension of tasks (multi-skilling), team members also get former supervisory tasks and are empowered to run the daily business, within a defined scope but independently.

In a self-managed work team environment, team members and supervisors have to learn new ways of working. Team tasks are organised around a defined product, service or customer and team members take more and more responsibility for operational tasks. Team members need to learn to make decisions and to interact differently within and outside the team. Supervisors take on the role of coach, facilitator, and counsellor, and management concentrates on the more strategic aspects of the business. As such therefore, with the introduction of self-management, the way in which the tasks are to be performed changes. To create an effective work environment, the style of leadership and management needs to change to fit this new way of working.

The Congruence Model also highlights how essential support from individuals and key players is to the organisational change process in motivating change, shaping the political dynamics of change and managing the transition. The change to self-management creates a fundamentally different work environment and senior managers need to provide a clear vision or strategy for the end-state and firm commitment and support (in terms of consistency in plans, financial support for training and time, for example) to achieve the objective. This case will explore the operational and change driver roles adopted by individuals within the organisation during the transition to self-management.

7.3 Operational Roles

7.3.1 Senior Management

In recent years, senior managers have been increasingly interested in self-managed work teams because of the perceived benefits of improved productivity, flexibility, quality, employee commitment and customer satisfaction (e.g. Industrial Society (1995), considered in Chapter One of this thesis). Senior managers recognise that team-based work designs may enable quicker responses to changes in business demands and needs. However, the implementation of self-management is a complex and radical process, affecting all aspects of the business and, as such, needs to be embedded into a broad, long-term strategy. Senior managers must match the internal strategic concerns of organisational structure, human resource policies, management style etc. with the external strategy of markets and products.

For the change to team working to be successful, the role of the senior management in this process cannot be limited to determining the strategy and operational plans. Models of change (e.g. Nadler and Tushman, 1979) emphasise the importance of senior management in

the transition to a new state and how important leader behaviour is in affecting the dynamics of the organisation. These theoretical models are supported by organisational surveys and research into the introduction of self-managed work teams.

For example, findings from the Industrial Society survey (1995), described in detail in Chapter One, indicated that the biggest difficulty in implementing self-managed teams was the senior management in organisations. Similarly, Knapp et al (1996) found that introducing team working requires the full commitment of senior management. The companies that took part in their survey of the Australian automotive industry identified "strong support from the CEO", "implementation strategy communicated to all employees" and "top management play leading role" as three of the most important factors for successful implementation of production teams.

Research in companies implementing self-management also highlights the key role of senior managers. Schilder (1992) describes several companies which have introduced team-working highly successfully and comments that a critical aspect on which the management teams in Northern Telecom, Steelcase and Johnsonville Foods all agree is that self-managed work teams need senior management commitment to succeed. In their more recent research, Whybrow and Parker (1997) conclude that "there is a clear need for leadership from the top to support the process of team working development" (p.1).

From his extensive case material on managing transitions in organisations, Dawson (1994) concludes that strong support and commitment of senior management is "critical to the successful management of change in providing a clear, unfettered, encouraging environment" (p.177). Similarly, Pettigrew (1985) emphasises from his study of change in ICI "the importance in managerial terms of strong, persistent, and continuing leadership to create strategic change" (p. 454). All told, the introduction of a complex and radical change, such as self-management, not only requires clear links with corporate strategy, but also senior management's operational commitment is crucial in overcoming opposition and securing the levels of investment required.

7.3.2 Middle Managers and Supervisors

The move to self-management is frequently perceived as an indication of ineffectiveness in the middle managers' previous behaviour and as resulting in the reduction of opportunities

for advancement of managers (Manz and Sims, 1993). Partly as a result of these perceptions, one of the biggest obstacles to the success of self-managed teams is what Manz, Keating and Donnellon (1990) call the "middle management brick wall". Success or failure is often determined before the teams are put in place as middle managers and supervisors find it difficult to prepare themselves to conduct business without traditional management and move themselves beyond managing and supervising to facilitating and leading. Indeed, it is increasingly being recognised that it is middle managers and supervisors who may offer greatest resistance to the redesign of the organisation from a traditional to a high involvement structure. Even when their job security isn't threatened, managers and supervisors still face the challenge of defining new roles for themselves when employees are striving for maximum autonomy (Manz and Sims, 1993).

The extreme of the traditional approach is for managers and supervisors to control and instruct the people who work for them. Work designs based on self-management give workers a high degree of autonomy and control over their immediate behaviour. This control often includes such traditional management and supervisory prerogatives as who will work on what machine or work operation, how to address interpersonal difficulties within the group, how to resolve quality problems and so on.

Although few managers and supervisors operate in practice as restrictively as the traditional approach suggests, sacrificing the command element of their job with the introduction of self-management may still be a major challenge for them. The decision to adopt teams and to move towards a work environment without traditional managers and supervisors requires the existing people at this level within the organisation to make significant adjustments and receive appropriate training. Passing of power and control to lower levels in the organisation can be an intimidating process for both managers and supervisors, stemming largely from their own sense of loss of status and power (Manz and Sims, 1993). Such changes to the management and supervisory roles and styles were described in some detail in Figure 2.5. in Chapter Two.

The behaviour and actions of the managers sets the tone for the introduction of self-managing teams and largely determines the chances of success. Unwillingness to "let go", reverting to a "blaming" culture, taking back control at the first sign of difficulties, will all send unmistakable signals to those who work for them (Manz and Sims, 1993).

Russ-Eft (1993), in her examination of factors predicting team orientation within organisations, found that one of the most important predictors was relationships within organisation-wide management. This study also emphasised the critical role the immediate manager or supervisor plays in the transition from the traditional organisation to the team-orientated organisation.

In their study of work groups involved in quality of work life projects, Trist and Dwyer (1982) found that managers had allowed almost all of the projects to die out despite the impressive results that had been achieved. In many of the projects, employees perceived their supervisors as not just disinterested, but negative towards the quality of work life activities. Managers felt that they could not satisfy simultaneously the two sets of objectives that that were being communicated to them from their superiors i.e. to get the work groups functioning and to maintain performance levels. They also felt that they were receiving neither the moral nor the resource support to address effectively this new set of demands. Specifically, management were perceived as: unwilling to change roles or policies that inhibited the more autonomous functioning of groups, slow to respond to suggestions, not directly involved enough in monitoring the process and helping to solve problems, unclear on their roles in the new system, insufficiently communicative with other groups, poorly trained in group process facilitation and conflict management, and generally "going along with the program" instead of actively trying to make it work.

The corporate managers involved in this study accepted these findings, noting that such a long-range strategic undertaking requiring a large investment of management time and energy and a large investment in the training and development of the workforce was a daunting prospect. It put a strain on other priorities and managers alike, especially as the current systems of management practice had stood the test of time and both sides knew where they stood (Trist and Dwyer, 1982)

In addition to these more general managerial roles and responsibilities, leading self-managed employees calls for new perspectives and strategies which may not come naturally to those involved (Manz, Keating and Donnellon, 1990). Traditional assumptions about power, authority and influence are challenged with self-management, with the emphasis being on participative management and teams managing and leading themselves.

Also, in the transition to self-management, the horizontal structures in the organisation are transformed as well as the vertical ones, which again impacts on the middle managers and supervisors. The complementary design of interdependent teams and organisational structures imposes greater demands for co-operation between all groups within the organisation. The self-managing nature of teams involves not only transforming line management, as supervisors become coaches to self-managing teams, but also reverses the traditional relationship between direct production and indirect support departments. As engineering, accounting and personnel functions are devolved to the teams, indirect departments move into a more supportive relationship.

Direct labourers become responsible for far broader aspects of their work, line managers and supervisors become more concerned with system development and strategic issues, and traditional specialists (e.g. human resource specialists) are required to work more in interdisciplinary and interdepartmental teams, often in greater contact with direct production operations. Indeed for Brandon (1993), it is this necessity for interdisciplinary collaboration that makes such strategic changes inherently vulnerable to the withdrawal of much needed support by different functional groups.

As such, the implementation and effectiveness of self-managing teams is affected to a large extent by the managers' and supervisors' contributions to the change process and the maintenance of the new work design. Indeed, the conversion to self-managed teams is as dependent on managerial and supervisory attitude and behaviour change as it is on the development of the teams themselves (Manz, Keating and Donnellon, 1990). These authors found that traditional managers and supervisors recognised the need to change, but they did not always know what new behaviours were expected, nor if they could successfully learn and apply these new skills. Managers experienced a perceived loss of power and control as they realised that their subordinates were becoming their own managers, and that their repertoire of management skills developed over years of experience and struggle were becoming somewhat obsolete. Indeed, as Schilder (1992) states some managers are not able to make the transition, with the statistics at Northern Telecom showing that about 25% of its first-line supervisors left after the adoption of team direction.

7.3.3 The Team Members

The research exploring the attitudes of operators and team members towards team working

reports two distinctly different types of responses to this type of change initiative. There is research describing both the resistance and the welcome given by operators to these changes.

Firstly, with regard to the resistance of operators to the changes Hoerr (1989) notes that the concept of team working troubles many workers, promising autonomy over their jobs, at the same time threatening their old ways of working. Similarly, Lawler (1992) comments about many employees "[they] may have long ago decided to find their intrinsic rewards in one of the many hobbies and activities that are available in the diverse economic and social environment that exists today" (p. 107). This quote reflects the idea that some employees who have worked a long time in command and control structures have lost any interest in the company and only come to work because they need the money.

As a result, when management implement a new system requiring participation, for example, it is difficult to get the commitment of all members of the workforce. To some employees, phrases like flexibility may sound like an euphemism for getting them to take on more tasks for correspondingly less reward (Neumann et al, 1995). How strong the opposition against team working practices is, depends on the management style that was in place before the change. If there was a climate of mistrust, it is more difficult to convince the workforce to adapt to the new system. Having employees with the right attitude is a major ingredient to successful team working and the reality is that not every employee wants to be empowered.

Furthermore, some individuals may not possess the characteristics necessary for team working, that is the aim for growth and responsibility on the job. Similarly, people may lack the ability to interact with others (Goski and Belfry, 1991) and different expectations may lead to deadlock in the team development process. For example, there may be different expectations about pay, with team members considering they should receive extra pay for increased responsibility and managers considering there should be improvements in business performance before rewards are provided. Finally, the way in which teams are implemented is an important factor in preventing these problems and gaining the commitment of the people involved.

There are also start-up problems for team members. For example, Hoerr (1989) cites one team leader from Mazda who commented that initial training sessions prepared workers for

unprecedented involvement in shop-floor decisions. When they actually started producing cars, there was no such thing as teamwork. For example, the team leader commented that workers were pressured to keep the assembly line moving even though they were told they had the right to stop production to solve quality problems. Furthermore, there are sometimes suspicions among team members that self-management is a way of getting rid of people. Perhaps more commonly, there is also a belief that self-management is a way of handing over the stress of added responsibility to the team, for which the supervisors are paid (Hoerr, 1989).

Conversely, Manz and Sims (1993) provide some examples in which the prospect of real participation instead of tight supervision seems to be favourable to the workforce. In these cases, the employees are keen to learn within the organisation. Hoerr (1989) comments that opponents of co-operation get more press than advocates of participation. In reality, Hoerr (1989) believes that many people favour participation. This author goes on to quote figures that show in many plants where participation is not mandatory an average of about 25% of the workers volunteer to join problem-solving teams, another 70% are passive supporters, while only 5% remain opposed.

7.4 Process Factors

Team effectiveness depends not only on the form of work design chosen, its fit to the setting, and the commitment of the individuals involved, but also on the implementation process. This process may influence the ability to implement the requisite work designs. It may also influence the impact of the work design on the outcome.

For example, Badham, Couchman and McLoughlin (1997) comment "despite the claimed greater commitment of senior management to team-based working, it has not necessarily resulted in the unambiguous transfer of substantial autonomy to work teams in the vast majority of cases....." (p. 147). These authors go on to say "the change management process is crucial to successful implementation of human-centred/socio-technical work redesign projects" (p. 147).

These comments are supported by wider survey data which indicates that change programs, including the introduction of team-based working, are not always successful in meeting their original aims and objectives. Indeed at a general level, although business leaders view teams

as an increasingly important factor in their business success, their satisfaction with team work initiatives is quite low (Towers Perrin/IBM, 1991). More specifically, Waterson et al (1997) reported between 50 and 60 per cent of the companies they surveyed in the UK were only moderately satisfied with the effectiveness of team working. Other surveys (e.g. Walton, 1995: Lawler, 1986) also indicate that team working initiatives are not as successful as expected, or indeed fail.

There are few models to guide either research or practice in the *process* of the organisational change to team working. Manz and Sims (1993) describe the move to self-managing work teams as a "dramatic new revolution" (p.1) and a "fundamental change from the traditional organisation" (p. 5). Change processes themselves are complex and political, involving change to both diverse organisational structures (e.g. Oldham and Hackman, 1980; Badham, Couchman and Buchanan, 1995; Neuman et al., 1995) and individual belief systems (Parker, Wall and Jackson, 1997). There are many accounts of what sort of profile makes for a successful team (e.g. Beyerlian, 1997). However, there is less information on exactly how to reach that perfect profile, which may in fact vary across plants, across departments and even within departments.

Whybrow and Parker (1997) comment that despite the prevalence of team-based working as a modern manufacturing practice, "the available practitioner guidelines give little flavour of the developmental processes that traditional manufacturing companies face when making as fundamental a change as introducing teams" (p. 1). The existing research on the introduction of teams in manufacturing companies in the UK (e.g. Sprigg, Parker and Jackson, 1996) provides important recommendations, but little further information on an appropriate processual framework.

In the change to team working, in contrast to more routine mechanistic types of change, there is a large degree of uncertainty about what is to be done and how to do it. Objectives are less clear, resource requirements not so well known, activities more often redirected and schedules reorganised. As McCalman and Paton (1992) observe, in such conditions it is difficult to achieve the shared perception of the project's goals and keep the necessary commitment to provide a solution. Time and effort has to be spent ensuring effective communication, addressing people's perceptions, encouraging flexibility, and generating and regenerating involvement in the face of new problems, setbacks and opportunities.

Indeed, one of the first and most critical steps for managing the transition state is to develop and communicate a clear image of the future (Beckhard and Harris, 1977). Resistance and confusion frequently develop during an organisational change because people are unclear about what the future state will be like. Thus, the goals and the purposes of the change become blurred, and individual expectations get formed on the basis of information that is frequently erroneous. In the absence of a clear image of the future, rumours develop, people design their own fantasies and they act on them. Therefore, as clear an image as possible of the future state should be developed to serve as a guideline, target, or goal in the transition to self-management. It is important to communicate information to those involved in the change, including what the future state will be like, how the transition will come about, why the change is being implemented, and how the individuals will be affected by the change (Beckhard and Harris, 1977).

Problems arise from the degree to which organisational actors, culture and structure have to be transformed for the project to succeed. A change is considered radical if it is central to the organisation's strategy and survival, and involves modifications throughout the organisation which are a radical departure from the existing ways of doing things (Badham, Couchman and McLoughlin, 1997). The change to self-management is, therefore, radical, as it fits these considerations, and as such, it is likely to be politically controversial since the activities and interests of a wide range of different groups may be fundamentally threatened. There is a likelihood of political disruption and opposition (Badham, Couchman and McLoughlin, 1997).

Also, the complexity of some changes processes, such as the introduction of team working, increases their vulnerability. There are a considerable number of unknowns involved in the introduction of teams. In creating new forms of team work, both management and the workforce have to overcome traditional distrusts in order to offer rewards, on the one hand, and both effort and commitment on the other. Yet there are inevitable uncertainties about how the other side will behave and how far the final result will be either productive for the firm or rewarding for employees.

In sum, by their nature, the introduction of self-managed work teams tends to cut across horizontal and vertical boundaries and operational roles within organisations and impinges on the interests of a broad range of stakeholders who may perceive a variety of threats and

opportunities. The final nature of the implemented change and its impact on productivity, working conditions and so on will be crucially influenced by how conflicts and compromises are managed and resolved during the change process.

The focus of this part of the study is on the drivers of change and the different stakeholders in the organisational change process. The change process generates differential demands on individuals at different times. Change-drivers within the organisation are constrained by historical conditioning and current context and whether they have the appropriate knowledge and tools to overcome and exploit historical factors and manipulate contemporary conditions to their advantage (Buchanan and Storey, 1997).

There are multiple change-driving roles that stakeholders and groups of stakeholders can adopt in the change to team working, and different stakeholders adopt different roles throughout the process (Buchanan and Storey, 1997). Different individuals, or groups of individuals, may be expected to play different roles, contributing to the process in discrete overlapping, identifiable and potentially conflicting ways at different times throughout the change process. Particular individuals, by virtue of their position in the organisation, their relationship to the changes in hand, and the nature of their potential contribution, may be expected to assume multiple roles throughout the change.

The actions of different groups and individuals in the organisation might not be consistent or indeed supportive of each other over time. The reality of the process of change is therefore iterative, with much back tracking (Buchanan and Storey, 1997) and the behaviour of the change drivers throughout the change process is important in shaping both the process and its outcomes. A central aim of this part of the case is to increase our understanding of the change process, especially the plurality of roles adopted by internal change-drivers.

There are six groups of change driver roles described by Buchanan and Storey (1997) and these will be used as a framework to explore the roles and actions of the individuals in this case. These roles were described in some detail in Chapter Two of this thesis and are summarised in the following table.

Table 7.1 Change driver roles

Role	Description
Visionary	Gives direction, inspiration and support: traditionally the domain of the chief executive, or one in similar position.
Analyst, compelling case-builder, risk assessor	Assesses the value of the vision in the organisation.
Team-builder, coalition former, ally seeker	Involves political activity, bringing groups together and communicating about team working developments to prevent uncertainty, suspicion, rumours and worry about e.g. pay, conditions, leadership etc.
Implementation planner, action driver, deliverer	Plans the times of workshops and meetings etc., sets the agenda, ensures the date, time etc. are communicated.
Fixer, facilitator, wheeler-dealer, power broker	Helps others to change and learn.
Reviewer, critic, progress-chaser, auditor	Feeds information back to the stakeholders and holds the threads of team-based working together.

According to the processual perspective of change (e.g. Dawson, 1994), the change process requires interlocking contributions of a multiplicity of drivers. Drivers of change are unlikely to slot into predefined roles. Rather, individuals adopt different roles, and play those roles differently throughout the change process, according to the pressures and demands of events as well as personal preferences and expertise. The manner in which organisational events then unfold may be explained in part by role taking and switching, and on the differential levels of competence with which interlocking change drivers conduct themselves in the organisational change process.

In this case, the focus is on the different change driver roles that were adopted by the different stakeholders and groups of stakeholders throughout the implementation of self-managing work teams. Understanding the mechanisms through which a change process to team working is successful or not will add to current knowledge and understanding in this area.

7.5 Aims of the Case

In the present case, there are two main aims. Acknowledging work conceptualising the importance of congruence between different components of an organisation, the first aim of

this case is to explore the operational roles, behaviour and actions of individuals at all levels of the organisation, who are involved in the transition to self-management.

When senior managers in an organisation implement a strategy involving self-management, team tasks become organised around a defined product, service or customer. Team members are expected to take more responsibility and control for operational tasks. To create an effective organisation, the change in the way team members complete tasks must be matched not only by the vision and commitment from senior managers to support the changes, but by a different approach and style by the managers and supervisors in leading the teams. The focus in this case is on the impact of individuals' operational roles, behaviour and actions in the transition to self-management. Qualitative data from an extensive interviewing programme will be used to explore the roles, behaviours and actions of those involved in the change process. Lessons can be learned from such a detailed case analysis about the nature of people's involvement and roles in a long-term change initiative

The second aim of this case is to examine the change driver roles individuals adopt during the process of team implementation. The success of such a fundamental change as the transition to self-management depends not only on the form of work design chosen, its fit to the setting and the commitment of the individuals involved, but also on the implementation process. The change to self-management is a radical, complex, and vulnerable change which impinges on the interests of a broad range of stakeholders and depends on the actions and behaviours of the change-drivers over the long-term.

The change-drivers and stakeholders will critically influence the outcome of the change and its impact on productivity and working conditions. This case will examine in some detail the roles of the different change drivers, stakeholders and groups of stakeholders in the change process. The transition to self-management is complex and this information will improve our understanding of the mechanisms through which this long-term change process is successful or unsuccessful.

7.6 The Design and Methods of the Case

This case was designed as a longitudinal study, investigating the implementation of self-directed work teams over a five-year period from their infancy in 1993. The researcher took on the role of observer and data collector and was involved with all key players in the

change process. Multiple sources of information were used in this case, including observation and structured interviews with individuals and groups.

7.6.1. Observation

After the negotiations with the company to secure participation in the study, the researcher initially took on the role of passive observer on the shopfloor. At this stage, there was no involvement with any of the operators and the idea was to learn about the work environment before the team working intervention. This short period of observation provided an opportunity to learn about the work processes and products and to record details of the physical setting, events and activities.

The researcher took on the participant as observer role throughout the remainder of the study and spent time on the shopfloor and at meetings, observing the teams and advisers and their activities, interactions, work patterns etc.

7.6.2 Interviews

The researcher conducted a programme of interviews to collect data on the implementation of team working. The interviews started in the first year of the intervention in 1993 and continued bi-monthly for the first three years and then quarterly for the remainder of the research period. Both one-to-one and group interviews took place, face-to-face and, where possible, away from the interviewees'/teams' workstations. All interviewees (except successive Vice Presidents Manufacturing) had a minimum of one year's experience with the company. The successive Vice Presidents Manufacturing were interviewed as soon as possible after their arrival in the organisation, both to elicit their support for the research and to examine their views on team working. Details of the interview programme are included below in Table 7.2.

7.6.2.1. One-to-One Interviews

The researcher was able to interview all key players in the intervention, including successive Vice Presidents Manufacturing, Business Unit Leaders, advisers, team members and Human Resource Management personnel. The one-to-one interviews were used to gather detailed information about the implementation process and the changing support systems. Interview protocols were used to record comments.

7.6.2.2 Group Interviews

Group interviews were conducted, where appropriate, with people who formed natural work groups and who were involved in the change process. These included group interviews with Business Unit Leaders and with advisers who came together for weekly meetings and tended to work in groups of two or three on particular projects and with team members working on the same lines.

Table 7.2 Interview Programme: Schedule of Interviews within Nova Cosmetics (numbers of interviews in brackets)

Pilot Study – 1993	One-to-One Interviews: Vice President Manufacturing (1); Work Redesign Team (1); Human Resources Manager (1); Supervisor (1) Group Interviews: Researcher worked on Packaging Line for one eight-hour shift (enabling observation/informal discussion) with one Product Team
Vice President Manufacturing (1): 1993 – 1995	One-to-One Interviews: Vice President Manufacturing (1); Work Redesign Team Members (2- repeat); Business Consultant for World Class Manufacturing Training (1); Human Resources Manager (6); Business Unit Leaders – 2 repeat interviews with 3 Business Unit Leaders (6); Advisers - 3 repeat interviews with 3 Advisers (9); Team Members - 5 repeat interviews with 6 Team Members (30) Group Interviews: Business Unit Leaders (1); Advisers (3); Product Teams (3)
Vice President Manufacturing (2): 1995 – 1997	One-to-One Interviews: Vice President Manufacturing (1); Human Resources Manager (3); Business Unit Leaders – 2 repeat interviews with 2 Business Unit Leaders (4); Advisers/Supervisors – 2 repeat interviews with 2 Advisers/Supervisors (4); Team Members – 3 repeat interviews with 3 Team Members (9) Group Interviews: Advisers (2); Product Teams (1)
Vice President Manufacturing (3): 1997 – 1998	One-to-One Interviews: Vice President Manufacturing (1); Human Resources Manager (1); Business Unit Leaders – 2 repeat interviews with 3 Business Unit Leaders (6); Advisers – 2 repeat interviews 3 Advisers (6); Team Members – 3 repeat interviews with 3 Team Members (9) Group Interviews: Advisers (2); Product Teams (2)

7.7 Company Background

7.7.1 Company Profile

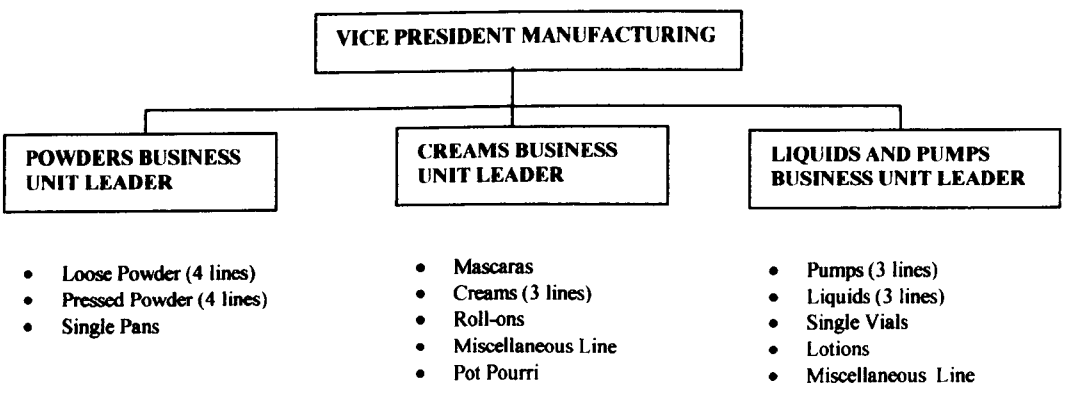
Nova Cosmetics is based in the South Midlands and was established in 1959 as the first European manufacturing facility for one of the world's largest manufacturers of beauty and related products. World-wide, the company manufactures cosmetics, fragrances, toiletries, fashion jewellery and gifts, and with $4.8 billion in annual revenues in 1998, the company ranked 293rd on the Fortune 500 list of America's largest companies.

At the site in the South Midlands, the company manufactures and packages a wide range of the cosmetics, fragrances and toiletries. This research was based in the packaging area of Nova Cosmetics and, at the time of the study, approximately 450 operators worked in this section. This unit packages high volume, low cost products and fluctuations in demand create a large amount of unpredictability and variability in the business units.

7.7.2 The Work Environment before Self-Managed Team Working

The decision to implement self-managed work teams was taken in 1993, as part of a wider work redesign initiative. Observations and qualitative data from interviews with operators, supervisors and managers in early 1994 (before any changes were undertaken) reveal that the work design of the operators at that time was very traditional and the shopfloor was organised along strict hierarchical lines. There were three packaging business units, divided into twenty-five packaging lines, and each line was dedicated to a particular product or type of product (see Figure 7.1 below).

Figure 7.1 The structure of the packaging department



Besides the three operational Business Units (Powders, Creams and Liquids), there were two main Support Units (Engineering and Transportation) and two much smaller units to provide support in Finance and Human Resources. Processing and Quality functions were incorporated into the operational Business Units.

The operators who worked on the lines had very mechanistic jobs, designed according to Tayloristic principles. The interviews revealed that the operators completed a narrow range of different tasks, rotating between different jobs on the lines and, at times of high demand, between different lines. The operators' tasks were largely standardised, fragmented and specialised, with a low level of task identity. Supervisors and management determined the work method and work pace and the operators had little control over what they did, and how and when they did it. The following comment from an interview with an operator reflected this low level of control and autonomy: "*we report for work at 8am, and the supervisors hold a five-minute group meeting with all the line operators to tell us the work schedule, to allocate jobs for the day and report any problems from the previous day*".

There was a very clear division of labour in the company. The Business Unit Leaders and the supervisors were responsible for planning the work, allocating tasks and liaising with internal and external customers and suppliers. The mechanics in each Business Unit were responsible for changeovers and machine maintenance, and the porters were responsible for all material handling. Unlike the operators, the mechanics and the porters were not dedicated to particular product lines. Rather, both the mechanics and porters worked in groups, dedicated to each Business Unit, and they responded to the needs of the product lines in their areas as required.

The interviews revealed that the supervisors had a very traditional view of their role, their comments reflecting their belief that they *"were in charge"*, they should act like *"the boss"*, that they should *"make all the decisions"* and *"only give the operators information when necessary"*. They did not expect the operators to use their initiative and expected all questions and problems on the lines to be referred to them. As a consequence, the supervisors played a very reactive role and were constantly inundated by very simple questions from operators.

Nova Cosmetics has a very loyal workforce and many of the operators have worked on the lines for over twenty years. They know their jobs *"inside out"*, yet, at this time, they almost

always sought out the supervisor's opinion on even the most basic problems. Similarly, some of these same people could also have handled routine changes to the machines and solved minor technical problems. However, there were clear demarcations between direct and indirect tasks and these were rigidly adhered to by the operators. Feedback on the lines was also limited, with operators receiving little or no information about their performance, whether they had achieved output targets, quality standards etc.

Interviews with the operators clearly revealed a very narrow orientation towards their work, with many operators having a very fixed and clear view of what was and was not part of their job. In part, this attitude towards the work was associated with the nature of the workforce itself. A large proportion of the operators were female, particularly selected on some lines because of the high levels of finger dexterity required for the packaging of small products and, as noted above, many of these operators had worked in similar jobs on similar lines for over twenty years. In the interviews, these operators expressed a tremendous loyalty to the company and were keen to *"keep things working the way they had always worked"*. Whilst there was little overt resistance to new ideas and change, many of the operators had firm beliefs about their methods of work and their roles and responsibilities *"for historical reasons"*. Some of the operators simply found it impossible to conceive of different ways of doing things, given that they had been doing the same things in the same way for so long.

A narrow, repetitive job, with little control leads to employees "switching off", doing the minimum they can get away with and feeling apathetic to the organisation (Neuman, Holti and Standing, 1995). In many mechanistic organisations, employees are discouraged from being innovative, making improvements and solving problems. Such sentiments were apparent in the interviews with the operators in this company, with many saying that they *"did their job on 'automatic pilot', but enjoyed coming to work to be with their friends"*. Many of the operators had no interest in whether they achieved their line targets for quantity and quality, nor did they seem to think about, or make suggestions for, improving their jobs and work environment. The operators carried out very routine tasks and had limited information processing and decision-making to do during task performance. There was limited collaboration between operators on the lines and limited ownership of the production process.

All told, before the change to self-management the packaging lines had a very traditional and

hierarchical organisation and the amount of variety, control and autonomy the operators had in their jobs was very limited.

7.7.3 The Rationale for Self-Managed Work Teams

In late 1993, Vice President Manufacturing (1) introduced a Work Redesign initiative, the main objective of which was to simplify the structure of the organisation to ensure that manufacturing problems could be identified and resolved directly by the Business Units in which they existed. Vice President Manufacturing (1) created a Work Redesign Team, comprising six people from a cross-section of functions and grades within Packaging, whose task it was to explore the underlying problems and make recommendations for new ways of working to improve performance in this area. After several months of research and discussion, the Work Redesign Team recommended the introduction of a World Class Manufacturing Training Programme for all operators to give people the tools to improve their performance. In conjunction with this, the Work Redesign Team believed that the reorganisation of the shopfloor operators into self-managed work teams designed to fit with the existing product line configuration would provide an appropriate basis for these changes.

The objective of the Work Redesign Team was to make recommendations that would help improve business performance and the team members were well aware of the reported organisational benefits of self-management, including quicker customer response times, higher productivity, greater flexibility and innovation, lower costs and higher quality (as described in Chapter One in the discussion of the Industrial Society (1995) survey results). It was also felt that team-based working would improve the operators' discretion over their work, increase job variety, make performance feedback available, etc. and these changes were expected to help switch employees back on to the organisation, and enhance their well-being and effectiveness.

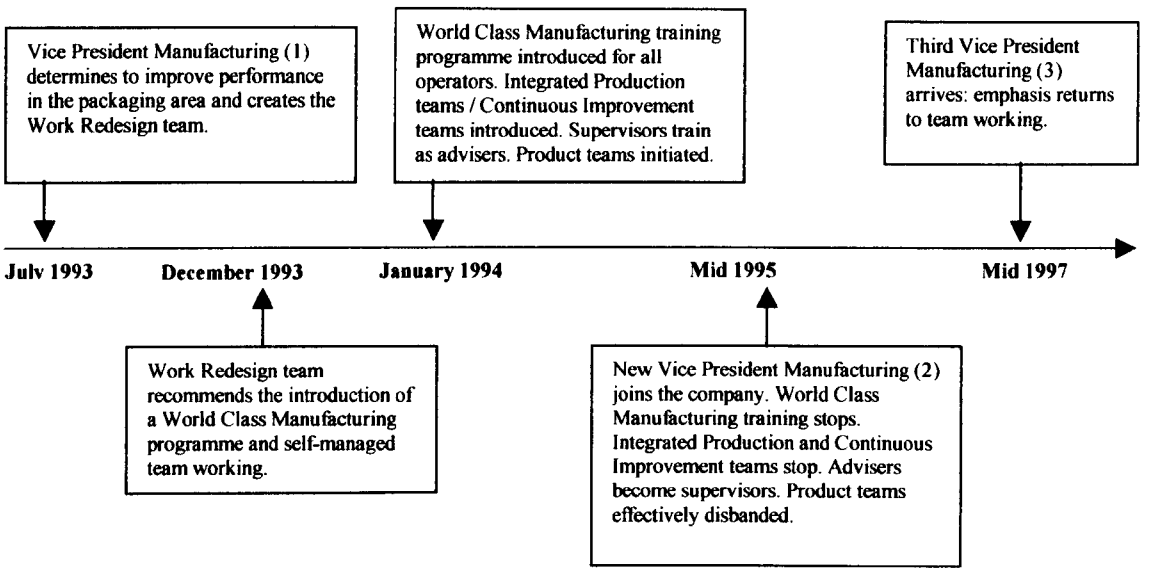
Part of the World Class Manufacturing Training was dedicated to the concepts and practices of team working and the company intended to create self-managing work teams by gradually enlarging and enriching the operators' jobs and moving along the team development continuum to self-management (e.g. Badham, Couchman and McLoughlin, 1997).

7.7.4 The Implementation of Self-Managed Team-Working

The researcher was involved with the company between 1993 and 1998 and the key stages

of the implementation process and the timing of the different interventions during this phase are recorded on the time line below.

Figure 7.2 The timing of events in the move towards self-management



In this case, the change process will be described chronologically and data will be presented according to the period in office of each Vice President Manufacturing.

7.7.4.1 Vice President Manufacturing (1) 1993 -1995

7.7.4.1.1 The Vice President

In 1993, Vice President Manufacturing (1) decided to simplify the structure of the packaging unit to improve performance. During the interviews with the researcher, he revealed that he strongly believed the very traditional, hierarchical structure of the packaging floor with the rigid demarcations between the different roles was hindering performance and preventing improvements in productivity and efficiency. He also believed that in the very competitive market environment in which the company operated this would lead to long-term problems. Vice President Manufacturing (1) was determined therefore to change the way of working in packaging to enable the people on the shopfloor to take more control of their work areas and to respond to the business need for improvements in performance. At this stage, Vice President Manufacturing (1) did not have a fixed or clear vision of the end-state of this change and, certainly in the interviews, the term self-management was not used to describe a possible new work design. However, it was clear from the interviews that the Vice President Manufacturing had thoughts about:

- flattening the structure of the shopfloor hierarchy,
- creating a structure which would improve communication within and between product lines,
- encouraging people to take more responsibility for, and control over, their work areas and,
- dedicating particular teams of people to product lines, so they would identify more strongly with their work areas and become experts on the equipment and machinery. This would enable the operators to identify and solve their own work problems more easily.

In late 1993, the Work Redesign Team recommended to Vice President Manufacturing (1):

- changes to the grading structure,
- the introduction of World Class Manufacturing processes onto the shopfloor with a training programme specifically designed for the company to be undertaken by all the personnel in packaging and,
- a self-managed team-based structure with dedicated operators working on particular machines on particular product lines. The Work Redesign Team made suggestions for the types of tasks that could be taken on by the operators over a period of about two years. These included housekeeping, safety, scheduling and planning, quality, continuous improvement and training.

The Vice President Manufacturing wholeheartedly supported these proposals and action was taken immediately to implement the changes. The shopfloor hierarchy of general duties operator, machine operator, supervisor (one for each packaging line), team leader (one team leader for every four packaging lines), Packaging Manager and Vice President Manufacturing was replaced by a structure comprising operator, line leader, adviser, Business Unit Leader and Vice President Manufacturing. These changes to the grading systems created a more horizontally-orientated, flattened structure and provided a basis for the introduction of self-managed work teams.

Vice President Manufacturing (1) also put in place systems to provide data and information about company performance, Business Unit and packaging line targets and absence costs to the operators and advisers on the packaging lines. Large notice-boards were placed in

highly visible places in each Business Unit and the information about the relevant lines was displayed on a daily and weekly basis.

7.7.4.1.2 World Class Manufacturing

A large consultancy firm was commissioned to design and run a World Class Manufacturing training programme for all the personnel in packaging as a precursor to the implementation of team working on the shopfloor. The training programme began in 1994 and all the operators, porters, mechanics and advisers from the packaging lines in each Business Unit were scheduled to take part in the course. This training was seen as a priority and Business Unit Leaders and advisers were expected by the Vice President Manufacturing (1) to make operational arrangements to enable all their staff to attend. At this stage, it was envisaged that this would be an ongoing programme, and that once all the existing operators were trained, it would continue to be run internally for new recruits. Indeed, in order to enhance the participation in, and the ownership of, the World Class Manufacturing concepts, a cross-section of people from the packaging unit, including members of the Work Redesign Team, supervisors and mechanics, were trained as trainers.

During 1994 and 1995, the programme was delivered to most of the operators in the Business Units to give people the tools to improve their performance. On the three-day programme, operators learnt, for example, to focus on activities that reduce non-value added activities and eliminate waste; there was a strong emphasis on adding value. The operators also learnt how to read and understand business-related performance data to help them interpret the efficiency and productivity targets for their work area. They were also given the opportunity to explore the advantages and disadvantages of working in teams through various team exercises. All the training was very practical and incorporated activities specifically related to their product lines and work areas to improve the transferability of the skills back to the workplace.

Many of the basic concepts from the training were immediately incorporated in day-to-day production practices. For example, as a direct result of the ideas from the World Class Manufacturing training, the packaging lines in the Business Units began to develop Integrated Production Teams and Continuous Improvement Teams.

Integrated Production Teams were introduced to involve the operators on the packaging

lines in problem-solving in their work areas and to encourage them to take the initiative in, and more control over, their work tasks and environments. The initial objective of the Integrated Production Teams was to identify and solve problems that had arisen on the lines the previous day. The Integrated Production Team for each line met for a maximum of fifteen minutes each morning to discuss the problems the operators may have experienced the previous day or identified from the productivity, efficiency and quality data which was now being supplied to the lines on a daily basis. If it was not possible to resolve the issues immediately during the meeting, they would be described and kept on the agenda which was displayed on the notice board for the line, until they were resolved permanently.

Membership of the Integrated Production Teams was rotated amongst the operators on each line to provide everyone with the opportunity to become involved in the initiative. At the outset, some of the operators found the concepts behind the idea of Integrated Production Teams quite difficult, and during the interviews revealed that they believed *"it was the supervisors' and Business Unit Leaders' job to do the problem-solving, it was not the responsibility of the line operators"*. Also, some of the operators did not believe that *"you could set up a line, so that it did not to break-down"* for example and, as a result, World Class Manufacturing seemed unrealistic and impractical. Other operators felt that *"it was inappropriate for operators to be given jobs that supervisors were paid for"*. However, Integrated Production Teams were introduced on all the product lines, and much of the initial scepticism from the operators disappeared quickly to be replaced by more positive views of the initiative.

Overall, the Integrated Production Teams were successful in:

- involving the operators in identifying and solving problems affecting their work areas,
- encouraging the operators to take responsibility for, and control over, some of their work problems, and
- getting the operators to use the business performance data supplied to the lines on a daily basis.

Through the Integrated Production Teams, the operators became increasingly involved in information processing, decision-making and scheduling.

Continuous Improvement Teams also started to be introduced as a result of the World Class

Manufacturing Training. These teams had a wider focus than the Integrated Production Teams, as their objective was to take a more holistic approach to improving the organisation and to involve people at all levels in decisions relevant to them. Membership of Continuous Improvement Teams cut across product lines and operators became involved in buying machines, testing new equipment etc. The Continuous Improvement Teams were constituted until the particular problems were solved.

Both the Integrated Production Teams and the Continuous Improvement Teams were important to the development of team-based working in encouraging operators to work co-operatively and to take responsibility for, and resolve, operational problems (a move away from the very individual focus of the lines). They also encouraged operators to use their initiative.

7.7.4.1.3 Supervisors to Advisers

In 1993, prior to the Work Redesign changes, the supervisory role in this company was a very traditional one. During the interviews with both operators and former supervisors about the nature of the supervisory role, some commonly used phrases to describe the role included: *"tell people what to do"; "enforce discipline"; "complete lack of trust between supervisors and operators"; "no sharing of information or knowledge of the areas"; "no training just supervising"; "supervisors give instructions"; "always getting involved in line tasks themselves"; "having a narrow focus"; "cracking the whip"; "telling people what jobs to do on the line in the morning"*; and *"dictatorial"*. The traditional nature of the supervisory role is very apparent from these descriptions.

In 1994, as part of the structural changes and the introduction of team-based working, the role of supervisor disappeared and the role of adviser was introduced. Whereas previously, there had been one supervisor for each packaging line, there was now one operations adviser responsible for all the packaging lines in each Business Unit (there were approximately four or five lines per business unit; see Figure 7.1). The role of line leader was introduced at the same time and there was one line leader for each packaging line. The line leader's role was designed to take on responsibility for dealing with the everyday, routine panics and questions from the operators. This freed up the advisers' time and enabled them to move away from their rather reactive operational role to a more proactive one. The role of adviser was quite different from the more traditional role of supervisor.

The advisers reported directly to the Business Unit Leaders and were responsible for overseeing the production activities of packaging and processing and for advising, coaching and disciplining all operators within their unit. According to the job description, it was the adviser's job to motivate the teams to support the objectives of the business unit, encourage employees to investigate and resolve their own day-to-day problems and to ensure the smooth running of manufacturing operations. Where necessary, the advisers were expected to use formal disciplinary procedures, but they were also expected to create an environment in which peer pressure and self appraisal were key features. The adviser's activities included: co-ordinating production activities to execute their production plan; motivating, facilitating and coaching the team to achieve the Business Unit objectives; appraising, disciplining and measuring performance, including involving all team members in continuous improvement programmes and helping initiate change; guiding the activities of staff and being responsible for the team's training, safety, welfare and morale; communicating with the team about production plans and with outside vendors on production issues; ensuring efficient use of direct labour and materials; and, encouraging the teams to become more self-managing.

The people who took on the new role of adviser were, in fact, mostly former supervisors and they completed a two-week training course in 1994. The course was run by an external trainer, but was very practical to enable the participants to transfer the skills learnt back to the workplace. The course focused strongly on leadership and supervisory style, with the objective of providing an insight into how to facilitate, guide and coach operators rather than direct and tell them what to do at work.

The transition to advisers was very difficult for some of the former supervisors. Indeed, for some of them, this required changing the experiences of over twenty years in a traditional, hierarchical system. However, during 1994 and 1995, there was a lot of commitment, support and encouragement from the Business Unit Leaders and the Vice President Manufacturing to effect this change in style of working.

In early 1995, interviews with advisers and operators about the role of adviser elicited the following type of statements: *"to work alongside the team"; "to encourage and develop the line leader to take away the hassle of constant interruptions and day-to-day concerns to allow greater focus on the future"; "to be proactive"; "to encourage the team to gain knowledge about the whole*

manufacturing/packaging process"; "to encourage the teams to take responsibility for planning and completing their jobs"; "to provide the team with the information they need to make decisions about their work"; and, *"to involve the operators in decisions about the lines".*

By early 1995, there was evidence from both observations and interviews that the advisers were successfully effecting a change in style and many of them welcomed their less reactive role. Many of the advisers put a great deal of effort into providing team members with information and helping them develop problem-solving skills. The tendency to tell team members what to do diminished during the 1994 – 1995 period. The advisers seemed to have learnt from their training, understood the role of adviser and started to trust their operators and communicate with them in a more open way. The advisers admitted in interview that at first after the training they felt they knew how they *should* act but did not know how to start to put their training into practice i.e. *"they knew all the words but not the actions".* They felt it took almost a year to change their advisory style in any significant way.

7.7.4.1.4 The Team Members

In 1994, the decision was taken to reconfigure the very traditional assembly lines in the packaging area to a team-based work design to enable self-management. The change process started for the operators with the World Class Manufacturing Training Programme and was supported by the introduction of advisers to act as coaches, guides and facilitators, and by changes in the structure of the work environment. The structural changes included efforts to ensure that team members were dedicated to particular lines as far as possible. Prior 1994, it had been quite usual for operators to move between the lines within each of the Business Units to respond to the fluctuations in product demand. It was considered that teams dedicated to particular lines would increase the team ethos and spirit. Team size varied from between two to fifteen team members.

At the outset of these changes in 1994, interviews with operators revealed some negative reactions with, for example, some operators believing it was not their job to be involved in problem-solving. However, these feelings did not amount to resistance and were replaced quite quickly by positive responses to the training, and some enthusiasm for introducing the Integrated Production Teams and Continuous Improvement Teams on the lines. The interviews revealed that there was a feeling in some groups that at least now they had the opportunity *"to do something about some of the things that had been bugging them for a long time".*

To break down some of the very traditional demarcation lines between the different operational groups, dedicated porters and mechanics were incorporated into the teams. Line leaders and operators started to be trained to take on more responsibility e.g. to schedule their work, to find the best way to work as a team etc. and porters and operators were trained to do simple machine set-ups. This was to reduce the time the operators spent waiting for mechanics and to increase the capacity of the lines. The operators were also trained to understand performance measures e.g. conformance to plan and accounting standards.

Interviews and observations revealed that the mechanics felt quite threatened by these initiatives at the outset and were resistant to training the operators in machine set-ups. However, their inclusion on the World Class Manufacturing training, and for some training as trainers on this programme, along with the constant support from the Business Unit Leaders to develop their new roles, reduced these feelings. The position was also helped by the severe shortage of mechanics within the company and the problems in recruiting mechanics, a difficulty faced by many companies in the area during this period. The demands on the mechanics' time were enormous and there were perceived benefits for all in the development of teams.

All told, the teams were dedicated to particular areas, so that they would know the equipment better and they would be more accountable for their performance. The team members became responsible for controlling and improving their work environment. The teams were expected to take responsibility for material usage, housekeeping, conformance to plan, efficiency, rejects, quality, training and productivity.

The Integrated Production Teams and Continuous Improvement Teams generally received very immediate and positive support from the team members. However, the structural changes and the devolution of responsibility and control for everyday tasks to the lines took much longer. In the interviews, the advisers and the operators attributed this to *"doing too much at one go"*. The very constant and pressing operational requirements of a high volume, low cost production environment, combined with a comprehensive training programme, espousing new ways of working and a new set of initiatives to introduce on the lines was seen as very demanding.

The Vice President Manufacturing and Business Unit Leaders at that time firmly believed that the transition to self-management was an incremental activity and that a solid foundation for change was being created by the comprehensive training and the introduction of the Integrated Production and Continuous Improvement Teams. They also believed that with their continuing support and guidance, the structural changes on the shopfloor would be implemented quite quickly. Interviews at this time revealed that the team members were aware of the very supportive and encouraging attitude of the senior managers. The team members themselves adopted this very positive approach in trying to assume their new roles.

7.7.4.2 Vice President Manufacturing (2) 1995-1997

7.7.4.2.1 The Vice President

In 1995, Vice President Manufacturing (1) left to take up a job in another part of the company and was replaced by someone from outside the company who had experience of managing a team-based manufacturing environment. Almost from the start however, there was a change in emphasis and direction. There was still a strong commitment to improving performance, but seemingly much less commitment to achieving this through team-based working. None of the structural changes made under her predecessor were dissolved, but the same level of support for team working was not apparent in either the words or actions of the new Vice President. For instance, there were numerous occasions when operators were scheduled to attend the World Class Manufacturing training course and were prevented from going *"for operational reasons"* i.e. they were required to stay on the lines to meet production demands. This had rarely happened with the previous Vice President. At the same time, comments made to the Business Unit Leaders and advisers revealed that the new Vice President Manufacturing disapproved of activities that involved taking operators off the shopfloor e.g. to work on continuous improvement or team projects.

The advisers came to understand from these actions and comments that under the new Vice President the emphasis was solely on output and not on training or team development. In fact in late 1995, once most of the existing operators had completed the World Class Manufacturing training course, it was stopped completely and new recruits to the company did not receive this training.

7.7.4.2.2 Advisers to Supervisors

Towards the end of 1995, the changes made by Vice President Manufacturing (1) were

starting to take effect in the form of new behaviours and actions on the part of the advisers. However, with the arrival of Vice President Manufacturing (2), a period of confusion began for the advisers. There was no explicit statement from Vice President Manufacturing (2) or the Business Unit Leaders to the effect that World Class Manufacturing and self-managed work teams were no longer operational, but the emphasis in all communications was on operational performance only, and not on team development and team working.

The decision to stop World Class Manufacturing Training was taken as supporting the belief that team working was no longer important, as was the lack of encouragement and support for Integrated Production Teams and Continuous Improvement Teams, which gradually fizzled out. In the interviews with the researcher, the advisers attributed this, to a very large extent, to the lack of interest and support from Vice President Manufacturing (2) in the outcomes of these meetings and initiatives. All told, the new Vice President showed little interest in, or support for, either World Class Manufacturing or team-based working.

During this period, the advisers became increasingly unsure of their role and, in fact, the interviews and observations revealed that the advisers started to revert back to a supervisory style in their approach to their teams. For example, instead of Integrated Production Team meetings at the start of the working day, the advisers resumed daily meetings to organise and plan the daily activities on the lines. Indeed, in many ways under this new management, the advisers started acting like supervisors again. The interviews revealed that the advisers were not actually told that team-based working was *"a thing of the past"*, but felt very strongly that *"the initiative had been abandoned"*.

All told, many of the advances towards team working made by the advisers under the first Vice President Manufacturing disappeared between 1995 and 1997. At this stage also, the researcher received much less support for her presence in the company. Observations and interviews were acceptable, if not too intrusive or disruptive. The new Vice President Manufacturing made it clear that time away from operational demands was to be restricted.

7.7.4.2.3 The Team Members

With the arrival of Vice President Manufacturing (2) in 1995, much of the transfer of control and responsibility to the team members did not progress and interest in some of the earlier initiatives started to disappear on the lines. For example, although no official statements

were made to this effect, there was a strong feeling amongst the team members that the ideas behind World Class Manufacturing and team working left the company with the original Vice President.

The team members also believed that with the arrival of the new Vice President, there would be *"a new management fad"*. As such, therefore, there was a period of some confusion for the teams. Many of the teams had been enthused by the ideas behind team working and saw the logic of this form of work design in their environment, but also understood that it was not viable to continue with the initiative without the appropriate structural changes and support from senior management. At the end of the day, it was easier for the team members *"to go back to how they had always worked"*.

Indeed, this is what started to happen. For instance, with the emphasis now being placed firmly and solely on operational requirements, team members started to be moved regularly between packaging lines again, reducing their ability to identify with the responsibilities and problems of one team and one packaging line. In response to this, many operators "switched off" from the notion of team responsibility and simply accepted problems as they arose on the lines. They also started to call for mechanics to handle minor technical problems and changeovers on the lines again. To add to the confusion, they saw the advisers begin to act like supervisors again and take back responsibility for planning daily activities. The team members responded with apathy.

On one packaging line in one of the Business Units, some effort was made by the adviser and the operators to continue with the implementation of teams during this period. In the main, the adviser and the team members in this section attributed this to the fact that the line was unique in many ways. Physically, the team was located away from the main shopfloor in a separate room and the packaging line for the product was small and had never relied on help from other lines. Hence, the line was inherently quite self-contained. Also, there were many long-term employees on the line who were very loyal to the company and who believed that, to a large extent, they already worked as a team. The official transition to team working, therefore, was seen as a very positive move by many of these team members. On top of which, the adviser had no experience of working as a supervisor and was selected specifically to the role of adviser. In the eyes of many of those interviewed, this was seen as beneficial, as the adviser *"brought no history to the job"* and *"did not have to re-learn the role"*.

Within this team, the adviser and Business Unit Leader encouraged the line leaders and team members to become involved in planning and scheduling work and setting up the lines. They were trained to understand performance measures and relate these to their targets, and they were given the responsibility for housekeeping, quality and material usage. In many ways this team continued to move towards Step 3 of the Badham, Couchman and McLouglin (1997) levels of team work model, whilst the other teams reverted to a more traditional way of working at this time.

7.7.4.3 Vice President Manufacturing (3) 1997 -

7.7.4.3.1 The Vice President

In mid-1997, Vice President Manufacturing (2) left the company. The third Vice President Manufacturing to manage the packaging area during the course of this study took over and again there was a change in the direction and emphasis of the manufacturing initiatives. The third Vice President Manufacturing strongly believed in team-based working and encouraged the advisers to resume facilitating and coaching rather than directing and telling the operators how to do their work. The third Vice President Manufacturing tried to ensure, as far as possible, that teams were dedicated to particular lines so that the team members could start to own the packaging process and take responsibility for, and control over, their work areas. He also started to encourage the newly revitalised teams to become involved again in problem-solving and continuous improvement, in planning and scheduling the work on the lines, collecting and collating performance data and handling minor technical problems.

7.7.4.3.2 Supervisors to Advisers

When the third Vice President Manufacturing arrived in 1997, the company was once again orientated towards team working and emphasis placed on advisers acting as coaches, guides and facilitators rather than supervisors. Interviews revealed that, in the first instance, the advisers were even more confused about what was expected of them and fed up with the lack of consistency. The third Vice President Manufacturing was keen to reintroduce Integrated Production Teams and Continuous Improvement Teams to reinforce the emphasis on team-based problem-solving and to reassign the responsibility for tasks, such as planning, scheduling and quality, to the teams. The advisers had taken back responsibility for almost all these things and, according to the interviews, were "*wary of putting in the effort, again, to work with the teams, when this might be just another management fad*".

However, over the course of his first year in office, the Vice President Manufacturing constantly supported and encouraged the move back to team working, rewarding, through praise and recognition, actions that were team-oriented. Very gradually, the advisers responded to this and tried to effect a change in style of working by, for example, encouraging line leaders and team members to plan and schedule the work and by responding positively to initiatives and suggestions to change work practices.

7.7.4.3.3 The Team Members

The period of confusion for the team members was also extended further with the arrival of the third Vice President Manufacturing and another change in direction. Although the senior management team were now emphasising team work again, there was suspicion amongst the team members that it would be another *"short-lived fad"* and that it was questionable whether it was worth investing any effort into the initiative. These feelings notwithstanding, all the Business Unit Leaders now began to make the relevant structural changes and to dedicate teams to particular products on the packaging lines. Many of the responsibilities mentioned above (in Section 7.7.4.1.4) started to be transferred back to the teams and the interviews revealed that some of the operators felt that things were picking up where they had been left two years previously. Teams dedicated to particular lines created the feeling of ownership and responsibility amongst the team members for specific products and team members were encouraged and supported in their efforts to resume co-operative problem-solving. By mid-1998, the team members, although still sceptical about the longevity of the initiative, were once again becoming part of the team development process and were taking back responsibility for their daily tasks and activities.

7.8 Discussion

By July 1998, the development of team-based working had returned to the same level as had been achieved by mid-1995 in Nova Cosmetics. Team members were largely dedicated to product packaging lines and were able to identify with particular products and teams. Integrated Production and Continuous Improvement Teams were operational again and were involving team members in identifying and resolving work-related problems. The supervisors were resuming the role of advisers and were encouraging the teams to take responsibility for, and control over, their work environment and activities. They were also encouraging the team members to use the business performance information supplied to the lines on a daily basis to identify more closely with their goals and targets and improve team

performance.

The introduction of team-based working has been a long and difficult process in this company and most of the teams have not yet reached a level of self-management. By July 1998, in fact, many of the teams were at Step 2 (Job Enrichment) and some were reaching Step 3 (Group Work) of Badham, Couchman and McLoughlin's (1997) levels of team work (described in Chapter 2). This case presents a detailed analysis of, and insight into, the change to team working in a brownfield manufacturing company, with specific focus on the operational and change-driver roles. When a change process is managed internally, people have functional roles at the operational and processual levels; gaps or blockages in either can affect the success of the implementation.

The initial desire to effect change was evident from the company's actions. To improve business performance within the unit, the company embarked on some extensive changes, including restructuring the unit, redefining roles and responsibilities and a widescale training programme. This case identifies how, over the initial eighteen-month change period, new operational roles were defined and successfully enacted by the workforce.

This case also illustrates how fragile these changes were with the loss of certain change driver roles e.g. in this case, the initial visionary, catalyst and compelling case-builder. Despite the considerable progress made during the first eighteen months, reversion to previous, more traditional roles took place quite quickly and team development was not sustained with the departure of Vice President (1). At the processual level, this case description emphasises the importance of identifying the key change-driver or process roles in the change process. The case also shows that the roles are not played by one person, but by a number of different groups at the same time to a greater or lesser extent and from different levels in the hierarchy. If these roles are not recognised and established, maintaining the momentum for change may be difficult when operational problems arise.

From the findings of this case, it is noted that for the success of internally-driven change programmes to implement self-managed teams it is not only essential to clarify operational roles, expected behaviours and actions to reduce uncertainty, but also to identify and clarify the process roles of key operational players. These issues are explored further in the concluding chapter.

CHAPTER EIGHT

Discussion and Conclusion

8.1 Introduction

This research explored the major organisational change to self-managing work teams in four brownfield manufacturing organisations. During the researcher's five-year period of study, two of the organisations successfully effected a change to a team-based structure, but only one of these, namely the Optel Corporation, achieved the level of self-direction. The other organisation, Berg Transmissions, successfully implemented lean or Toyota production teams. Of the remaining two organisations, Nova Cosmetics was still working towards self-management with some of the teams moving towards Step 2 (Job Enrichment) or Step 3 (Group Work) of Badham, Couchman and McLoughlin's (1997) levels of team work and Clearwipe had ceased to implement a team working initiative.

The first section of this chapter is dedicated to a detailed discussion of the findings from the individual cases. These findings increase our insight into the team development process and the key issues from each case study are highlighted at the end of the individual case narratives. In the second part of this chapter, these key issues are drawn together to provide the basis for a new theoretical framework for investigating the change to team working. The framework is presented and discussed in some detail and then, using the structure of this framework, the many common threads within the cases are summarised in an effort to clarify further the factors which impact on the success or failure of work design initiatives to implement team-based working.

8.2 Clearwipe plc

In this case, there were three aims. The first aim was to explore the implications and practical limitations of implementing self-managed work teams in an existing assembly line and cell-based lean production environment. The second aim was to examine the implementation process and the complexities of the people issues in the transition to team working, and the final aim of this case was to consider whether a pilot study provides an appropriate implementation strategy in a complex and radical work design initiative.

8.2.1 Team Design and Manufacturing Strategy

In itself, the failure to implement self-managed work teams in a lean production environment

is unsurprising in view of the recent literature describing the incompatibilities between the two systems.

As the case analysis shows, the changes implemented by Clearwipe plc created enriched and enlarged jobs for the operators, as defined by Badham, Couchman and McLoughlin (1997) and described in Chapter Two of this thesis. This model of levels of team work in manufacturing settings suggests job enlargement involves job rotation and material handling within the cell, and job enrichment involves machine set-ups, material handling in and out of the cell, routine maintenance and quality control and inspection. The teams in Clearwipe plc certainly achieved these two levels of the Badham, Couchman and McLoughlin (1997) model, but Steps 3 and 4, group work and autonomous teams, were still a long way from being achieved. The teams fell significantly short of the objectives of the organisation with regard to self-management. The case description indicates that the teams were not at the stage where they were willing and able to take responsibility for innovation and change, control of people, in terms of for example, absenteeism and evaluation, or control of work, for example, scheduling or work methods.

The proposition at the beginning of the case, based on recent theoretical frameworks presented in the literature, was that, in a lean production setting such as at Clearwipe plc, it is not possible to create self-managed work teams with a high level of autonomy and independence. Without a fundamental and radical work redesign, Steps 3 and 4 (group work and autonomous teams) of the Badham, Couchman and McLoughlin (1997) model were not practical and achievable targets. The findings from this research support this proposition and this case discussion explores in detail the constraints and practical limitations imposed on self-managed team working by lean production practices.

The nature of the fit between the lean production systems and self-managed work team design at Clearwipe plc is explored in more detail in the following table.

Table 8.1 Comparison of characteristics of lean production system and self-managed work team design at Clearwipe plc.

Characteristics of Manufacturing Organisations	Lean Production in Clearwipe plc	Self-Managed Work Team Design in Clearwipe plc
Origin	Japan – Toyota Pull System, 1960s	Socio-technical system team design originating from UK (coal mines, 1940s) and Scandinavia (Volvo Kalmar, 1970s)
Primary Goals	Continuous improvement in work operations; improvements in organisational flexibility and product quality for competitive advantage	Continuous improvement in work operations and increases in productivity, based on the assumption that increased autonomy improves quality of work experience and employee job satisfaction
Assembly operations	High interdependence among groups of workers	The creation of small teams with high autonomy, responsibility and self-management
Leadership	Depends on strong team leader	Depends on self-managing group
Task cycles	Fragmented, specialised tasks - low level of task identity	Teams responsible for more complete modules of work, increasing task identity and autonomy
Work method	Standardised tasks - exact standards developed for each process, the cells/lines have no influence over work pace or method	Teams should have some discretion over how they achieve results, the work pace and methods, increasing autonomy and self-management
Work organisation	Cells/lines, with strong leaders chosen by management	Autonomous teams, with leader chosen by the team
Job rotation	Scheduled, workers carry out a wide range of narrow tasks	Teams organise job rotations themselves, to increase autonomy and self-management
Indirect tasks	Responsible for quality control, problem-solving etc. to reduce costs and improve quality	Responsible for quality control, problem-solving, routine technical tasks etc. to reduce costs, improve quality, increase autonomy and increase responsibility
Material Flow	Pull system; no buffer stocks; system fits with high interdependence and strong leadership	Pull system; no buffer stocks – system conflicts with self-management of teams, internal team leadership and autonomy of teams
Individual work pace	Set by management, variations impossible	Set by management, some variations allowed to work pace and method
Links	Tightly linked to internal customers - to improve product quality	Loose links to other teams; limited links to customers - to maintain team autonomy

The table illustrates some of the problems and incompatibilities between the different systems manifested in Clearwipe plc. In many ways, at the outset of the change initiative, the idea to implement self-management into the existing organisational structure at Clearwipe plc seemed a relatively straightforward proposition. The nature of the production system had created a situation in which operators were already working in groups/cells of between three and eight people. The transition to self-management seemed a logical step as it would provide the operators with the opportunity for greater involvement in the work processes, improve their quality of work life, and at the same time provide a platform for extending the existing continuous improvement philosophy and increasing productivity.

Clearwipe plc's stated objectives were that self-managed work teams would have high levels of autonomy over their movements and would set their own working pace to meet predetermined targets. The teams would be involved in decisions about the ways in which they achieved their targets and would influence decisions about their working arrangements. The team members would be expected to work closely together, share responsibility for the work, substitute self-management for leadership (by choosing their own team leader within the team) and co-ordinate their own activities. The emphasis was on increasing the autonomy and responsibility of the team.

However, over the eighteen-month transition period, the change to self-management met with only limited success. The characteristics of lean manufacturing, namely flow production, large interdependence and minimal buffer stocks, presented obstacles to the achievement of the company's objectives. The production setting allowed little freedom of movement and work processes were standardised to a large extent. There was little flexibility for teams to establish their own pace of working and limited opportunities for teams to influence how to approach their tasks. The team members carried out a narrow range of tasks with rotation between them being the norm.

The teams were designed according to the principles of sociotechnical systems. The limitations of the design when superimposed in a lean production environment were not recognised initially nor acted on by the organisation. The literature has highlighted the inevitable tensions created by the conflicting assumptions underpinning a lean production manufacturing strategy and a self-managed team design and these tensions certainly limited the success of the initiative in this company.

For example, the teams became more involved in day-to-day manufacturing decisions and developed more understanding of the operational systems. Team members were trained to read plans and schedules for product build. However, because the production process demands interdependence between the cells/teams in Blade Assembly to build product and meet customer orders, there was always a need to co-ordinate outside cell/team boundaries to make planning and scheduling decisions. Certainly, the cell teams increased their understanding of the production processes, but it was difficult for the cells/teams to put into practice their newly acquired knowledge and skills in planning and scheduling. Each decision a cell team made about the organisation of their own work had a direct impact on other cells/teams and required a considerable degree of co-ordination between them. This mitigated against self-management and autonomy within teams.

Team members' expectations about autonomy also created problems and frustrations. The principles of self-management were described in some detail to the teams and were central to team training events. It was explained to team members that they would be expected to take greater control over their work processes, in terms of, for example, increased discretion over work methods and work pace and responsibility for solving problems in their work environment. However, within the confines of the assembly operations, there was in fact limited opportunity for this to happen. For example, teams were learning how to monitor their own performance, by calculating efficiency figures, relating these to downtime etc., but there was limited scope for them to alter their work methods to improve their performance. Teams suggested housekeeping changes and design of equipment changes that were successfully implemented, but the flow of work and the requirements placed on teams regarding targets and output to other teams severely limited the scope of their actions.

This tension between team autonomy and team interdependence manifested itself in other ways too. Reduced in-process inventory, reduced buffers and just-in-time delivery, in line with lean production practices, required management and co-ordination through strong leadership. The team design was promoting self-management and autonomy. The result was an unresolved tension between the external managers of the team and the internal team leaders. The control and interdependence required to operate a lean production system was not inherent in a sociotechnical system that was emphasising autonomy within teams and minimising co-ordination outside team boundaries. In this case, there was pressure on the external team leaders to empower the internally-elected team leaders to make decisions

about the internal organisation of the team and related production decisions. Whilst, over time, the internal team leaders began to be comfortable with decisions about the organisation of the team, the production decisions required an holistic view of the activities of the relevant work unit and remained outside the scope of the internal team leaders.

Overall, the behaviour of the team members provided evidence of support for the self-management aspects of self-managed team working, in terms of learning new skills and taking on new tasks, associated perhaps with the belief that there would be a financial reward eventually. Their behaviour also provided an indication that there was some resistance to the team working aspects of self-managed work teams i.e. to sharing knowledge and responsibilities amongst the team members. For example, some team members had more technical knowledge (the skills and ability to make routine changes to machines) than others. This knowledge was not always shared as a matter of course with other team members, suggesting that perhaps the operators did not see themselves as a team working interdependently to complete their tasks. Rather, they still considered themselves to be working as individuals.

This case supports the ideas discussed in recent literature that the introduction of self-managing work teams into an existing lean production system is fraught with difficulty. The case provides details of the sort of practical constraints encountered. All told, and referring to Banker, Field, Schroeder and Sinha's (1996) classification of teams discussed earlier, Clearwipe plc's teams fell far short of self-managing work teams. These authors define self-managing teams as groups of workers who can self-regulate work on their interdependent tasks and who have control over the management and execution of an entire set of tasks, from the supply of materials through the transformation process to the despatch of finished goods. This includes all support activities, such as quality control and maintenance.

A more appropriate classification for cell teams in Clearwipe plc may be that the company moved towards lean production teams, which are defined as groups of workers with limited employee involvement through employee participation in problem-solving group, or perhaps, that Clearwipe plc moved some way towards high-performance teams. As defined by Banker, Field, Schroeder and Sinha (1996), high-performance teams provide the opportunity for all staff to become involved in organisational activities and to take an active part in the decision-making process. The ideas behind high-performance teams come from

sociotechnical job design and other sources, such as just-in-time inventories, total quality and statistical process control, and entail teams being given the authority and incentive to pursue continuous improvement (Applebaum and Batt, 1994). Such teams are designed to have less autonomy than self-managing teams and to have a very specific focus on continuous improvement. This type of team would seem to fit comfortably with the organisational structure and systems developed at Clearwipe plc.

It may seem pernickety to be dwelling on this question of terminology and definition. However, it is fundamental to understanding and orchestrating a successful change process, both to establish the fit between the design of the team and the design of the production process and to establish the nature of the end-state. Terms and definitions are important in orienting the change process and people's expectations, attitudes and actions.

The findings from the case also highlight other options, in terms of team-based work designs, that are open to the organisation. The first relates to a redefinition of the nature of the teams, for example, the change to high performance teams, as discussed earlier. A second option involves a more radical restructuring of the work environment, with, for example, the Blade Assembly area being reorganised to enable self-managed work teams to take ownership of the blade assembly process from supply to output. In such an approach, the current cells would be reorganised into larger teams possessing the flexibility to produce outputs of different product categories (e.g. different lengths of blades) in any particular period. This reorganisation would involve the creation of a team from a number of cells to include the line feeders, technicians and indirect support. Multi-skilling would need to be a key feature of this reorganisation and team members would have significantly greater job variety. This structure would enable the team to take more responsibility and control of their work processes and methods. Interdependence would be greater within the team and less co-ordination required outside team boundaries. Teams could be developed to the point where they could control their own supply base (plastic, cardboard, rubber etc.) and would be responsive to customer needs rather than being product driven. Ownership of the customer-focused process would entail team problem-solving, resource identification, communication and prioritisation. This reorganisation would promote the ownership of work processes and self-management, linked to the achievement of targets, and is far more radical in its approach than the design that was initiated by Clearwipe plc in 1997.

On the basis of the findings from this particular case, it is argued that the introduction of self-managing work teams in the context of a lean production strategy is not feasible without a more radical work redesign initiative, as described above. The problems and constraints between the two systems are described in some detail, along with the possibility of redefining the nature of the teams for a more compatible design. Clearly, at this stage, there are team-based work design options open to the company, and a decision needs to be made about whether to adopt a high-performance design to fit in with the production strategy or whether to embark on a more radical restructuring to pursue the creation of self-managed work teams.

There is no doubt from the analysis of the findings from the interviews, however, that the problems in the introduction of self-managing teams in this company were not confined to the fit between team design and production strategy, but were exacerbated by the small number of teams introduced compared to the overall size of the workforce and the limited changes made to the organisational systems. These are summarised below.

8.2.2 The Implementation Process

Indeed, the nature of the implementation process was very important in the changes at Clearwipe plc and the focus of the second aim of this study. Clearwipe plc certainly tried to manage key features of the implementation process according to best practice by, for example, communicating extensively at all levels about the need for the change and the nature of team working, as well as enabling key players to participate in the implementation process.

Notwithstanding these attempts to manage the change process, however, the interview data from Clearwipe plc reflects some of the problems and people issues associated with such complex changes. As these data reveal, and despite the established implementation plans, there was a great deal of confusion about the change and uncertainty about how to handle tasks and situations in the new structure. For example, at the outset, there were a lot of expectations generated by the term self-management. The team leader immediately started to play a low-key role in team activities, trying to give team members the scope to exercise some control over their work and trying to avoid directing their decisions and actions. After all, they were now a self-managed work team. However, on the basis of only limited training and with no further guidance at that time, the team was not ready for this approach

and effectively became immobilised. They were uncertain about what to do and how to do it. Notwithstanding an implementation plan outlining the tasks and areas the team should take responsibility for from a given date, the team members did not know how to take responsibility for some things e.g. turning ideas from team meetings into workable practices.

The removal of traditional work boundaries and demarcation lines was one of the key features of the change in Clearwipe plc with regard to the role of both the team leaders and indirect staff. Problems with changing the attitudes and activities of personnel in Clearwipe plc are illustrated, for instance, by the demarcation between the roles and functions of technicians and operators. At the outset of the intervention, the technicians seemed quite positive about the changes and their role in these changes. If operators were able to complete routine machine changeovers, this would enable the technicians to undertake the more technical and proactive maintenance work. However, in practice and once the initiative was underway, the traditional, political, status-oriented demarcations between technician and operator grade surfaced and the technicians simply did *"not make themselves available"* for the training work. This was not only quite significant in slowing the progress of the change, but frustrating for the team members and team leaders.

Problems of trust and reward were also clearly apparent in Clearwipe plc. Senior managers believed the change to self-management would have intrinsic benefits for the team members, in terms of quality of work life and job satisfaction. From the outset, there was no promise of financial rewards in the short-term; team members would only receive financial rewards if the intervention was successful in the longer-term. Team members, whilst seeing the intrinsic benefits of the change, remained firm in their belief that if they were doing more work and had more responsibility, they should be paid more money. There was also the feeling that if team members took on the responsibilities without financial reward now, the new way of working would become the norm and they would not receive financial rewards in the longer-term. Clearly, there were uncertainties felt by both the teams and the management about the short- and long-term rewards and the benefits of the initiative.

In the pilot team, one influential, but disruptive team member created a source of conflict, which was heightened in some ways because of the uncertainties induced by the change process. The elected team leader wanted his technical expertise to be recognised by a promotion. To make this point and emphasise the importance of his role in the team, he

chose not to share his technical expertise with other team members (hindering the development of a multi-skilled team), did not attend team meetings and was often unavailable when the team needed help for changeovers and minor breakdowns. This contributed further to poor efficiency figures. At this stage, uncertainties in the change process namely, who had responsibility for what at any given time, led to problems in resolving the situation. The team leader considered the team should handle some of the issues, such as attendance at meetings and availability to deal with machine problems, because these responsibilities were now assigned to them in the team development plan. The team was clearly not sufficiently mature to do so. In some ways, this was a practical issue associated with the transition of responsibility, in others it was a question of political "point-scoring" and people's willingness to be involved in team working. Ostensibly, this is a minor issue, but one that proved to be a major stumbling block in the pilot team development process.

This vulnerability inherent in change projects is also demonstrated in other areas of the change to self-managed work teams in Clearwipe plc. Despite the clear formulation of design principles, the definition of project goals and the specification of detailed plans and timetables for implementation, the ultimate fate of the change differed from what was intended. Progress was not straightforward and some goals were not achieved. In many ways, the team leaders were under a lot of pressure, in terms of trying to manage most of their cells in the traditional, supervisory manner and their self-managed work teams in a participative, involved way. Although there were implementation plans, the team leaders work in a busy, demanding situation and were often faced at any one time with a myriad of questions and decisions. Even if they had felt the trust necessary to hand over decisions to the team members, it would have been quite a juggling act to divide themselves in this way.

It was also difficult for the senior managers to stand by and let the team members make "mistakes". For example, management stated they would support changes suggested by the teams' continuous improvement projects, providing the teams made a clear business case when it involved expenditure. This did not always happen, inevitably provoking a negative reaction from the team members. In one situation, a low-cost suggestion to solve a problem was turned down, deemed by management before its trial not to work. It was not the solution the managers were looking for, and rather than letting the team try their idea and draw their own conclusions about this, management vetoed the idea. On the surface this is a

small issue, but again it was a major set-back for team members and team development.

In the company, the principles being applied in work redesign were radical enough to expose conflicts of interest across horizontal and vertical demarcations. The proposed changes, although their underlying principles, design objectives and implementation plans were relatively clearly specified, proved neither straightforward nor unproblematic. In particular, organisational politics and the intricacies of the change process became a key factor in shaping both process and outcomes as the project developed. It is apparent from this case that managing these is just as important as specifying objectives and detailing timetabled plans.

8.2.3 The Introduction of Pilot Teams

As already described, the change to self-managed work teams is a radical and complex change. In drawing conclusions from the interviews and observations of the change process at Clearwipe plc, another aspect it is essential to analyse and comment on is the implementation of pilot teams. From the findings of this case, there is justification perhaps, in concluding that the complexities of the change process are increased with the use of pilot teams. It is important to recognise that organisations face a difficult question when implementing radical and fundamental change initiatives, such as self-managed work teams. There is the need for companies to balance a test of the proposed structure, to make sure it works in practice in their environment, with the realisation that such a test in itself may prove impractical, because of the lack of congruence between the old and the new organisational systems. In some ways, the introduction of pilot teams may represent caution and the realistic concern to maintain organisational effectiveness. In the case of self-managing work teams however, pilot teams may in themselves create too many obstacles to success and doom the initiative to failure. This is essentially because key figures are operating in two systems, with two sets of arrangements, policies and procedures and achieving a workable balance in a changing environment is very difficult. The third aim of this research was to examine this issue of whether a pilot study is an appropriate implementation strategy in the context of the introduction of self-managing work teams.

In Clearwipe plc, problems with the experimental nature of the pilot initiative were apparent at all levels. For example, with regard to the people involved in the change, team leaders were required to adopt two different styles simultaneously and to work as coaches and

facilitators with some cells and as supervisors with other cells. Technicians were asked to train some cells to complete technical tasks and to continue handling routine changeovers and breakdowns for other cells. Team members were asked to take on more responsibility and control of their work in an environment in which their counterparts carried on as before. Notwithstanding the people issues, the organisational arrangements were also designed to fit another system. The reward and appraisal systems were not changed and so people were being assessed and paid for their old ways of working. The systems were not reinforcing the work design changes. Pressure to create equilibrium did not work in favour of the change initiative. The nature of organisations is such that they seek to create a state of balance. The forces against the change in this case outweighed the forces for the change, which were much more intangible.

In this case, the duality of the roles undertaken by many people in the change process and the problems created by operating old and new organisational arrangements and systems in parallel presented obstacles to the success of the self-managed work teams. The findings support the proposition that in a complex and radical change process involving fundamental work redesign a pilot study may not provide the most appropriate implementation strategy.

All told, the findings from the Clearwipe plc case contribute to our understanding of the links between team working, work design and effectiveness. The case builds on recent research on the incompatibility of self-managed work teams in lean production environments, exploring in depth the practical limitations of team design characteristics. The case also examines contextual and organisational factors in the change to team working, including the importance of the informal organisation (power and politics) in complex and radical change processes and the congruence of organisational arrangements between existing and new systems. These research findings also support the hypothesis that in a radical work redesign initiative a pilot study may not be the most appropriate implementation strategy. Indeed, and as discussed in Chapter Two, punctuated equilibrium theorists considers that it is the interdependence of interrelated organisational subunits that may generate resistance to change in an incremental transformation as subunit managers seek to maintain a complex network of commitments and relationships. As such, the success of a pilot study may be constrained by the ongoing commitment within the rest of the organisation to established patterns of activities and relationships.

As noted in the introductory section to this chapter, the findings from each case make a contribution to the theoretical framework proposed later in the chapter (Section 8.6). The key issues surfacing from the Clearwipe plc case include the importance of the compatibility of the team design and the production environment, the impact of power and politics in radical and vulnerable change processes, the need for congruence between the new work design and supporting organisational arrangements and finally the scale of the change, in particular the problems with an incremental approach to the transition to team working. These issues will be explored further in the context of the framework and the cross-case comparisons in the second part of this chapter (Section 8.6 onwards).

8.3 Berg Transmissions

The discussion about the interrelationship between the nature of the production environment and team design continues in this case analysis, albeit from a rather different perspective. This case also examines in some depth the problems of team leaders' and team members' uncertainty about their roles, responsibilities and expectations in such a complex, radical and vulnerable change as the one to team working and consideration is given to whether team-related jobs are up-skilled or de-skilled. This case also examines the importance of deep structure changes and the introduction of new organisational support systems and arrangements in establishing team working. As such, some of the issues raised in the Clearwipe plc case analysis are developed further in the context of the findings from Berg Transmissions.

8.3.1 The Toyota Production System and Team Design

One of the obstacles in this case to the successful development of self-managing work teams related to the high interdependence and close coupling of teams in a just-in-time production environment. In this setting (as indeed in Clearwipe), the production process and teams were tightly linked and this provided barriers to teams trying to be autonomous and take control over their work areas. The high mutual dependency between the different stages of the production process created by the removal of inventory resulted in a situation in which teams did not know how to disassociate themselves from their production tasks. Given the interdependent relationships with other process teams, team members did not know, for example, how to create time and space to focus on improvements or other team development activities. In fact, team members felt there was pressure on them not to take time out for continuous improvement activities.

At this stage, the problems of lack of congruence were exacerbated because of the concept of self-management and the lack of leadership on the shopfloor. The structure created by the senior management team did not give the team leaders responsibility for supervision and, as such, there was no provision for guiding the teams and giving them the opportunity to develop collective initiative.

Another factor highlighted in this case relates to the external economic climate and the difficult financial situation of the company. Buchanan (1994) considers the origins of different types of team working and points out that the original aims of self-managed work teams related to improving the quality of life to reduce absenteeism and labour turnover. In more straitened economic circumstances, team-based work designs are associated with a way of dealing with their customers and their competitors. As such, their objectives are strategic rather than operational (Buchanan, 1994). This shift in focus among the senior management team in this company from self-management to lean production teams was driven by financial circumstances as well as operational constraints. It seemed to provide the senior managers with more momentum in the transition process and perhaps reinforces Bratton's (1991) view of the importance of social choice and the complex configuration of opportunities and constraints in a change process.

8.3.2 The Transition to Lean Teams: Up-skilling or De-skilling?

The second aim of this case was to explore the characteristics of lean production teams and consider whether team members' roles and responsibilities were up-skilled or de-skilled in the transition to lean teams. In this case, one of the key reasons the company changed the focus of the work design initiative from self-management to lean production teams related to the fact that the latter provide more prescriptive detail of work arrangements, implicit in which was a certain amount of de-skilling. However, this enabled the senior management team to address some of the barriers to the introduction of self-managing work teams e.g. team members not knowing what to do and when to do it.

During 1997, the senior managers within the company focused on just-in-time practices and their actions were guided by an emphasis on discipline, involving the establishment of work standards, and autonomy, involving the delegation of responsibility to shopfloor personnel. This autonomy involved such things as material scheduling, data gathering and problem solving. Other core principles of just-in-time philosophy which had implications for team

working in this case are total employee involvement, team work, continuous improvement and simplification. Just-in-time encouraged team-based problem-solving, job enrichment, job rotation and multi-skilling.

The case analysis reveals that the responsibility for tasks associated with the production process was effectively delegated to the shopfloor. However, the findings from this case support those of Delbridge, Lowe and Oliver (2000), in the sense that this delegation did not increase the autonomy of team members. In fact, team leaders took responsibility for decision-making, material scheduling, data gathering, problem solving, timing control, work scheduling, performance measurement, and dealing with suppliers regarding schedules, quality issues and delivery information. The team leaders took on a pivotal role, very much in line with Benders and van Hootegem's (2000) notion of the focal position of the foreman.

On the other hand, the team members' tasks became largely routine, timed and standardised and the operators followed a regimented pattern of work. There was increased job rotation, partly linked to the fact that the standardisation of the operators' tasks enabled them to move between different roles very easily. There was also an element of job enrichment in that team members became increasingly involved in problem-solving activities. However, the information from this case analysis is not altogether supportive of Womack et al's (1990) assertion that " the truly lean plant .... transfers the maximum number of tasks and responsibilities to those workers actually adding value to the car on the line" (p.99). Just-in-time practices advocate total people involvement, but this was limited in this company.

There was one aspect over which team members had discretion and control, namely improvement activities. In this company, much emphasis was placed on training and involvement in kaizen activities and there was a shift in the way operators worked from just doing the jobs to solving problems. These findings are in line with those of other researchers e.g. Delbridge, Lowe and Oliver (2000) who found that shopfloor operators in lean production teams have a significant role in both quality and process improvements. These findings are also consistent with the ideas of those who have advocated a recombination of thinking and doing in manufacturing (e.g. Kenney and Florida, 1993). It is the dynamic of continuous improvement through the incorporation of workers' ideas and suggestions that most markedly distinguishes the post-Fordist model of lean production from the rigid division of labour associated with Taylorist mass production.

The findings from this case suggest that in some transitions to team-based work designs there is not a qualitative shift away from the detailed division of labour noted and critiqued by Piore and Sabel (1984). Indeed, elements of the change described in this case are rather more in line with Dawson's (1994) view that some changes to team work represent a reassertion of managerial control. However, it is with respect to the greater inclusion of knowledge work that there is a significant difference from the Tayloristic model.

Dawson's framework of the organisation and control of work presented in the introduction to this case in Chapter Five (Section 5.2.2, particularly Figure 5.1) is useful in elaborating some of the conceptual issues here. If the findings from this study are considered in the light of this framework, it is this above-mentioned difference that prevents this particular change process and resulting team development from fitting neatly into a particular quadrant. With regard to the daily production tasks, it is apparent that individual tasks were down- rather than up-skilled in this case. Control and autonomy remained with the team leader and this represented managerial control. In this sense, there were Tayloristic aspects in the team design. However, the change process increased the thinking and problem solving elements associated with the team members' roles and as such, these roles were up-skilled.

Elements of quadrant A are appropriate to this change, in that collaborative team work developed, with some elements of supervisory control. Elements of quadrant D are also important in that operators took on responsibility through just-in-time for continuous improvement. However, this was at the team level, not the individual level.

This case in line with other recent research on lean production teams (e.g. Delbridge, Lowe and Oliver, 2000) highlights the need for some reworking of this and other team design and change process frameworks. The findings from this case suggest that with the transition to lean production teams it is not solely a question of whether roles and responsibilities are up-skilled or de-skilled. The changes move the focus from individual tasks to collaborative team work and from doing to thinking. However, the team leader role becomes pivotal and the team members' roles and responsibilities more standardised and regimented. Team design frameworks need to allow for a greater focus on collaborative team work with direct control through strong team leadership and autonomy limited to some specific areas, such as continuous improvement. This would seem to fit the emerging pattern for the development of lean production teams in manufacturing settings in this country.

8.3.3 Organisational Support Systems and Arrangements

The third aim was to consider the idea that a company must ensure the appropriate alignment of its human resource management systems for the successful development and maintenance of collaborative team work. Organisational systems that are congruent with the new work design are fundamental to a successful transition process. In this case, new systems and arrangements were required to reinforce the new work design. The systems and arrangements within the old company structure were based on the individual as the key organisational unit. For example, the grading structure was a deterrent to operators' willingness to take on a wider role. New systems were important to reinforce co-operative team work and group regulation.

In this context, just-in-time practices emphasise flexibility i.e. the need for appropriate grading structures to allow for expansion of responsibilities, and equality i.e. the need to recognise the importance of discarding unfair and divisive personnel policies and for consistent pay structures etc. The personal development of team members is also important in gaining competitive advantage.

This company made appropriate changes to its organisational systems and arrangements. In particular, to develop and maintain congruence with the new patterns of working the company ensured the selection process and reward scheme placed emphasis not only on technical skills but also on team work. The company also implemented contractual changes emphasising the role of the team leader, increases in pay to reflect role expansion of team members, a new grading system focusing on roles rather than jobs, employee development and training programmes, and an open book policy enabling teams access to company information. These case findings support Cohen et al's (1996) view that the strengthening of these contextual variables is key for organisations embarking on team working.

In terms of the contribution to the theoretical framework presented in Section 8.6, the key points arising from this case study include the interrelationship between the production environment and the team design, issues surrounding the politics of the change e.g. uncertainty about roles, responsibilities and expectations in the transition to team working and concerns about whether team member's jobs are up-skilled or de-skilled, and finally the importance of internal contextual factors associated with organisational arrangements and systems.

8.4 Optel Corporation

The importance of contextual variables, specifically the congruence between new work designs and their supporting organisational arrangements and systems, is explored further in this case discussion. This case starts by considering the scale of the change to team working, contrasting radical and incremental approaches.

8.4.1 The Scale of the Change

In relation to the other cases in this research, one unique feature of the transition to team working in Optel Corporation is associated with the scale of the change process. This was a revolutionary transformation, during which the strategies, power, structure and systems were fundamentally changed overnight. The company made the transition from an individually-based, hierarchical structure to a team-based, empowered structure. The organisation then effectively entered an equilibrium period, during which incremental changes were made to the system and arrangements. These elaborated the structure, systems, controls and resources of the organisation to achieve the goals embedded in the deep structure.

New systems, arrangements and activity patterns were required to reinforce the new work design. The systems and arrangements within the old company structure were based on the individual as the key organisational unit. For example, people were selected for jobs on the basis of individual skills and abilities with no reference to their ability to work with others, and people were appraised and rewarded on the basis of individual performance. With the team-based work design, the organisation needed to facilitate employee interaction and information exchange, and reward team involvement and team decision-making. The new organisational systems and arrangements implemented by the company are described in the next section.

8.4.2 Organisational Systems and Arrangements

The second aim of the case was to explore the development of self- directed work teams within the company and the alignment of the organisational systems and arrangements. As the case analysis shows, and according to the definition by Banker et al (1996), the work design initiative in Optel Corporation did create self-directed work teams by 1998. Many of the teams in Optel Corporation self-regulated their work on interdependent tasks, managed and executed an entire set of tasks and took responsibility for support activities.

The results of this case provide support for Beer, Eisenstat and Spector's (1990) proposition that "individual behaviour is powerfully shaped by the roles that people play" (p. 99). The organisation was transformed to self-direction by a revolution and overnight Optel Corporation created a new organisational context for its employees, with a new structure and new roles, responsibilities and relationships. These changes required a different way of working and the development of the teams to the stage of self-direction indicates that team members took on these new roles, responsibilities and relationships. In many ways, there was no choice as the old, hierarchical structure was completely removed, and the old ways of working and the usual points of reference for operators, supervisors etc. disappeared with it.

As the teams developed and moved towards self-direction, the company began to focus on its human resource strategies. For Optel Corporation, the notion of utilising their human resources was central to their strategy. Therefore, their human resource practices became central to the maintenance and development of team working and the company's performance. As such, Optel Corporation changed its organisational arrangements and systems to fit with the new structure and the human resource practices were changed to support group-based performance. These changes were integral to the maintenance and development of the intervention.

The team members developed their technical, problem-solving and interpersonal skills and the organisation changed its human resource practices to facilitate employee interaction and information exchange and assessed and rewarded team involvement and team decision-making. The company introduced an element of structure within the teams in the form of prime roles to facilitate communication within and between the teams and between the teams and the support functions. A new career development scheme was initiated which emphasised team-related skills and behaviours and new recruits started to be assessed on their team working skills, as well as their fit with existing team members. Finally, both the appraisal and compensation systems were redesigned, with key criteria such as teamwork and attitude, being included in the assessment process and a proportion of pay increases being dependent on peer assessment ratings and team performance.

By implementing these changes to its human resource management systems to support the transition to self-direction, the company reinforced the new deep structure, maintained a

continuous force for change and established equilibrium within the organisation. The company created a team working culture and value system (Nadler and Tushman, 1979).

8.4.3 Evaluation of Self-Directed Team Working

Optel Corporation succeeded in creating self-directed work teams and in aligning its human resource management practices to the new work design. Optel Corporation has experienced phenomenal business growth since 1997 and believes that self-direction has made a contribution to this. Yet, there is no quantitative data available from this research to support this assertion, and certainly no data that supports a causal link between self-direction and improved company performance.

In 1994 when the researcher first became involved with the company, this initiative was seen as an excellent opportunity to evaluate self-direction and its impact on business performance. The transition to self-direction in this company provided an ideal situation in which to explore the link between satisfaction, team development and human resource management practices. This proved impossible and instead what the research has done is illustrate the problems inherent in measuring the impact of a long-term change initiative in a large, complex organisation.

These problems include, firstly, a different focus each year in the annual employee satisfaction survey reflecting the changing emphasis of corporate headquarters, but which made it impossible to monitor changes consistently at a local level. Secondly, the massive expansion of the workforce led to the influx of many new teams in the production areas, and this has drawn the production managers' attention away from charting the links between team development and team efficiency and productivity. Finally, the new human resource management initiatives to support self-direction were introduced alongside other changes to the work patterns in the company. For example, the training programme for team members, the peer assessment system and the shift changes were all introduced in the same year, making the impact of the different initiatives impossible to separate out and measure appropriately. However, the senior management team continued to attribute some of the success of the company to team working. This overriding belief in the team approach has emerged to be a distinctive feature of this case and emphasises the key role of senior management in such a change process.

In future research, it may useful to focus on the consistency in the direction of the change, and not the lack of consistency in the surveys and the problems with the team metrics. Although there were frequent changes in personnel, particularly, in terms of leadership with four Directors of Operations in four years, the strategy remained constant. Successive senior managers provided a clear direction for the organisation; there was a clear and constant strategic plan or map. In Weick's (1985a) words: "The important feature of a cause map [or any map] is that it leads people to anticipate some order 'out there'. ....Thus, trappings of rationality such as strategic plans are important largely as binding mechanisms. They hold events together long enough and tight enough in people's heads so that they do something in the belief that their action will be influential. The importance of presumptions, expectations, justifications, and commitments is that they span the breaks in a loosely coupled system and encourage confident interactions that tighten settings. The conditions of order and tightness in organisations exist as much in the mind as they do in the field of action." (pp. 127-128).

Future research, for example, could usefully examine these strategic maps using cognitive mapping techniques and relate them to company performance data. Techniques such as the repertory grid could be incorporated into the interview schedules and provide insightful information about, for example, Youndt, Snell, Dean and Lepak's (1996) proposition that an organisation's strategic posture either augments or diminishes the impact of human resource management practices on performance. Alternatively, interviews with senior managers could be structured to concentrate on the strategy of the company, as well as the rather more practical side of implementation of self-direction and the ongoing development of the teams. This would enable the researcher to use content analysis of the interview material to draw conclusions about the strategies and concepts driving the thinking of successive Directors of Operations and identify, perhaps, why a company's senior managers are so keen to attribute some of the company's success to team working. All told, this kind of data may have provided a greater insight into the success of the self-directed work teams within Optel Corporation and why there was this overwhelming belief in the success of the initiative when there was no hard evidence to this effect.

However, this idea comes with the benefit of hindsight, and the data available from the interviews was not suitable for this kind of analysis. The interviews were conducted rigorously following an interview schedule, but for a different purpose altogether. Cognitive

mapping techniques may prove a useful analytical tool in future cases. This case emphasises the problems and difficulties related to measuring and evaluating the transition to self-direction.

The findings from this case contribute to our understanding of revolutionary transformation to self-direction and the importance of aligning human resource management systems with new work design practices. The research provides an insight into the types of arrangements that are appropriate for a team working environment. The case also highlights some of the difficulties encountered in evaluating the implementation of self-direction in a large and complex organisation. These three aspects are explored further in the development of the theoretical framework and the cross-case comparisons in Section 8.6.

8.5 Nova Cosmetics

In the final case in this thesis, attention turned to the individuals involved in the change process and the operational and change agent roles held by internal organisational members.

The introduction of team-based working was a long and difficult process in Nova Cosmetics and most of the teams did not reach a level of self-management. By July 1998, in fact, many of the teams were at Step 2 (Job Enrichment) and some were reaching Step 3 (Group Work) of Badham, Couchman and McLoughlin's (1997) levels of team work. The following examination of the two objectives of this case provides an insight into the problems encountered in this company.

8.5.1 Operational Roles

In itself, the failure to implement self-managed work teams in this company during the five-year period of involvement of the researcher is unsurprising, in view of the well-documented, long-term nature of this change process and the evident lack of support and commitment to the process by senior management between 1995-1997.

The first aim of this case was to explore the operational roles, behaviours and actions of individuals at all levels of the organisation who are involved in the transition to self-management to further our understanding of their impact on the successful implementation of self-managed work teams. These are considered below.

8.5.1.1 The Role of the Vice President

The implementation of self-managed work teams is a complex process affecting all aspects of the business. The implementation process needs to be embedded in the broad, long-term strategy of the organisation. This was the case in this company at the outset of the process in 1993. The senior managers defined a clear strategic goal, to improve business performance by making internal strategic changes to the organisational structure, human resource policies and management style.

There is considerable emphasis in the literature on the importance of the behaviour of senior management in the transition process. This case supports the findings from the surveys (e.g. Industrial Society, 1995: Knapp et al, 1996) that the biggest difficulty in implementing self-managed work teams is often the senior management. In this case, the first and third Vice Presidents Manufacturing operationally supported and encouraged the implementation of teams both explicitly, by providing vision, strategy and commitment as well as financial support and time for training and implicitly, by providing reward and recognition through praise etc. for team-oriented actions. There was evidence that these senior managers put in place the necessary and appropriate operational requirements for this strategic change and that the teams were developing under their guidance.

This was not the case with the second Vice President Manufacturing. This Vice President Manufacturing did not make an explicit statement to the effect that the operational strategy was moving away from team-based working. However, support for the initiative was withdrawn implicitly. In discussions with advisers and team members, Vice President Manufacturing (2) continually reinforced the primary importance of meeting operational demands as a priority. She restricted activities which took team members away from the packaging lines (e.g. training), and showed no interest in the outcomes from Integrated Production and Continuous Improvement Teams or other team development activities. In the terms of Dawson (1994) and Pettigrew (1985), the first and third Vice Presidents Manufacturing provided clear, strong, persistent and continuing leadership to create strategic change and there was evidence of success, the second Vice President Manufacturing did not and the change process faltered. The evidence from this case supports the survey findings identifying the importance of the operational commitment, actions and behaviours of senior managers in the successful implementation of self-managed work teams.

8.5.1.2 The Advisers

With regard to the managers and the supervisors in this change process, extensive training was provided to help them make the transition to the new work design. Specifically, and perhaps most importantly from the operational perspective of implementing the change, the former supervisors were retrained as advisers. They were trained to move away from directing and telling the operators what to do, to coaching, guiding and facilitating the team members. There was evidence from the interviews that the advisers took on board the concepts behind the training and understood the principles of their new role as a facilitator and coach, not a boss. They also understood that they were now expected to include others in the decision-making and to share information (Dumaine, 1993). However, it took longer to put these principles into action. The advisers knew what they should do, but not how to do it. As Manz, Keating and Donnellon (1990) identified, supervisors may recognise the need to change but not know how to apply their new behaviours and skills.

In many ways, the World Class Manufacturing training provided a supporting framework, without which the first steps for the advisers would have been even harder. For example, the Integrated Production and Continuous Improvement Teams provided a structure for the team members to become involved with problem-solving and information sharing and helped move the advisers away from, for example, the morning meetings to plan and schedule the work. There was also considerable support from the Business Unit Leaders to "let go" (Manz and Sims, 1993). The systems put in place in the Business Units to pass down information for the teams (the charts and the notice boards) also provided a useful framework for the advisers to encourage the teams to respond to, and take responsibility for, the goals and targets of the production lines.

The case identifies the operational difficulties faced by the advisers in changing their style of working after long experience as supervisors in a traditional manufacturing environment. There was no resistance as such, but the advisers simply did not know what to do at first and how to do it. With the practical and moral support provided by Vice Presidents (1) and (3) and other managers, the advisers adapted their actions and behaviour quite successfully to their new roles in the first eighteen months. However, when the direction, guidance and support from above disappeared, the advisers reverted easily to the traditional supervisory role and to telling the operators what to do, solving their problems etc.

Manz and Sims (1993) comment that change programmes will fail where there is a tendency to take back control at the first sign of difficulties. Without the necessary moral and resource support, the advisers stopped trying to make the change work and went back to the old systems and ways, tried and tested over time. These findings were very similar to those described by Trist and Dwyer (1982) in their study across different organisations. In Nova Cosmetics, once the support was reinstated, the advisers started to resume their new roles and styles of working. All told, the advisers had a key operational role in this transition and their reversion to a supervisory style during the transition process had serious knock-on effects on the behaviour and morale of the team members.

8.5.1.3 The Team Members

The change process generated a wide range of responses amongst the operators initially. Some operators expressed the concern that they were being asked to take on supervisor's work without any associated changes to their benefits but, in the main, there was no overt resistance. There was apathy, some employees "switched off" (Neuman, Holti and Standing, 1995) and there was a feeling from this that people had been doing the job in the same way for so long, there was only one way to do the job. However, in this case, as in the study by Hoerr (1989), there were volunteers from the outset for the problem-solving teams and for people to train as trainers for the World Class Manufacturing programme. Few of the interviews revealed direct opposition to the changes and most team members were passive towards the change process initially.

The change in the advisers' behaviour and the introduction of new ways of working, such as the Integrated Production and Continuous Improvement teams, provided support and guidance for the team members to take on a different role and to start to control the production process. The changes were designed to create an incremental approach to team development (Badham, Couchman and McLoughlin, 1997), but were overwhelming for the team members at some points of the transition. The training, the involvement in problem-solving, the responsibility for housekeeping, planning, scheduling and simply being part of a team and not working as an individual were very radical changes for many of the team members to take on board and act on simultaneously. The operational support and guidance from the advisers was essential in meeting operational demands and managing team development.

Between 1995 and 1997, the confusion felt by the advisers was passed on to the team members, and the team members lost the impetus for change. Like the advisers, the team members reverted to their traditional role and became quite "switched off" and apathetic towards their operational roles. They ignored problems on the lines and waited to be told what to do and when to do it.

When the advisers reinstated their moral support and guidance for team working, and the context was changed to make teams viable e.g. dedicating teams on product lines and re-introducing problem-solving teams, team development began again. In fact, some of the teams progressed quite quickly to Step 3 of Badham, Couchman and McLouglin's (1997) levels of team work, taking control of their work scheduling, work methods, performance measurement and continuous improvement, as well as responsibility for evaluating hours of work, the impact of absenteeism etc. This transition was made easier because the operational roles were well defined. Continuous support from the advisers was essential in the maintenance of the new operational practices and ways of working adopted by the team members.

During the initial stages of the change process, the groups amongst the team members who faced some of the greatest difficulties in adapting to the new structures and systems were the porters and mechanics. In essence, the traditional demarcations between skilled and unskilled workers (e.g. Badham, Couchman and McLoughlin, 1997) were the main source of the problem. As part of the team development process, the mechanics were required to pass on to the operators/team members some of the more specialist skills e.g. responsibility for machine set-ups and for handling minor technical problems. The mechanics felt threatened by up-skilling the team members and were uncertain about the nature of their new role. They were concerned about what they would do if the reactive and very demanding part of their job became the responsibility of the team. Their concerns largely disappeared as the teams developed and the mechanics were enabled to take on a more proactive (and interesting) technical role e.g. involvement in the purchase of new machinery.

This situation identifies another key operational feature of the change to team working, namely that it is essential to clarify the operational roles and responsibilities before, or as soon as possible after, the change, especially where there are additional sensitivities involved in crossing demarcation lines.

8.5.2 Process Roles

The second aim of this case was to outline the change-driver roles adopted and discarded by different stakeholders and groups of stakeholders throughout the development process. The change-driver roles described by Buchanan and Storey (1997) will be used to structure this discussion in the context of the organisational change. There are six groups of roles, each of which will be considered in turn along with those who adopted those roles and their actions. The stakeholder groups were: the Vice Presidents Manufacturing, Business Unit Leaders, Work Redesign Team, Human Resources function, external trainers, advisers, and team members. The key findings in this context are summarised in the table below with the more detailed discussion in the following section.

Table 8.2 Change driver roles in Nova Cosmetics

Role	Stakeholder
Visionary, catalyst, "mover and shaker"	Between 1993 and 1995,Vice President (1) provided vision and acted as a catalyst. The Work Redesign Team provided definition. Between 1995 and 1997, no-one adopted this role and team development ceased. From 1997, Vice President (3) provided inspiration to move to the vision.
Analyst, compelling case-builder, risk assessor	The Work Redesign Team adopted the role of analyst and Vice Presidents (1) and (3) adopted the role of compelling case builder. This latter role was neglected between 1995 and 1997.
Team-builder, coalition former, ally seeker	In 1993, this role was adopted by the Work Redesign Team and in 1994/5 by the advisers. The role was neglected between 1995 and 1997 and adopted again by the advisers in 1997.
Implementation planner, action driver, deliverer	This role was adopted by the Work Redesign Team initially and then by Human Resources and the Business Unit Leaders.
Fixer, facilitator, wheeler-dealer, power broker	Vice President (1) supported by the Work Redesign Team took on this role. The role was neglected after 1995.
Reviewer, critic, progress-chaser, auditor	This role was neglected throughout the change process.

8.5.2.1 Visionary, catalyst, "mover and shaker"

The visionary role is primarily one of giving direction, inspiration and support, and is traditionally seen as the domain of the chief executive, or one in similar position (Williams, Dobson and Walters, 1993). In this case, the first Vice President Manufacturing provided the vision for change and acted as a catalyst in initiating the change process. The Work Redesign Team, in conjunction with the Vice President Manufacturing, clarified the vision and provided direction. The Work Redesign Team defined the required change and provided

an understanding of how to achieve that change. The third Vice President Manufacturing also provided direction, inspiration and support, to restart the change process, and sought to explore possibilities from all the stakeholder groups, so as not to limit participation and ideas. Many of the advisers and team members initially lacked confidence to contribute their thoughts and ideas, maybe because of the stop-start nature of the initiative up to that point.

The second Vice President Manufacturing did not support her predecessor's vision, nor did she provide direction and inspiration to pursue a new vision. During her time in this role, the change process lost momentum and there was considerable confusion amongst the employees about how they should be working. The company did not immediately address this issue, despite the resulting confusion. Team working was not a company-wide initiative, however. Rather, it was specific to this unit, and hence the detail of the situation may not have been immediately apparent to those more senior to the Vice President Manufacturing who were making the decisions. During this phase, between 1995 and 1997, no-one adopted the visionary role, and the unit as a whole lacked direction. This created confusion amongst the employees.

8.5.2.2 Analyst, compelling case-builder, risk assessor

There is no clear definition of the role of analyst, case builder or risk assessor (Whybrow and Parker, 1997); however, as the names imply, this role is taken to be assessing the value of the vision in the organisation in question. The Work Redesign Team played this role, along with those involved in developing team-based working on the shopfloor (e.g. the advisers). These people assessed the possibility and plausibility of different ways of working. The basic principles for team working were the same across the packaging lines, but there were minor variations because of the size of units and teams etc. At the outset of the process, many advisers and team members initially lacked confidence and were not comfortable in contributing their thoughts and ideas.

The first and third Vice Presidents Manufacturing adopted part of this role, the compelling case builder, clarifying why there should be the change to team working, the value of this change and the benefits for the packaging department. The second Vice President Manufacturing neglected this part of the role, and did not define and clarify the reasons and benefits for her choice of actions, which reinforced perhaps, the lack of direction at this time.

8.5.2.3 Team-builder, coalition former, ally seeker

This role is one of political activity, bringing groups together and canvassing support for the change among different stakeholders. Initially, the Work Redesign Team adopted the role of team-builder and coalition former, to bring the different stakeholders and groups of stakeholders together to work towards a common goal. The World Class Manufacturing training workshops played a role in this, too. Part of their function was to facilitate team-based working development and bring together different stakeholder groups to share information and adopt different relationships to the ones they were used to, whilst working towards the common goal of improving business performance.

The advisers' group also adopted this role, essentially because of their regular, weekly meetings and because their responsibilities spanned the workforce and work area. For the first time, they worked collaboratively and shared information across the production lines. This communication channel was a significant way of bringing groups together.

When the World Class Manufacturing training ceased in 1995 and the advisers stopped meeting regularly to focus on the operational performance, this role was neglected. This contributed to the cessation of team development. The stakeholder groups reverted to the tried and tested ways of working in traditional manufacturing units and, for example, stopped sharing information and working to jointly resolve problems.

It was the advisers who resumed this role in 1997, communicating with Vice President Manufacturing and the Business Unit Leaders across product lines and between teams.

8.5.2.4 Implementation planner, action driver, deliverer

Planning/driving was another major role that the Work Redesign Team adopted initially: co-ordinating the external trainers for the World Class Manufacturing training; planning the times of the workshops; organising the training schedule and ensuring the participants knew the dates/times etc. The Work Redesign team members were really responsible for implementing and delivering the vision, through the training on World Class Manufacturing and Work Redesign, by applying guidelines and by using their knowledge of their work areas to discuss and develop the teams. When the Work Redesign Team was disbanded, part of this role i.e. co-ordinating the training workshops, was absorbed by Human Resources. There was a problem in the timing of this, in that the transfer of responsibility for

co-ordinating the people and the training times from the Work Redesign Team to the Human Resources function coincided with the arrival of the second Vice President Manufacturing. It became increasingly hard to release people for training and there was no-one with the appropriate power to influence this and continue to drive the transition forwards.

This role was neglected completely between 1995 and 1997 and this is, perhaps, another key reason that team development faltered despite the considerable progress made prior to this date. Continuous effort is required in this role and there were no stakeholders or group of stakeholders to drive the change forward. The role is now being filled by the Human Resources (co-ordinating training, for example), the Business Unit Leaders (rolling out continuous development plans) and advisers (planning and implementing team development).

8.5.2.5 Fixer, facilitator, wheeler-dealer, power broker

The facilitator is involved throughout the change process in helping others to change and to learn (Williams et al., 1993). Members of the Work Redesign Team took on this role also, as they had developed experience and knowledge of team working and team development. Their role in liasing with external consultants, for example, allowed them access to ideas and processes others within the organisation might not have had. Working closely with Vice President Manufacturing (1), the Work Redesign Team also had the power to do things e.g. they kick-started the process of team development by bringing in the external trainers to run the World Class Manufacturing training. When the Work Redesign Team was disbanded, no stakeholder or group of stakeholders took on the role of facilitator, or had the power to facilitate or encourage further training or to question the second Vice President's perspective.

8.5.2.6 Reviewer, critic, progress-chaser, auditor

This role was neglected throughout the change process, with no stakeholders or groups of stakeholders taking an evaluative perspective. In an internally-driven change process, someone is required to hold the threads of team-based working developments together, whilst others take on the demanding tasks required by these roles (Whybrow and Parker, 1997). For example, stakeholders and groups of stakeholders within the company needed to take on the roles outlined above to successfully implement team working. The fact that this role was not filled was perhaps significant, in that the company did not continuously

evaluate its needs and how the operational actions and change processes could be improved along the route to team working.

In this company during the first two years of the initiative, the transition to team working had progressed quite a long way along the team development continuum. During this time, the operational roles had become progressively more defined and the skills, actions and behaviours of all of those involved in the change process had become more focused on successful team development. This was an internally-driven change process; however, the change-driver or process roles were not recognised as such. The emphasis or focus was on the operational roles and their development. If the change-driver roles had been defined and established, then it is possible that the momentum for the change to team working would have sustained the initiative during the senior management changes. No stakeholders or groups of stakeholders were driving the change process and, as a result, when faced with problems or difficulties, historical conditioning took over and key players reverted to more historical, traditional ways of working.

At the processual level, this case description identifies the importance of the key process roles and shows that the roles are not played by one person, but by a number of different groups at the same time to a greater or lesser extent and from different levels in the hierarchy. This supports the work of Badham, Couchman and Buchanan (1995) who argue that the sociotechnical change process is more appropriately viewed as an integrated circuit rather than the traditional cascade model of change. These authors suggest that in sociotechnical change it is important to recognise and address the key problems or blockages in this circuit; this is supported by this case, in which the strong focus on the operational roles and development overshadowed the process or change-driver roles. When a change process is managed internally, people have functional roles at the operational and processual levels; gaps or blockages in either can affect the success of the implementation.

The findings from this case contribute an insight into the importance of both operational and change-driver roles in the transition to team working and these are discussed further in the next section in the context of the politics of the change process.

8.6 A New Theoretical Framework for Investigating the Change to Team Working

This section of the chapter utilises the theoretical discussions from Chapters One and Two and the findings from the individual case discussions as a basis for developing a new theoretical framework for investigating the change to team working. Indeed, this framework pulls together the different elements of the team implementation and development process highlighted by each case.

One of the central arguments presented in Chapter Two of this thesis highlighted the limitations of perceiving the transition to self-management in terms of a linear process. Models representing the large-scale organisational change to self-managed team working as a step-by-step process do not take into account the reality of this transition process, which involves disruption to both diverse organisational structures and individual belief systems.

The findings from the cases outlined above support the idea that in the transition to self-management there may be an organisationally defined beginning and end-point, but the intervening period is often muddled, confused and difficult to understand. For example, in Nova Cosmetics the transitional period was very confusing for all concerned, with the lack of senior management commitment creating uncertainty about the direction of the change and the nature of individuals' roles. Effectively, during the transitional period, the company lost its momentum for change; team development ceased and key players resumed traditional ways of working. Similarly, in Clearwipe, the political tensions surrounding the pilot team leader's role and the demarcation issues associated with non-technical team members assuming technical tasks created confusion and barriers to team development. As such, this complex, intervening period does not centre on managing logical sequences of events which step-by-step models tend to suggest, but, rather, on managing a composite and non-linear series of transitional tasks.

Indeed, this research confirms that the change to self-managed team working is an unfolding, non-linear, dynamic process in which individuals and actions are never clearly defined. During the implementation process there are often unforeseen contingencies which necessitate a modification of intended pathways and stated objectives. For example, in Berg Transmissions, problems associated with the production setting and the unwillingness of team members to take on responsibility for production tasks resulted in senior managers modifying their original objectives and creating a different outcome (i.e. lean production

teams) to the one intended (i.e. self-managing work teams). As Dawson (1994) suggests, the need to revise strategies to meet the demands of unpredictable events may form part of a predefined task of evaluation and appraisal, or it may result from the response of individuals or groups to problems arising from the transition process. Whether these tasks are part of a blueprint for change or evolve over time, their management is critical to the successful establishment of new organisational arrangements. Indeed, the fact that the senior managers within Berg Transmissions took on the roles of "reviewer, critic, progress-chaser and auditor" (Buchanan and Storey, 1997) contributed to the successful implementation of a team-based work structure.

The significance of these tasks centres on the ability of key players to maintain an overview of the multiple and changing routes to organisational transition and their actions in creating, displacing, redefining and directing the ongoing development of change programmes. In part, the complexity and untidy nature of large-scale transitions to team working stem from the timeframe associated with the change (in this research, not uncommonly for the transition to self-management, the change processes lasted four or five years). The change to self-management is also complex given the large degree of uncertainty about what is to be done and how to do it and radical because it involves modification throughout the organisation and a major departure from existing ways of doing things. This research indicated that even very detailed plans for change, such as those provided by Clearwipe where there were training plans and matrices, new role definitions, team briefings and meetings etc, do not remove the uncertainty or necessarily clarify the timing of events to key individuals.

On the basis of the results of these case analyses and their implications for organisations embarking on the transition to self-managing team work, it would seem both appropriate and essential to develop existing theoretical frameworks of team development to explicitly include key elements of the process of managing the change. As such, a new framework is presented below to highlight the key team development and change process issues in the transition to self-managed team working. This framework has a solid basis in previous work in this area and builds on the key findings from the individual case discussions in this research.

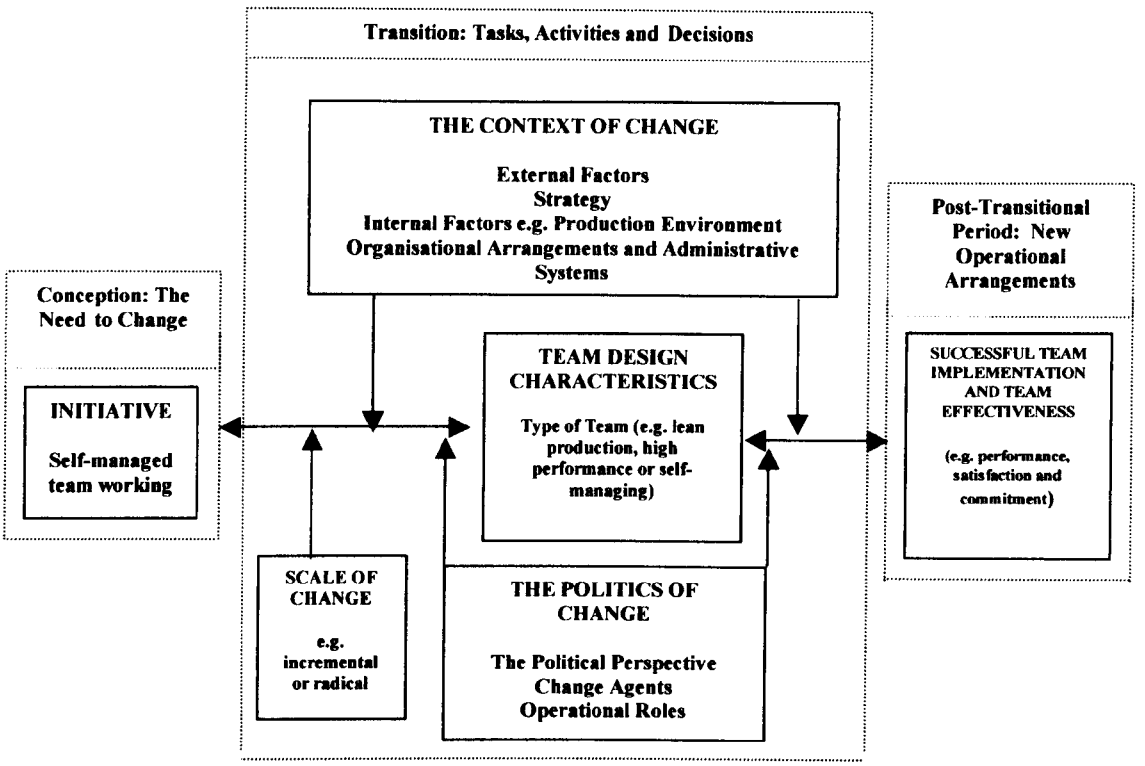
Chapters One and Two of this thesis described numerous attempts to codify researchers'

and practitioners' experiences in work design. Several main theoretical frameworks have contributed to the body of knowledge on work design, such as the Job Characteristics Model and the sociotechnical systems approach (described in Chapter One). The published research endorsing these frameworks typically reveals consideration of one or more other factors seen as elaborating on these frameworks, setting conditions for their applicability and explaining their effects. These span additional levels of explanation ranging from organisational contingencies to individual processes.

The framework proposed here builds on this earlier research and describes some of the characteristics that determine effectiveness of the implementation and development of team working over time in organisations. In particular, the framework builds on ideas proposed by Jackson (1997) and the processual approach presented by Dawson (1994; 1997) and both of these sources are adapted for use here. This proposed framework supports the notion that linear team development models are inadequate in explaining fully the change to team working and that there must be an appropriate emphasis on the process of change. Indeed, this framework is designed to increase understanding of the key factors in the organisational change process to team working and the barriers to successful implementation of team working initiatives in organisations. As noted earlier, many team working initiatives do not yield the expected results. This framework and research are not just focused on the theoretical significance of this issue, but also on the practical importance, because it will help clarify the conditions under which approaches to team working are more or less likely to achieve benefits.

The framework is described below and then elaborated further in the following section through more comparative discussion of the case findings.

Figure 8.1 Framework for investigating the change to team working



(adapted from Jackson, 1997; Dawson, 1994: 1997)

The above framework is proposed as the basis for understanding team forms of work design and the nature of the organisational change to team working. This framework emphasises the dynamic nature of change in an attempt to understand the process and context of the change to team working as it unfolds within an organisation. Previous theories (discussed in Chapter Two e.g. linear models of change or contingency approaches) have tended to underplay aspects such as the political dimensions, or the iterative nature, of change processes. This framework incorporates these ideas and may be interpreted as follows.

The complex process of the change to team working is set within three broad timeframes; the conception of the need to change; the transition period and the post-transitional or operational period. Broadly speaking, this temporal approach is based on Dawson's (1994: 1997) processual model of change and during each of these timeframes a series of tasks, activities and decisions will be made by individuals and groups. These decision-making activities may be influenced by external agencies e.g. government or trade union policies, or internal factors e.g. management views and expectations or individuals who facilitate or inhibit the change process. There is not a definitive list of tasks, activities and decisions

associated with each stage of the process, and it is proposed in the process of the change to team working an organisation may move back and forth between the different timeframes.

Indeed, there are two-directional arrows linking the "Conception: The Need to Change", "Transition: Tasks, Activities and Decisions" and "Post Transitional Period: New Operational Arrangements" sections of this framework. The idea of the "life cycle" of teams is discussed by Buchanan (2000: 37), who proposes a rather evolutionary view of the team development process, and suggests that teams may be "adopted, adapted, developed and disbanded". As such, changing organisational circumstances and management perceptions may influence senior managers within an organisation to constantly re-evaluate the organisational design.

The factors associated with the transition stage of the change process are displayed in groups in Figure 8.1, but should not be treated as representing a series of sequential stages in the implementation and development of team working. Rather, this representation is analytically useful to separate out the different factors and to identify key tasks, activities and decisions. In reality, the process is likely to be iterative and involve much back-tracking. As a result, the factors presented in Figure 8.1 will change in their significance as shapers and determinants of change during different time periods in the process of the transition to team working. In this context, Clark et al (1988) noted "the processual approach sensitises us to the fact that there are no fixed outcomes of change under a given ..... system, simply outcomes at particular moments in time." (p. 222).

This is not meant to imply that there is no order to the change process. Indeed, it is likely that as the change to team working progresses, there will be a shift in focus from external to internal factors, with external factors constantly being monitored. For example, in the transition to team working, the initial conceptualisation of a need to change and the strategic decisions on the scale of the change will be taken at senior management level. These decisions will be influenced by management's strategic objectives, the state of the business market and the applicability of this work design in the context of the company's current operating systems. During the planning and implementation of the change, the internal contextual variables, including work patterns and relationships, training, timescale, budgets etc. will become the main focus of attention. Further into the transition period, these factors may decline in significance, as team leader's and member's concerns increase in importance

and the politics of the change process becomes more significant. There is also likely to be increasing emphasis on the establishment of organisational systems and arrangements congruent with the new way of working and a consolidation of the new working practices.

All told, however, nor is this meant to imply that there is a rigid order to transition period and the way in which the variables take on importance. There is a certain logic to the way in which such a change process progresses (the focus on external factors switching to an emphasis on more internal factors), and this was reflected generally in the case discussions. However, this should not be taken as prescriptive. Different factors will be important at different times in different organisations in this change process, and these are contingent upon the organisation's circumstances and management perceptions. Also, as noted above (and highlighted in the case discussions) the process is likely to be iterative and involve backtracking. To reflect these issues, the arrows from the boxes in Figure 8.1 are drawn to indicate that the different factors may impact on the change process at more than one stage.

Through combining the three timeframes of change with this classification of factors shaping the process of the transition to team working (i.e. the scale, the context and the politics of the change), a processual framework of the change to team working is presented. This framework is intended to clarify and explain the process of managing the transition to team working and is intended to convey the interconnectedness and complexity of the dynamic processes underlying this change. The framework is intended to help identify, analyse and explain factors which shape outcomes at different moments or periods during the transition to team working.

The aim of this research was to explore the factors critical to the successful transition to team working in manufacturing companies. The cases in this study describe the change process from the conception of a need to change to the establishment of new operational arrangements and the findings from the individual cases studies have been utilised in the development of this new framework for examining the change to team working.

The three broad timeframes and the associated tasks, activities and decisions which make up this framework will be explored in more detail below. Each section will begin with a general explanation of the framework for investigating the change to team working and then the findings from the cross-case comparisons will be introduced to elaborate further on the key

variables in this framework and the factors which impact on the success or failure of team-based work designs. The discussion is structured according to the key factors depicted in this framework and suggestions for the direction of future research are included under each heading; indeed, the framework provides a sound theoretical structure and focus for subsequent research.

8.7 The Conception of a Need to Change: The Initiative

At the outset of the transition process, there is a period of initial awareness and the conception of the need for change within the organisations. This may either be a reactive response to external or internal pressures for change or through a proactive belief in the need for change to meet competitive pressures. In the context of the change to team working, the conception of the need to change may be influenced by factors external to the organisation e.g. management reports on the success of team working in other organisations or the perception of a management fashion or fad towards team working, or by factors internal to the organisation e.g. operational inefficiencies.

This conception of a need to change will be constantly re-evaluated by senior managers within the organisation throughout the change process. Buchanan (2000) notes that team work is a process in context, an organisational form which evolves, and in many cases, regresses to a more conventional working and managing style. Organisational circumstances and management perceptions change and work design initiatives may be discontinued accordingly. As such, it is a two-directional arrow linking the "Conception: The Need to Change" and "Transition: Tasks, Activities and Decisions" sections of the framework. The findings from the Clearwipe plc case provide an example of senior management re-evaluating the need for change and a move back to an earlier stage in the change process.

The four organisations included as cases in this study were committed to the implementation and development of self-managing teams at the outset of the change process. However, the drive to make this change was inspired by different external and internal factors for each organisation.

For example, within Clearwipe plc a combination of both internal and external factors came together to provide the impetus for change. Clearwipe plc operates in a high volume, low cost environment and fluctuations in product demand create unpredictability in the

production units. There is constant pressure on all the companies within the group to maintain market share (as Bosch, for instance are close competitors). As such, senior managers within the company are constantly evaluating the need to change work processes and practices to meet these competitive pressures. Alongside these market pressures, Clearwipe plc's manufacturing plant is based in South Wales and there is a great deal of competition for shopfloor personnel. Initiatives within the organisation, particularly those which provide potential employees with a more positive view of the work and organisation and differentiate them from other local manufacturing sites on factors other than pay, are perceived as significant in attracting new recruits. As such, securing commitment from employees by the provision of more interesting and challenging work in a team environment was seen as a contribution towards ensuring the company's long-term future. The combination of these two external factors with the internal pressure to change working practices because of operational inefficiencies on the shopfloor influenced senior management within the organisation towards the introduction of self-managed team working.

In Berg Transmissions, a long history of intense competitive pressures influenced the conception of a need to change. Over a number of years, external pressures on Berg Transmissions have included the oil crisis, the influx of Japanese suppliers, problems in the motor industry e.g. British Leyland in the 1970s, and changes in technology with the introduction of new transmission systems. For most of the 1990s, Berg Transmissions has operated in adverse trading conditions. In this organisation, the move to team working was also influenced by other companies within the corporation (particularly in North America) beginning the team implementation process. Faced with enormous economic pressures, there was a considerable need within Berg Transmissions to reduce operational problems and to improve quality and efficiency. As such, there were both external and internal factors issues providing the impetus for the change to team working in this organisation also.

On the other hand, Optel Corporation made the transition to team working to meet the demands of a booming economic environment. During the period of this research, there was phenomenal growth in the demand for Optel Corporation's products. Within this context, the organisation considered it essential to empower people to make their own decisions and to take responsibility for their actions, in order to maximise results in the production area in terms of productivity, quality and lead times. Essentially, Optel required

the flexibility and speed inherent in team working practices to meet the growth and demand in the product market. Also, Optel Corporation was in a similar position to Berg Transmission, in that several other organisations within the group in North America and Canada were beginning the team implementation process. Management perception within the corporation as a whole considered this to be a very positive initiative. As such, there was pressure on successive Directors of Operations within Optel Corporation to make the transition to team working.

Finally, the conception of the need to change within Nova Cosmetics was also associated with both internal and external factors. For example, the senior managers and the Work Redesign Team were influenced by the reports of the success of team working in other organisations and its impact on business performance. At the same time, there was considerable emphasis on internal factors and a determination to rationalise the structure of the shopfloor to reduce inefficiencies, increase operator's involvement in the work processes and enhance their well-being.

All told, different reasons inspired the organisations studied in this research to set out on the same journey. As the case narratives indicated however, they ended up with very different results. In some ways, this research illustrates the fragility of work design initiatives to implement and develop self-managed work teams in brownfield manufacturing organisations. The individual case discussions illustrated how the force of technology, the context and politics of the change and the management of the transition process itself affected the reality of the change. Each of the case studies brought into the foreground different aspects of the change to self-managed team working. These issues are elaborated further below from the more integrative perspective of a cross-case analysis.

8.8 The Transition: Tasks, Activities and Decisions

During the transition period, the focus moves to the complex, non-linear process of change, which comprises a range of different tasks, activities and decisions for individuals and groups within the organisation. Based on the findings from the individual case discussions in this research in the transition to team working this period includes a range of variables key to a successful change process. These variables are clarified below.

8.8.1 The Scale of the Change

The senior managers in an organisation may have clarified the need to change to team working, for example, to enhance competitive advantage. They then have further decisions to make about the constituents of change. One such decision refers to the scale of the change and whether to take an incremental or radical approach. The case discussions highlight the use of both approaches in the context of this work redesign initiative, and also that an understanding of the techniques and organisational processes associated with the different approaches is a prerequisite to a successful outcome. The incremental and radical approaches to change have different characteristics, which enable or constrain the options open to management during the change process.

Advocates of the former view (e.g. Quinn, 1980; 1982) see change as being a process whereby individual parts of an organisation deal incrementally and separately with one problem and one goal at a time. Change takes place through successive, limited and negotiated shifts. Pre-eminent exemplars of incremental change have been the Japanese companies (Hamel and Prahalad, 1989). Advocates of radical change (e.g. Gersick, 1991), on the other hand, depict organisations evolving through relatively long periods of stability (equilibrium periods) in their basic patterns of activity that are punctuated by relatively short bursts of fundamental change (revolutionary periods). Revolutionary periods substantively disrupt established activity patterns and install the basis for new equilibrium periods.

The findings from the cases in this research provide support for both the incremental and radical approaches to the transition to team-based working. Support for the incremental approach comes from the successful transition to lean production teams in Berg Transmissions. Over the four-year research period, the company made a series of incremental strategic and structural adjustments including the gradual shift in responsibility to team members for problem-solving, training initiatives, reductions in the hierarchy, revised contracts and associated changes to the selection, grading and reward systems. The company dealt separately with one problem at a time and change took place through successive and limited shifts. As such, the transition evolved through a cascading adaptation in related parts of the organisation.

In the context of Hamel and Prahalad's (1989) comment that pre-eminent exemplars of incremental change have been the Japanese companies, it is interesting to note that Berg

Transmissions effectively implemented Japanese-style teams in a Japanese-style production setting through a philosophy of continuous improvement. As such, the success of the change may relate to the philosophy and practice of the transition process and the new working arrangements being in harmony.

Support for the radical approach to the change to self-management comes from the findings in the Optel Corporation case. These findings suggest that the transition to self-management may be accomplished successfully through a period of rapid and fundamental change. Indeed, the Optel Corporation switched overnight to self-directed team working, sweeping away the traditional shopfloor hierarchy and replacing it with a team-based structure. The change involved most of the key domains of organisational activity. In line with punctuated equilibrium theory, the organisation then created a new deep structure.

Within the context of this research however, the problems associated with the pilot study in Clearwipe plc demonstrate some of the difficulties inherent in the incremental approach to change. In this case, these difficulties were associated with the inter-relatedness of the different components of the organisational systems. Non-revolutionary or incremental views of organisational transformation emphasise the relative independence of organisational subunits. Punctuational equilibrium theorists stress the interdependence of organisational subunits and the need to ensure complementary alignment among structural variables. Interdependent relationships and patterns of working constrain organisations to an ongoing commitment to established activities. Gersick (1991) described organisational deep structure as a system of interrelated organisational parts which is maintained by mutual dependencies among the parts. According to this view, the result of interdependence is not cascading adaptation over related organisational subunits, but rather resistance to change as subunit managers seek to maintain a complex network of commitments and relationships.

This interdependence between organisational systems was one source of the problems within Clearwipe. Indeed, Clearwipe adopted an incremental approach to the change to self-management and decided to test the water, first with the introduction of a pilot team, and then by introducing teams into one part of a larger unit. In this process, Clearwipe made changes to some key structural variables by designating teams, identifying and transferring responsibility for some work tasks and encouraging team problem-solving activities, but did not make fundamental changes to the associated organisational arrangements and support

systems. Changes to one part of the system e.g. devolving problem solving to the teams created difficulties in other parts of the organisational system e.g. the reward system. The team members considered some kind of benefit was appropriate for taking on more responsibility. In some ways therefore, Clearwipe's efforts to make incremental changes to establish self-management were prevented by deep structure inertia.

The activity patterns of a system's deep structure reinforce the system as a whole through mutual feedback loops. By not changing components of the deep structure Clearwipe generated a strong inertia, first by preventing the system from generating alternatives outside its own boundaries, then by pulling deviations that did occur back into line. In this case, the interdependence between the different systems created a resistance to the change and there was pressure to retain the status quo.

One key outcome from this research is the finding that both incremental and radical approaches are appropriate in the change to team working. In this context however, and perhaps of equal significance, is the finding that it is not whether the scale of the change is incremental or radical that is important, but that associated changes to the organisation's deep structure are a pre-requisite to the successful change to team working. Congruence between different elements of the organisational systems is essential. This was achieved in both the Optel Corporation and Berg Transmissions, but not in Clearwipe. An additional implication is that where senior mangers decide to implement pilot schemes as a means of testing the viability of the team structure in their organisations, these need to be supported by appropriate organisational arrangements and systems to eliminate a potential stumbling block to their success.

In this context, further research is important to determine the factors that result in the incremental or radical approach to change in the context of the transition to team-based working. There are a wide range of factors that may be of significance, such as the economic climate surrounding the company (in this research the Optel Corporation was in a strong financial position, whereas Berg Transmissions faced adverse trading conditions), the timing of the decision in association with the level of maturity or the life-cycle stage of the organisation, the nature of the leader or cultural artefacts of the change (whether a Japanese or Western-style team-based structure is proposed). These factors could usefully be clarified by further studies.

8.8.2 Team Design Characteristics

The team design characteristics refer to the distinctions between the different types of team design e.g. lean production, high performance or self-managing teams. Each type of team design has unique characteristics and requirements, which must be considered in the context of the production environment.

In the first chapter of this thesis, attention was drawn to the distinctions between the different types of teams that exist within organisations and the unique characteristics and requirements inherent in these team designs. For example, at the core of sociotechnical systems team design is autonomy, the need for challenging work and the wholeness of work. Attention is paid to work content. Workers have autonomy over their movements, to a certain extent they can set their own working pace and they are comparatively free to decide the way in which results are achieved. Essentially, they are given autonomy over work pace and work methods. Self-management is seen as a substitute for leadership and the traditional role of supervisors becomes more that of facilitator and coach. Regulatory tasks, such as administrative and other duties, become an integrated part of the job. Co-ordination between groups is minimised, and the autonomy of the group is maximised.

On the other hand, lean production is characterised by flow production and interdependence. The leading co-ordination principle is the standardisation of work processes, resulting in a situation in which workers are physically bound to their workplace and have limited freedom of movement. Each worker is expected to deliver a certain amount of work within an appointed timespan and the team, as such, has no influence over work pace or work method. The team aspect of lean production is governed by the process, rather than by the pursuit of autonomy and operative decision-making through self-management. Team leaders are traditional-style supervisors who, from their hierarchical position, command the team. In lean production settings, group boundaries are not clearly defined and it is the process which relates the products to the teams. Lean production expects workers to be capable of carrying out a wide range of narrow tasks with employees being rotated not only within teams but also between teams.

As such, different work settings favour different type of team design. The individual case discussions highlighted the need for congruence between team design and production setting and the importance of understanding the distinctions between the different team types at an

operational level. All the organisations in this study set out to implement self-managing work teams; however, constraints of the production settings in Clearwipe and Berg Transmissions were such that that this became an unsuccessful endeavour.

To set this issue in context and underline the importance of the congruence between the work setting and the team type, the case findings will be examined further in the detailed consideration of the production environment in the following section about the context of the change.

8.8.3 The Context of Change

The context of the change is taken to refer to external and internal operating environments as well as the influence of future projections and expectations on current operating practice (Dawson, 1994). In this way, the context of the change can be divided into the context pertaining to the environment in which the organisation operates and the internal organisational context. In a sense, external and internal factors similar to those described in relation to the Conception of a Need to Change section above continue to influence the change process during the Transition Period. The external contextual factors might include changes in competitor's strategies, technological innovation and changes in the level of business activity. During the Transition Period, senior managers will continue to evaluate these factors and they will influence the change process and the way it unfolds over time and in context. For example, in relation to the cases reported in this research, the external factors driving this work redesign initiative included both particularly adverse trading conditions (Berg Transmissions) and particularly good trading conditions (Optel Corporation). The adverse trading conditions surrounding Berg Transmission provided momentum to the change process and influenced the way in which the teams evolved during the change process. The teams in this company were developed to fit in with tight financial, as well as the operating, constraints. As such, these case findings indicate that external contextual factors influence the way in which the change process unfolded.

Internal contextual factors comprise the nature of the production environment and the organisational arrangements and systems. The production environment refers to the plant, machinery and tools and the associated philosophy and system of work organisation which blend together in the production of goods. Internal operational inefficiencies associated with the production setting are a key feature in placing an emphasis on team working in many

organisations. In this research, this was apparent in both Clearwipe plc and Nova Cosmetics. The nature of the proposed team design and its compatibility with existing production arrangements will be a key factor in determining the outcome of the transition process (as indicated by the case discussions on Clearwipe plc and Berg Transmissions).

Another key internal contextual variable relates to the organisational arrangements and systems, which comprise the formalised lines of communication, established working procedures, the allocation of tasks and the design of jobs and work structures, the managerial hierarchies and the reward systems. In the transition to team working, the organisational arrangements and systems are all transformed.

As indicated by the case discussions, a change in work design necessitates a change in the organisational arrangements and systems. If this does not occur, it provides a barrier to the successful change process. For example, in Clearwipe plc, the change to team working established new work relations and patterns of work behaviour, but there were no concomitant changes in the supporting systems and arrangements. This created a blockage in the change process. On the other hand, in both the Optel Corporation and Berg Transmissions, the changes to the pattern of working were supported by changes to the organisational arrangements and systems and no such blockages were apparent.

8.8.3.1 External Contextual Issues

In the introduction to this section (Section 8.8.3), it was noted that the external and internal factors influencing the conception of the need to change also impact on the transition process, in the sense that senior managers will be monitoring the organisation's internal and external environments on an ongoing basis in order to evaluate the outcomes of the change process.

The case findings in this research indicate that such external contextual issues influence the direction and outcomes of the change process. In particular, the external economic climate in which Berg Transmissions was operating created a difficult financial situation for the company. This relates to Buchanan's (1994) consideration of the origins of different types of team working. This author points out that the original aims of self-managed work teams related to improving the quality of life to reduce absenteeism and labour turnover. In more straitened economic circumstances, team-based work designs are associated with a way of

dealing with their customers and their competitors. As such, their objectives are strategic rather than operational (Buchanan, 1994). In Berg Transmissions, the shift in focus among the senior management team from self-management to lean production teams was driven by the difficult financial circumstances as well as operational constraints. These circumstances provided senior managers with more momentum in the transition process and certainly influenced the final outcome of the transition process with their impact on the nature of the team design and the switch from self-managed to lean production teams, enabling a more defined focus on continuous improvement, quality and efficiency.

On the other hand, in Optel Corporation, some of the impetus to drive the change to self-management was provided by the very positive views of this initiative from other companies within the corporation. This management perception was sustained throughout the research period within the corporation as a whole and the change to team working became associated with success. Senior managers firmly believed that the team working initiative was one of the enabling factors in a phase of phenomenal business growth. There was no causal data to substantiate this firmly-held belief in the success of the team working initiative, but senior management conviction was a driving force in the team implementation process, providing well-defined expectations and the drive to surmount difficulties.

8.8.3.2 Production Environment

Jackson, Parker and Sprigg (2000) note that one of the basic reasons for the lack of success in the implementation of team working "may be that the setting within which team working implementation is attempted is inappropriate" (p. 84). This is likely to be the case for production settings where work designs are influenced to a large degree by features of the technology and structural aspects of the production process (Slocum and Sims, 1980).

Introducing self-management will only be successful if there is a good fit between the initiative and the characteristics of the work setting. One example of such a contingency is identified by Wall and Jackson (1995) as production uncertainty. An uncertain production process is one where there are many unpredictable events and uncertainties brought about by, for example, frequent changes of product design, unreliable machines and rapidly changing customer requirements. Based on sociotechnical systems principles, uncertain processes can be managed most effectively by devolving responsibility to those closest to the source of the uncertainty; in other words, by enriching operators' jobs and allowing them to

solve local problems by themselves (Jackson, Sprigg and Parker, 2000). With the rigid standardisation of work processes in a lean production environment, this production uncertainty is largely eliminated.

In the Optel Corporation, the team members were able to establish, to a large extent, their own methods and work pace to achieve production targets. In doing this, they became responsible for resolving any associated difficulties and problems. In Berg Transmissions, uncertainty associated with the production process was removed with the introduction of the Toyota Production System. Team members became involved in a limited and prescribed way with problem solving through kaizen activities. As such, the scale and control associated with problem solving in the Optel Corporation was considerably greater than in Berg Transmissions and provided more scope for the teams to become self-directing.

Another contingency factor that has been identified as an important characteristic of the work setting in relation to team-based forms of work design is the degree of interdependence in the production process. According to Jackson, Sprigg and Parker (2000), interdependence refers to the degree to which both physical layout and manufacturing tasks give opportunity for team members to work collaboratively in order to complete their work as a team. For example, some define self-managed work teams as an interdependent collection of individuals, each of whom shares responsibility for organisational outcomes (Hackman and Oldham, 1980). In the context of self-management, interdependence is found within the group.

Within the Optel Corporation, the production setting enabled the members of each team to work collaboratively to complete their work. The boundaries between teams and autonomy within the teams were maximised and co-ordination between the teams minimised. This was not the case in Berg Transmissions where the interdependence was sequential and team boundaries were not clearly defined. Indeed, job rotation practices meant that team members rotated not only within their teams, but also between teams and between production groups. Similar problems were encountered in Clearwipe where the so-called autonomous teams found it almost impossible to take responsibility for resolving their own production problems because of the interdependence and co-ordination required between the teams demanded by the production process.

Other facets of different team-based work systems include aspects of autonomy i.e. task control and role breadth at the individual and collective level and work demands. The nature of the production setting in the lean production environments in Clearwipe and Berg Transmissions meant that team members could not achieve control over aspects of work timing and method. In both Clearwipe and Berg Transmissions, work processes were standardised and team members expected to operate at a fixed pace. The strict control of work processes prevented the teams exercising control within the production process. Job enlargement occurred by job rotation. As such, task control was limited and team members carried out a wide range of narrow tasks. In the Optel Corporation, increased responsibility for the production process enabled team members' jobs to be broadened vertically rather than horizontally. Job enlargement occurred within the boundaries of the teams and the relative autonomy within the groups enabled team members to control the allocation of work.

The interdependence inherent in the lean production settings in Clearwipe and Berg Transmissions also necessitated strong team leaders. However, in Clearwipe, the teams were established along the lines of sociotechnical systems teams with internal, elected team leaders. The demands of the production process for co-ordination across the team boundaries were a major stumbling block to team development. Effectively, the self-managing work teams could not establish control over their part of the work process. In Berg Transmissions the final result i.e. lean production teams did have strong hierarchical team leaders in whom much of the responsibility devolved to the shopfloor rested. This had an impact on the success of the team initiative and did allow for lean team development within the constraints of the production setting. However, this did result, to a large extent, in de-skilling team members as authority and responsibility were invested in the team leader not the team members. All told, the requirement for strong leadership to manage across team boundaries inherent in lean production settings provides an impediment to the implementation of self-managed work teams.

Another problem presented by the lack of strong leadership between the teams in Clearwipe related to the question of problem solving. In Clearwipe, one of the responsibilities of the newly designed teams was to resolve their own production-related problems. However, the interdependent nature of the production process made problem solving as a team activity quite impossible as any suggestions invariably crossed team boundaries and went beyond the

scope of the self-managing teams. Unlike in Berg Transmissions, where the strong leadership provided the necessary co-ordination, the internally elected team leaders in Clearwipe did not consider it within their role or appropriate to pursue ideas between teams. As such, the problem solving activities of the teams within Clearwipe were limited and there was minimal expansion of cognitive elements of the team members' roles.

These comments notwithstanding, problem solving was the one area in which there was some similarity across the different production settings in the Optel Corporation and Berg Transmissions. In Optel, the team design and production process was such that independent, co-operative working reinforced the teams working together to solve production problems; indeed the abolition of the structure on the shopfloor necessitated team problem solving. In Berg Transmissions, the teams' involvement in kaizen and collective problem-solving activities proved to be one of the few areas in which their roles were up-skilled and the major distinguishing factor from the more traditional Tayloristic forms of work design. As such, therefore, the cognitive elements of the team members' roles were increased in both companies.

In summary, this research suggests that self-managed forms of team design are appropriate in certain work settings. These include situations in which the production setting enables high interdependence within the team and low interdependence between different teams. Where the production process demands high interdependence between teams, alternative team designs e.g. lean production teams may be more appropriate. Other factors in the production setting and team design that require congruence include opportunity to establish autonomy over work pace and methods and control over problem solving activities relevant to the production process.

This research supports Jackson, Sprigg and Parker's (2000) view that far from team working being the solution to an organisation's competitiveness problems the wrong team design adds more layers of difficulty and this adds stress and strain to the workforce. Problems associated with the fit between the team design and the production setting were evident in two of the cases in this research (i.e. Clearwipe and Berg Transmissions) and these findings highlight the need for organisations to place more emphasis on diagnosing the context in which they intend to implement self-management. There are no universalistic solutions in the team design process: gains can be achieved only when work design choices

result from a prior audit of production process characteristics (Jackson, Sprigg and Parker, 2000).

Further research in this area could usefully focus on the issue of the viability of developing self-managed work teams in a lean production area and consider the work design implications of, for example, enlarging the team boundaries within the lean production environment to enable the teams to take greater control of their work processes. Such research may also be useful in exploring whether it is possible to progress from lean production teams, in which the team roles are relatively de-skilled, to self-managed teams, as proposed by Berg Transmissions in their longer-term strategy.

8.8.3.3 Organisational Arrangements and Systems

The internal contextual factors of organisational arrangements and human resource systems are particularly pertinent to the transition to self-management, in the sense that there needs to be congruence between these systems and the new working patterns in order to reinforce the change process. The change to self-management creates the need for different skills and attributes in employees. Appropriate recruitment, assessment and training programmes that emphasise attracting and developing individuals with appropriate technical, problem-solving and interpersonal skills are essential and become instrumental in achieving the strategic goals of these interventions. Employee interaction and information exchange must also be facilitated through appropriate structural and appraisal and reward systems changes to promote a high degree of interdependence and group problem solving.

The findings from the cases in this research support the results of the Industrial Society (1995) survey in which it was highlighted that if too many of the old controls stay in place the change to team working will not be successful. This statement is particularly relevant to Clearwipe and relates to problems encountered both in their pilot study and the wider implementation of team-based working. Senior managers in Clearwipe considered that changes to organisational arrangements and systems to support the structural changes were inappropriate without establishing, in the first instance, some evidence of the success of the team working initiative. However, by not making such changes, the company seemed to be limiting the success of the change initiative – creating rather a chicken and egg situation. Indeed, data from interviews in Clearwipe revealed that issues surrounding more pay for more responsibility, for example, became a key concern for team members in this company.

Team members considered there should be a reward for taking on more responsibility and control of the production process. This became another stumbling block to the successful implementation of team working.

The findings from the Berg Transmissions and Optel Corporation cases confirm Cohen et al's (1996) view of the importance the relationship between the organisational context and team effectiveness. Indeed, the organisational arrangements and support systems in these companies emerged as one of the most significant factors in the successful implementation and development of team-based working. The congruence between the new work design and the supporting frameworks was pivotal to the success of these team working initiatives. Berg Transmissions introduced an open-book policy, revised contracts for process operators, role re-definitions, training and employee development activities and streamlined the selection, grading and reward systems. The Optel Corporation established a resource support team to help resolve team-related problems, prime roles to provide links with support functions, a new career development structure, team-oriented recruitment and selection procedures and team-based assessment and rewards systems.

Acknowledging there was a difference in that Berg Transmissions established these new arrangements and systems to support lean production and the Optel Corporation to support self-directed work teams, nevertheless, both types of team design represented collaborative working and a fundamental shift away from traditional, individual systems. In both cases, these new arrangements were essential in crystallising the new deep structure and preventing slippage back to old patterns of working and old ways of doing things. The new organisational systems and arrangements implemented in Berg Transmissions and the Optel Corporation supported the transition to team-based working and reinforced the change and new patterns of behaviour. The new deep structure maintained a continuous force for change and established equilibrium within the organisations.

Indeed, this change to the organisational arrangements and organisational systems was one of the unifying features of the transitions in Berg Transmissions and the Optel Corporation. Both companies were successful in their transition to team-based working; however, Berg Transmissions adopted an incremental approach to develop lean production teams and the Optel Corporation adopted a radical approach to create self-directed work teams. The findings from the cases suggest that, at least in part, this success was related to both

companies reinforcing the transition to team working with appropriate deep structure changes and creating congruence between the interdependent components of organisational structures and systems.

The findings from this research demonstrate the importance in the change to team-based work designs of congruence between the new structure and supporting systems. The implication is that even in organisations embarking on small-scale changes to team systems, e.g. pilot studies, changes within one group or department in an organisation, as well as those contemplating a major organisational change, should be prepared to adopt arrangements appropriate to collective working.

In this context, further research in Nova Cosmetics will be useful to follow the progress of team working and to explore any of the associated changes to the organisational arrangements implemented to sustain team development.

8.8.4 The Politics of Change

The politics of the change process are taken to refer to the political activity of consultation, negotiation, conflict and resistance, which occurs at various levels during the process of managing change (Dawson, 1994). This political activity may take the form of negotiations between different organisational groups and between and within managerial, supervisory and team member groups. These individuals or groups can influence decision-making and the setting of agendas at critical junctures during the transition to team working. The change process can be influenced by factors such as variations in commitment and differing vested interests between different management levels or different functions. Indeed, the Industrial Society (1995) survey highlighted several issues relevant in this context, namely problems with senior/intermediate managers and teams rejecting responsibility/authority. The effects of political activity on the change to team working were particularly apparent in the Clearwipe plc and Nova Cosmetics case discussions. The findings from these cases indicate that senior managers had a huge impact on the viability of the team working initiatives, not only in operational terms, but also by adopting, or perhaps more importantly, by not adopting relevant internal change agent roles.

8.8.4.1 Operational Roles

As well as survey data to this effect, studies examining implementation inadequacies as a

reason for the lack of success of team working often cite low senior management commitment. Indeed, Marchington (2000) states " senior management support and commitment is considered essential for team working to have any chance of success" (p. 73). If employees see little evidence of this, it is understandable that their interest and commitment is likely to be minimal, and any initiative treated with disdain. This situation is often exacerbated in organisations by the frequent turnover of senior managers/champions of initiatives and their replacement by new managers with a different set of priorities (Marchington et al, 1993). In this context Geary (1993), in his study of team working at two electronics plants in Ireland, noted that a lack of managerial commitment seemed to have been the primary factor in explaining the limited success of quality circles.

The findings in this research also confirm the key role of senior managers in the change to self-managed team working. In Nova Cosmetics, one of the main reasons for the interruption to the team development process related to the reduction in commitment from senior personnel in the Manufacturing Unit. In this case there were frequent changes of manager with different operational strategies and priorities. The findings from Berg Transmissions and the Optel Corporation also support this finding, although from a substantially different perspective. In both these companies, senior managers demonstrated sustained commitment to team-based working. In the Optel Corporation, there were also frequent changes to senior management; however, successive managers shared the vision and commitment to team working.

The case analyses also provide evidence that even when new operational roles and responsibilities are well-defined it is not always apparent to those involved in the change how they are supposed to act in these new roles. For example, the interview data from Nova Cosmetics indicated that despite extensive training prior to the change the advisers knew what they were supposed to do, but not how to do it. Similarly, in Berg Transmissions, the team members failed to act in their new roles despite appropriate training and support. In effect, organisations need to provide more than new role definitions and training for new operational roles; they also need to help individuals operationalise their new roles.

The findings from the cases in this thesis, especially Clearwipe and Nova Cosmetics, also support the work by Manz and Sims (1993) which suggests that reverting to a blaming

culture and taking back control when faced with difficulties sends signals to those who work for them. For example, in Nova Cosmetics, with the arrival of Vice President Manufacturing (2) the team members perceived the signals of confusion from the advisers very quickly, on the basis of which they reverted to more traditional ways of working. Additional operational pressures highlighted by team leaders and advisers in Nova Cosmetics and Clearwipe indicated, as Trist and Dwyer (1982) have previously suggested, that it was a severe strain to try to develop team-based working at the same time as maintaining high levels of productivity and efficiency.

The political issues associated with self-management crossing vertical and horizontal boundaries within organisations were also demonstrated in this research, particularly in relation to the skilled/semi-skilled nature of the technician's role compared to the team member's role. In Clearwipe, the technicians withdrew their support of the initiative by avoiding training team members on routine maintenance and changeovers, despite the perceived benefits of moving away from the routine, reactive work to more challenging technical problems. Similar problems were encountered in Nova Cosmetics with the mechanics and their concerns about role demarcation.

With regard to the different groups of team members in this research, the findings from the case analyses support the results of the Industrial Society (1995) survey, which indicated that a key problem in the implementation of self-managed work teams related to team members rejecting authority and responsibility. Certainly, in Clearwipe and Berg Transmissions data revealed that team members received training in their new roles and responsibilities but did not change their work behaviour. This continued in Berg Transmissions until the team members were contractually obliged to do so. Similarly, in Nova cosmetics, the team members were trained through World Class Manufacturing but again had difficulties putting these ideas into practice. In this case, structural changes and the introduction of Integrated Production and Continuous Improvement teams provided the impetus for new work patterns. In the Optel Corporation, new behaviours on the part of the team members were forced by the radical nature of the change and the abolition of old ways of working. In all however, in three of the four cases in this research, team members were initially unwilling to take on the responsibilities and tasks associated with team working.

All told, in the transition to self-management, this research confirms the integral nature of

senior management commitment to the change process. This study also highlights the importance of defining in detail the new roles of key players in the change process, as well as helping individuals operationalise these new roles. Attention also needs to be paid to political tensions and perceived threats associated with changes to traditional role demarcations, with, perhaps, more emphasis placed during the change process on the benefits of adopting new roles and a clearer definition of these roles.

8.8.4.2 Change Agent Roles

The case findings also highlighted that it is not just operational roles that were significant in the context of this change, but that it was also important for key players to adopt appropriate change driver roles. Indeed, this research confirms that the successful implementation and development of team working in organisations depends not only on individuals making the necessary transition to new operational roles, but also on the roles played during the change process. To effect a successful internally driven change, different change-driver roles need to be filled appropriately at different times in the change process. If this does not happen, and the change process encounters problems, it may be derailed. The contrast between the more and less successful change programmes in this research demonstrates this point. In the successful transitions in both Berg Transmissions and the Optel Corporation, the different change driver roles were effectively assumed at different times by the various stakeholders and groups of stakeholders. For example, in the Optel Corporation successive Directors of Operations undertook the visionary and the compelling case-builder roles. Members of the resource support team acted in many different roles including as analysts, team builders, coalition formers, ally seekers, implementation planners action drivers, deliverers and fixers and facilitators. The Production Managers and Controllers also took on aspects of these roles at different times, and along with the resource support team members, reviewed and criticised the process. All told, in the Optel Corporation, different stakeholders and groups of stakeholders adopted the change driver roles to successfully manage the change process.

The change process was managed less successfully within Nova Cosmetics. In particular, the team development process was interrupted by the loss after eighteen months of the visionary and compelling case builder. Also, with the roles of reviewer, critic, progress-chaser and auditor unfilled, there was no-one to feed information back to the stakeholders, to hold the threads of team working together and to accomplish the pre-defined task of

evaluation so crucial to long and complex changes.

The findings from the cases included in this research suggest that for the successful implementation of team working it is not only essential to clarify operational roles and expected behaviours and actions to reduce uncertainty, but also to identify and clarify the process roles of operational personnel. Further research in this area would be useful to clarify these roles in the context of this particular change process and to discern the levels and characteristics appropriate to individuals undertaking them.

8.9 Post-Transitional Period: New Operational Arrangement

The final section of Figure 8.1 reflects the post-transitional period of operation and the emergence of new operational arrangements and new patterns of working. In the context of this research, this refers to the successful implementation and development of team working and identifiable improvements in performance, satisfaction and commitment. Such findings were discussed in the context of the Optel Corporation and Berg Transmissions cases. The findings from this research confirm the problems highlighted in Chapter One of this thesis associated with evaluation of the impact of self-management on business performance.

Even with the co-operation of senior managers within the Optel Corporation, the researcher struggled to determine the link between the organisational change to team working and improved performance. The researcher attempted to adopt the holistic approach, following Patterson et al (1997), but was thwarted by no consistent use of the same questionnaire. On top of which, the many contextual changes, such as frequent changes in senior personnel, an extraordinary increase in the shopfloor workforce resulting in teams at different stages of development, and the introduction of different practices and policies at the same time, made it impossible to separate out the different effects on the change process. The senior managers believed that team working contributed to improved business performance. Evidence of causality did not seem significant to the senior managers in the context of this company, maybe because it was experiencing a time of significant business growth and expansion. In many ways, the findings from this case confirm reliance on anecdotal evidence in evaluating self-managed team working.

On the other hand, Berg Transmissions, in a period of adverse trading conditions, worked hard to evaluate the impact of the change to a team-based work design. Berg Transmissions

was able to provide hard business data indicating improved business performance in several areas, which related these improvements to the impact of new working practices. Given the contrasting economic situations of the Optel Corporation and Berg Transmissions, it was, perhaps, more significant for Berg Transmissions to establish improved performance.

Perhaps also, the historical context of the different team-based systems is important in terms of evaluation. Historically, the transition to self-management has been associated with quality of working life initiatives and not to business strategies for increasing competitive advantage. On the other hand, the philosophy behind lean production relates to increasing profit by reducing cost. As such, a focus on quantifiable data is inherent in lean production work designs.

These findings are in line with Miller's (1975) argument that the social system of the self-managing team was inflexible in the face of extreme environmental demands. This debate has been rehearsed more recently in the context of the dispute concerning the respective merits of Japanese and Scandinavian motor car manufacturing methods (e.g. Womack et al, 1990). The implications of these findings for organisations considering the implementation of team-based systems reinforce the idea and importance of diagnosing both the external and internal context of the change.

All told, this research confirms the complexities of trying to measure the outcomes of the introduction of self-management. Such problems may be expected by organisations measuring the outcomes of long-term initiatives, such as the transition to team working, because of the difficulties inherent in trying to separate out the effects of the different changes made simultaneously in the organisation. However, an interesting avenue for further research would be to examine why some managers maintain their commitment to the change process in the face of no hard evidence and how they maintain the momentum and consistency in the direction of this change. In this context, techniques such as the repertory grid could be utilised to increase awareness of senior managers' constructs associated with team development and the change process and determine factors associated with establishing commitment and consistency. This research has confirmed the importance of senior management commitment in a successful transition to team working and such cognitive maps may prove invaluable in increasing the number of companies achieving a successful outcome.

8.10 Limitations of this Research

No empirical work is perfect in every respect and researchers endeavour to strive for more facts to increase understanding of any phenomenon close to its reality. This research was based on the use of qualitative research techniques in a longitudinal case study design. In Chapter Three, the researcher argued for the use of a qualitative approach to enable her to build a complex holistic picture of the change process and identify key contextual and processual factors inherent in the self-managed work team development process. Such an approach also enabled the researcher to seek to explain the interconnected and dynamic processes inherent in everyday life and, as such, to avoid a static snapshot view of social life which may be a characteristic of quantitative research. Longitudinal research was appropriate in this context as its continuity allowed the researcher to follow the organisational changes and team development in the four companies for periods of between eighteen months and four-and-a-half years. Relatively few in-depth cases focusing on this work design initiative exist and the aim was to increase understanding of the self-managed work team implementation and development process through longitudinal research.

However, despite the appropriateness of qualitative techniques in investigating this research topic, the present study has the shortcomings associated with the application of only one approach. Case study methodology was chosen, at least in part, to enable a multi-method approach and observational and interview techniques were effectively combined in this research to create a complex and holistic description of the change process to self-managed team working. In future research, the use of quantitative data would serve as a supplement to the qualitative data. Quantitative methods, for example, questionnaire data focusing on specific factors that affect the team development process, e.g. the political dimensions of the implementation and development of self-managed work teams, would add to our knowledge in this area and would enable more causal hypotheses to be examined and inferences to be made.

Having said this however, the researcher did attempt to use quantitative data in the form of a questionnaire in a repeated measures design within the Optel Corporation, but this was largely unsuccessful because of organisational constraints and senior management's decision to use different questionnaires each year. In fact, the problems associated with the questionnaire data in this study reflect wider issues in the context of research in applied settings. Whereas the researcher in the laboratory can exert considerable control over their

research design, researchers in applied settings cannot control the design to the same extent. Indeed, to identify accurately the contextual variables that affect organisational processes, the researcher has to relinquish such control and work within the constraints of the organisation.

Also with respect to the methodology, the researcher did not subject the interview data and analysis of the transcripts to independent scrutiny to confirm whether others would categorize the data in the same way. To a large extent, the decision not to take this step related to the very factual nature of the interview data, especially the responses to the questions from the interview protocols. Little judgement was required on the part of the researcher to assess the answers to the questions because of the concrete nature of the data and because the researcher was able to cross-check the information with data from other interviews within the same organisation and from her own observations. Similarly, it may have been appropriate to subject the descriptive coding undertaken by the researcher with respect to the stories and examples from the interviews to independent scrutiny, but again the very factual and concrete nature of the data meant the requirement to make fine judgments about the information was limited.

The researcher chose a multi-method approach, combining observational and interview techniques, to establish an understanding of the change to team working. Other methods e.g. diary methods, may have contributed to the data collection process. However, they were not included in the research design for several reasons. Diary methods comprise a very intensive methodology and provide a detailed snapshot of parts of a process. They are, perhaps, not particularly suitable for longitudinal studies in busy production environments. Certainly, in the high volume environments of Clearwipe plc and Nova Cosmetics, in which production demands were constantly pressing for the team members, it was not a viable option to ask them to complete diaries and, had they done so, it may have resulted in only very extreme events being recorded, for example. Over the long period the researcher was involved with the organisations, it may also have been problematic sustaining the team member's enthusiasm for completing the diaries. It may be that in future research diary methods could be incorporated and play a useful role in eliciting information as part of a multi-method approach e.g. in exploring the politics of change and by asking team members to record when and/or why they feel uncertain about new tasks, activities and expected behaviours.

In terms of the nature of the organisations studied in this research, the main unifying feature related to the original, explicitly stated goal of each of these organisations to implement self-managed work teams. The outcomes of the cases illustrate the fragility of self-management and, indeed, from the same starting point in the journey, the four organisations each reached different destinations. If the researcher were to start another study into the implementation and development of self-managing teams, additional criteria would be considered in the selection of the organisations to be included in the research. For example, with the benefit of hindsight, the researcher would consider carefully whether to include organisations in which production strategies are designed on the principles of lean production. The findings in this research identify key variables in such production settings which prevent the successful development of self-managed work teams and it would be self-limiting to incorporate lean production environments in similar studies of the implementation and development of self-managing work teams.

Also, with regard to the generalisability of the findings from this research, it may be valuable in future research to chart the transition to self-management within organisations from the same industry sector. The outcomes from this study appear, at a broad level, to be generalisable to other brownfield manufacturing organisations, but more specific recommendations would be possible from research based in same sector organisations. Similarly, caution must be applied in generalising these findings on a wider basis, for example, to service organisations.

8.11 Learning Outcomes

The discussion of this thesis would be incomplete without an overview of the learning process involved in carrying out this applied research. This overview provides additional insights into the research process.

Perhaps one of the main challenges for the researcher in this study was associated with the practical problems of maintaining intense working relationships with the large number of people involved in the change process and team development in each of the four organisations, especially as the organisations were located in four entirely different parts of the country. Close relationships were needed to ensure continuity in observing and charting the change processes and as such the researcher spent a lot of time in each organisation. The fact that the organisations were located so far apart added to the pressures on the

researcher's time.

On a more positive note, the researcher was genuinely impressed by the warmth and friendliness displayed by almost everyone encountered during this period of research. The vast majority of senior managers, supervisors, team members, mechanics and technicians involved in the change processes within the companies were willing to become involved in the research. Indeed, the researcher established close, informal relationships with many of the key people and received an overwhelming welcome, unstinting co-operation, and over time, increasingly uninhibited responses to questions and comments. Very few people within the organisations were either apprehensive about the research or reluctant to become involved, but when this reaction was encountered it was, to a large extent, minimised through building rapport. The researcher's knowledge about manufacturing organisations and their processes and patterns of work grew enormously through involvement with these four organisations and through participation in shopfloor and training activities and social gatherings. This knowledge effectively increased the researcher's understanding and insights about the organisations and helped provide a sound basis from which to interpret observational and interview data.

8.12 Conclusion

The aim of this research was to examine the team development and organisational change processes in the large-scale transition to self-managed team working in brownfield manufacturing sites using empirical evidence drawn from a detailed knowledge of case study data collected over a period of almost five years in four organisations. The findings from the research confirm Buchanan's (2000) observation that "teamwork (however defined) should be regarded as more appropriate in some settings that in others" (p. 35).

The outcomes of this research confirm that the change to self-managed team working is an unfolding, non-linear, dynamic process in which individuals and actions are never clearly defined. As such, team development models describing the change as a linear, step-by-step process are simplistic and misleading. Rather, those managing such a change should consider the process as a composite and non-linear series of transitional tasks. Indeed, the transitional tasks involved between the conception of the need to change and the emergence of new work practices and procedures associated with team working overlap, occur simultaneously, stop and start, and are part of the initial and later phases of major change

programmes. A considerable body of data emerged from the four cases in this research and was used to document these dynamic processes in the change to team working.

The findings included support for both incremental and radical approaches to the transition to team-based working. This research also confirmed that different work settings favour different types of team design and illustrated the importance of understanding the distinctions between the different team types at an operational level. Specifically, this research suggested that self-managed forms of team design are appropriate in certain work settings. Factors that need to be considered in establishing congruence between production settings and different team designs include interdependence, opportunity to establish autonomy over work pace and methods and control over problem solving activities relevant to the production process.

The findings from this research also demonstrated the importance in the change to team-based work systems of congruence between the new work design and supporting systems. The implication is that organisations embarking on both major and small-scale changes to team systems should be prepared to adopt arrangements appropriate to collective working. This research also confirms the integral nature of senior management commitment to the change process and establishes the importance of defining in detail the new roles of key players in the change process, as well as helping individuals operationalise these roles. The cases highlight the importance of paying attention to political tensions and perceived threats associated with changes to traditional role demarcations, and indicated that it is important for key players to adopt appropriate change driver roles. Finally, this research confirms the complexities of trying to measure the outcomes of the introduction of self-management.

In many ways, this research illustrates the fragility of the implementation and development of self-managed work teams in brownfield manufacturing organisations. This research also confirms the relevance to the team development process of the quotation which appeared at the beginning of this thesis, namely "The road to success is always under construction" (Miller, cited in Williams, 1998). Indeed, the findings from this research demonstrate how the context and politics of the change process impact on the success of this long-term initiative and that team development is a constantly adapting and evolving in specific organisational contexts. As such, the prescriptive linear models of team development are unlikely to be useful tools for organisations to planning to implement and develop team

working. These models are likely to be useful only if they are considered within the context of the process factors described in this research.

The outcomes of this research support Buchanan's (2000) view that forms of team work differ significantly from one setting to another and that it is difficult to establish commonly agreed benchmarks or shared definitions to facilitate systematic contrasts and comparisons. Team development must be seen as a process in context and as an organisational form which adapts and evolves over time in specific organisational settings. In the continuing enthusiasm for implementing and developing self-managing work teams in modern production conditions for economic reasons (e.g. Badham, Couchman and McLoughlin, 1997), there is little emphasis on the potential costs and risks or limits and liabilities incurred, nor the situations in which they are more or less likely to succeed and make a successful contribution to overall organisational effectiveness.

This research indicates that self-managed work teams are difficult to implement and shows the enormous variety of responses to the same initiative, the different problems faced by organisations and how important it is to adapt the intervention to the organisation. Essentially, this research, by increasing understanding of the change process to team working, may help reduce the difficulties faced by organisations making this transition.

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APPENDICES

APPENDIX 1 – SAMPLE INTERVIEW PROTOCOL

(Team development schedule relevant for team members.)

This is a sample of the type of interview schedule used during the research. This is a condensed version: spaces underneath questions have been removed to reduce length.

Date/Time:

Organisation:

Team:

(Note: size of team, location etc.)

Team Member:

(Briefly remind the respondent about the purpose of the interview, the researcher's role and confirm anonymity and confidentiality.)

History/Background

Could you please tell me a little bit about your team? (e.g. when/why was it first formed, how was it put together, and how were team members prepared for working on the team?)

Characteristics of the Work Environment/Work Tasks

Could you please describe the nature of the production process?

How do you/your team fit into this? (Probe: Links to other teams? Style of leadership within/across teams? Work standardisation? Control?)

What is your team's primary task or tasks?

Who do you see as your team's customers and suppliers?

What types of training have you received? (Probe: Technical? Teamwork training?)

Team Empowerment (Probe in the following areas – in all cases, if the following aspects are not the team's responsibility, who does do these things?)

Housekeeping

Does the team decide on the physical layout of its work area?

Does the team maintain the tidiness/cleanliness of its work area?

Safety

Does the team ensure its work area is safe?

Does the team take on responsibility for Health and Safety standards in its work area?

Maintenance

Is the team involved in the day-to-day maintenance of machinery?

Is the team involved in solving minor breakdowns?

Is the team involved in solving major breakdowns?

Is the team involved in setting up machines?

Meeting the Schedule

Does the team receive information on scheduling?

Does the team decide how to get its work done?

Does the team decide on the order in which work is done?

Does the team decide when to start a piece of work?

Does the team decide when to finish a piece of work?

Does the team decide its own pace of working?

Can the team control how much it produces or does?

Can the team vary how it does its work?

Can the team choose the methods to use in carrying out its work?

Can team members decide on the amount of work to be done at any given time?

Do the team members make most job-related decisions?

Quality

Does the team control the quality of what it produces?

Does the team ensure quality standards are maintained?

Is the team involved in solving quality problems?

Communications

Are all team members willing to share information between themselves about their work?

Do team members feel they receive sufficient information to do their jobs properly?

Do team members present information from their team to other teams?

Do team members find it easy to talk to teams in other departments?

Are team members kept informed about what is going on in their teams/other teams in their department/other teams in other departments?

Do team members present information from their team to senior colleagues?

Are people in the team asked for their views when decisions are being made about the job?

Time Management

Do team members decide on rest breaks?

Do team members decide on holidays?

Do team member decide on flexi-time arrangements?

New Product Introduction

Are team members involved in decisions about new product introduction?

Training

Are team members involved in training newcomers?

Are team members involved in training team mates in new skills?

Employee Flexibility

Is the team as a whole responsible for performing a variety of tasks?

Can team members influence the way jobs are divided up among themselves?

Can all team members perform a range of tasks?

Do team members have the skills to do each other's jobs?

Are team members willing to do each other's jobs?

Do team members have complementary skills and abilities?

Are team members confident in the technical skills of team mates?

Team Maturity

Do team members understand the duties and responsibilities of the team?

Do team members understand the goals and objectives of the team?

Do team members understand how the team's work relates to the overall aims of the department?

Do team members understand how the team goes about getting its work done?

Do team members solve disputes in the team?

Do team members suggest new ways of doing things?

Do team members discuss problems with other teams?

Are the team's tasks highly dependent on outside factors/other team's efforts on an ongoing basis?

Do team members get on with their work without being asked to or waiting for other team members to do it?

Can team members rely on each other to help out when they are overloaded with work?

Do team members trust each other?

Do team members co-operate with each other to get the work done?

Do team members co-operate with members of other teams to get work done?

Is there competition between teams in the same department?

Knowledge of Customer Requirements/Needs

Do team members understand who the customers are?

Do team members have any contact with customers/suppliers?

Do team members participate in dealing with customer queries/problems?

Production Scheduling

Does the team plan its own work?

Continuous Improvement

Are team members responsible for problem solving in their teams?

Discipline

Are team members involved in disciplining other team members?

Performance Appraisal

Do team members understand how to improve the team's work performance?

Do team members understand how team performance is assessed?

Do team members give feedback to colleagues on performance?

Do team members receive (enough) feedback on how well the team is doing?

Compensation

Do you feel you are fairly compensated for your work in the team?

If you feel you are unfairly compensated, why is this? Have you done anything to overcome the problem

Budgeting

Does the team have its own budget?

Does the team decide how to spend its budget?

Overtime Approval

Are team members involved in making decisions about overtime requirements?

Selecting New Team Members

Are team members regularly involved in the selection of new members?

Setting Future Targets/Goals

Does the team set its own short-term production targets/goals?

Does the team have any input/participation in decisions about longer-term production goals?

Does the team have any input/participation in decisions about overall targets/goals of the work unit?

Is the team involved in making long-term plans for the team?

Is the team involved in making long-term plans for the department?

Is the team involved in making long-term plans for the company?

Team Procedures

Does one or a few team members dominate team decision making, or does everyone have a say in the decisions made by the team? (If dominate, what effect does this have on

the team's performance?)

Do team members tend to avoid making suggestions that might conflict with those already made by another team member (If yes, what consequences does this have for team performance?)

Do you feel that your team can make better decisions about its work than management? (Probe for an example to illustrate this.)

Responsibilities of Managers

What are the responsibilities of first-line management with regard to your team?

What are the responsibilities of middle- and upper-level management with regard to your team?

What kinds of things does management do that help your team in decision making and getting the job done?

What kinds of things does management do that hinder your team in decision making and getting the job done?

How often does management step in and make decisions for the team that were supposed to be made by the team? What sorts of decisions are these?

Does management generally support your team's decisions, once made?

The Change to Team Working

Do you have any comments (specific or general) on the company's change to team working? (Probe: Their role? Knowledge about process? Particular influences?)

APPENDIX 2 – SAMPLE OBSERVATION PROTOCOLS

Notes during periods of observation were recorded by two methods (in the main). In more formal situations, such as observations of team briefings, the researcher used prepared protocols; there is an example of one of these below. In more informal situations, such as the observation of team member activities on the shopfloor, the researcher tended to write descriptive notes without the use of such a protocol. An example of a passage from these observation notes is also presented below to illustrate the type of information recorded using this method.

Sample Observational Protocol

Activity: Morning Operator Briefing Session (Nova Cosmetics: Creams Business Unit: Mascaras Line)

Date: January 1994

Length of Activity: 10 minutes

Descriptive Notes	Reflective Notes
General: 8am operator briefing by Debbie (supervisor). Operators, porters and mechanics gathered round adviser's desk. All standing; adviser perched on desk.	
At exactly 8am, Debbie starts the meeting and starts by describing work schedules for the day – noting production runs, product changes, timings etc.	Quiet concentration, no comments. Perhaps associated with Debbie's "telling" voice.
Debbie moves on to allocating roles/tasks on the line for the day – tells each person what they will start by doing.	Very detailed – no comment/feedback from group.
Debbie asks for questions – some discussion about the order of the production runs and material availability. Porters asked to confirm some of the details on a particular product.	Friendly rapport – comment about material availability seemed welcome.
By 8.05am Debbie turns to the previous day's problems on the line. Feeds back comments from manager about the excessive number of seemingly empty boxes around the line. Gives the task of tidying up these boxes to a porter – as his first priority (Health and Safety issue).	Tone less friendly – more in "telling" mode again. Quite authoritative.
By 8.06am the meeting is over, group members disperse to jobs.	Chat/discussion amongst group members increases as meeting finishes; group disperses quickly.

Narrative observation notes

Description

After morning coffee break, M who has been working on the labelling machine all morning approaches the supervisor's (G) desk and comments that the machine keeps jamming. G immediately leaves paperwork and goes to the machine with M. Everybody watching and slowing down. M restarts machine, seems OK for a few minutes and then problem recurs. G asks M what she thinks the problems is, M suggests altering the speed of the machine and with G watching, does so. M resumes labelling: no problems apparent in the next few minutes. G returns to paperwork.

Reflective Notes

Question to self – if M knew what the problem was, why did she leave the machine, go to the G and involve him in the problem? Why did she not just alter the speed of the machine and carry on? Check out at interview stage.

(January 1994 - 10.40am – Pumps Line)

APPENDIX 3 – INTERVIEW ANALYSIS

The following interview extracts are from the four case companies involved in this research. They are included here to demonstrate the process undertaken in the analysis of the interview data.

1. Extracts from interviews at Clearwipe with Pilot Team member (MJ – 5.3.97 and 16.4.97)

These interviews were repeat interviews with the same team member and extracts are presented here to show how the interview questions and responses were used in repeat interviews to chart team development. This extract focuses on the development of "Team Empowerment", particularly "Maintenance" issues. As the extracts illustrates, the answers to the questions are very concrete and not really open to a wide degree of interpretation. This information contributed to the case narrative by defining areas of training and aspects key to the development of a multi-skilled team, highlighting the problems of the interface with team leaders/managers in other sections and physical barriers to all aspect of multi-skilling in the team (height). The comments also highlighted the need for the researcher to follow up this issue of the seeming reluctance of people outside the team to become involved.

Interview – 5.3.97

JT: Has the team become involved in setting up the Bradman-Lake?

MJ: No – there were markings on the machine to help set up the Bradman but these have worn off over time. It's still only done by SP or a technician at the moment but the team want SP to put these marks back on the machine to help other people when they are being trained in this process.

JT: So at the moment SP is the only team member involved in machine set-ups?

MJ: That's right. We talked about this on the machine the other day and might ask AT to ask GA to train a few of the team.

Interview – 16.4.97

JT: Has the team become involved in setting up the Bradman-Lake?

MJ: Well, we are supposed to be doing it now, but we have been discussing with GA him coming on the Bradman-Lake now for four weeks ((frustrated tone, exasperation)) to show me, MF, SP and MP how to set it up. A date as yet hasn't been given to the team. If GA is too busy then he could organise somebody else to show the team as they are compiling some points/concerns they need advice on. ((Pause – smile.))

The female members of the team are continuing to get involved in some of the setting issues. Some of us are too short to reach into parts of the machine ((note MJ is about 5'; SP for example is over 6')) and do it all, but we are beginning to share it now.

2. Extract from an interview at Berg Transmissions with Plant Manager (JH – 9.4.1999)

This is an extract from an interview with the Plant Manager when the organisation was focusing on the development of Toyota Production Teams and is presented here to illustrate the semi-structured nature of the interviews. In this example, the researcher was following up a key issue in this context, namely how the company has encouraged operators to become involved in kaizen. The Plant Manager gives a useful example to reinforce his point and the use of words is interesting i.e. their contract says they will do it now, they are obliged to do so etc. Again, the response was used descriptively to understand the pattern and influences in team development.

JT: You mentioned a moment ago that most process operators are **now** ((emphasis on this word)) involved in kaizen activities. Kaizen activities have been a key facet of team working in BT since 1997, what is different about this now?

JH: In all this time the biggest concern of team members has related to their fear for jobs through kaizen, and that workers were being exploited. An example - people still fear that if overtime falls below a certain level, their wages will be reduced. A difficult situation, if you reduce overtime by improving productivity somehow, then you need to reward people not punish them through a pay cut. So you need to share out rewards from the gains. The company's aim is to drive out waste not people.

JT: So how have you got the operators involved in kaizen?

JH: Their contract says they will do it **now** ((emphasis on this word)) – they signed a contract saying that they will be active in the participation in continuous improvement, including kaizen activities. ((Pause in interview to get copy of new contract, promises to copy.)) We did try to get volunteers, but there were problems with perception of this training. Now 100 or so operators so far have been involved in the training/activities – **obliged to do so** ((emphasised)) by their contract.

This is key to performance improvements. Kaizen is a team approach, a structured way of solving problems. If you apply the procedures they will work. The kaizen training is important in making team work more concrete. Do not abandon ideas if they don't work – rethink.

JT: Anything else?

JH: People are now on the same pay rate – the same status norms makes teams better and partnership with the union continues, all are helping team work. Help with team spirit and kaizen.

3. Extracts from interviews at Optel Corporation with Resource Support Team Members (BF and AD – May 1997)

These examples were provided during interviews with Resource Support Team Members in May 1997. They were elicited during introductory, general discussions about team development, rather than in response to specific interview questions. As such, they were more open to the researcher's interpretation and judgement.

a. Extract A

BF: I have been working with the night shift teams for the past several weeks. A different perspective in that there are very few managers (of any type) about and it tends to be quiet. Normally, ((long-ish pause)), but there was a difficult incident last week – an injury at work. For some reason, a shoe was thrown by one of the team and injured somebody. We're not sure why it was thrown, or whether it was aiming for the injured person. The team clammed up, difficult to know exactly what happened. ((Pause – a long time.))

TEAM EMP: SAF

TEAM PRO: COM

JT: Have you spoken to the team?

BF: Not about this issue, it is specifically a Health and Safety issue.

JT: Do you think this says something about team development?

BF: If the team won't talk tell people what happened, and are not open, then it suggest a lack of trust. Perhaps that is the real problem.

TEAM PRO: TRUST

CHECK OTHER DATA RE. TRUST ISSUES

b. Extract B

AD: I am moving from the RST to Training. Time to move on, develop new skills. Some things bother me that I am leaving undone, or for others to do – especially those I've been most involved in.

JT: Such as?

AD: The peer review –implemented to help generate team spirit, but identifying good and poor performers at intervals seems to compromise team spirit in some teams. Whoever is reported as poor performer, knows the rest of the team has done this. Linked to pay, so it is a big issue for the team members. Not enough is done to help the poor performer and the team is left to deal with the issues and tension. It's divisive, blocks the progression of team work.

CHGE PRO: BARR

JT: Is there anything else?

AD: Not really, that says it all. Not sorted out yet from manager's end either. Managers review individual attendance – no-one penalised for poor attendance last year. This has upset some of the teams too. So there are wider issues here to sort – which is why it seems undone still.

4. Extracts from interviews with Supervisors/Advisers at Nova Cosmetics (April 1994, April 1995 and November 1996)

The following extracts are examples elicited from supervisors/advisers within Nova Cosmetics outside the more formal interview programme e.g. when the researcher was on the shopfloor observing the team working, whilst waiting to start a group interview and in the canteen. These examples were coded, descriptively initially and then, in the longer-term, interpretively, in the context of the unfolding story of team development within Nova Cosmetics. As such, these stories made a meaningful contribution to the case narrative, describing team members starting to move towards taking more responsibility and initiative for their tasks and activities and then moving away from this again.

a. Extract A (April 1994 - SP)

Line 21 has started IPTs, but it is hard work. Lots of things identified as problems, but not much happening. Housekeeping a big issue at the moment, especially as we are at the end and have the walkway next to us. The operators keep talking about the empty boxes left on the line and how they get knocked across over towards the tape. But that is all. They have even noted the H&S issue and others comments.

TEAM EMP: HK

b. Extract B (April 1995 - DD)

The girls on labelling were fed-up, more and more so in fact, with having to label by hand. There has been a problem with base labels which has meant hand labelling, and base the labels on mascara bottles are very small, which makes it worse. Identified in the morning meetings, and they set up a visit from the supplier (through me, but asked for by them). The supplier saw the problem and is changing the material. It was a real boost for something to happen, made everybody feel good.

TEAM EMP: PROB SOLV

c. Extract C (November 1996 – GJ)

I am still not happy with the way the place looks. Had the Housekeeping Team down – but the team have not taken on board what they said. I have told them the standards for the Unit, highlighted the problems specifically. They should do all this, not wait to be told all the time – it is their responsibility to keep the area clean and tidy.

TEAM EMP: HK

APPENDIX 4 – FURTHER EXAMPLES OF CODE CATEGORIES

CODE CATEGORY	EXAMPLE
TEAM EMPOWERMENT (TEAM EMP)	
Housekeeping (HK)	"Housekeeping is a big issue at the moment, especially as we are at the end and have the walkway next to us. The operators keep talking about the empty boxes left on the line and how they get knocked across and over towards the tape" (Nova Cosmetics - Adviser)
Safety (SAF)	"For some reason, a shoe was thrown by one of the team and injured somebody" (Optel Corporation – Resource Support Team Member)
Meeting the Schedule (SCHED)	"The team agreed to start rotating one person forward at a time from Monday 12 March – but rather than rotate every hour the team decided to leave the decision to each individual – if you want to sit down ask somebody in the group to swap with you" (Clearwipe plc - Team Member) "The team decided to ask about which products are to be built on which days. Asked Team Leader for a list of customer deadline days so they know what is happening and what has to be completed when." (Clearwipe plc – Team Member)
Quality (QUAL)	"The big issue for me is the issue of quality – it might sound odd but never thought of it in the same way as before - don't pass on a reject to the next person." (Nova Cosmetics – Team Member)
Communications (COMM)	"There is something else – we need to be congratulated as teams, or individuals - there needs to be more positive communication going on with regard to teams." (Berg Transmissions – Team Leader)
Training (TRNG)	"It would be best if the team trainers were trained – they might know the skills on the machine, but they may not be so good at training people" (Clearwipe plc – Team Member)
Problem Solving (PROB SOLV)	"The girls on labelling were fed-up .... with having to label by hand. There has been a problem with base labels which has meant hand labelling, and the base labels on mascara bottles are very small, which makes it worse. Identified in morning meetings and they set up a visit from the supplier." (Nova Cosmetics – Adviser)
Continuous Improvement (CONT IMP)	"We have been quite fearful for our jobs through kaizen – maybe it exploits the worker, or maybe we share the benefits." (Berg Transmissions - Team Member)
Discipline (DISC)	"Sorry, I am late I have been dealing with a problem in one of the teams – someone not following instructions. The team leaders are different to facilitators but do not have disciplinary powers" (Berg Transmissions – Group Leader)

Compensation (COMP)	"Things are going well generally – having made changes to contracts, people are more equal ... There are no payment differentials for team leaders." (Berg Transmissions - Plant Manager)
Overtime Approval (OVER APP)	"All overtime has to be approved by the Production Manager" (Clearwipe plc – Training Manager)
TEAM PROCESSES (TEAM PRO)	
Cohesiveness (COH)	"The team clammed up .." (Optel Corporation – Resource Support Team Member)
Trust (TRUST)	"If the team won't talk, tell people what happened, and are not open, then it suggests a lack of trust" (Optel Corporation Resource Support Team Member)
CHANGE PROCESS (CHGE PRO)	
Roles (ROL)	"I feel more comfortable now – my role is clear. This last set of changes has got rid of the uncertainty for me." (Berg Transmissions - Team Member)
Knowledge (KNOW)	"I am against any more changes – I am happy with what I am doing already. I am making a contribution already – no-one tells us that." (Berg Transmissions - Team Member)
Barriers (BARR)	"If teams improve productivity, which reduces overtime, they are worse off. Need to make sure they are rewarded for changing, that there are no barriers to moving from one way of doing things to another." (Berg Transmissions - Plant Manager)
	"Whoever is reported as a poor performer knows the rest of the team has done this. Linked to pay, so it is a big issue for the team members. Not enough is done to help the poor performer and the tam is left to deal with the issues and tensions. It's divisive, blocks the progression of team work" (Optel Corporation - Resource Support Team Member

APPENDIX 5 – EXAMPLES OF TYPES OF DOCUMENTATION PROVIDED BY THE ORGANISATIONS

The following six documents are examples of the type of paperwork provided by the organisations for the researcher. Such documentation was invaluable in enhancing the researcher's understanding of the change process and ensuring continuity in charting its progress.

The documents included here are minutes of team meetings and were provided by Clearwipe.

SELF MANAGED BRADMAN TEAM

Date of meeting 12 March 1997

Present	*Absent*
Steph Watkins	Shane Palmer
Lisa Wilks	
Coleen Pinney	
Sue James	
Liz Mutlow	
Martin Beven	
Mark Fever	
Martin Parson	
Marcia Jenkins	

1. Reviewed last weeks meeting notes:

a. The team agreed to start rotating one person forward at a time from Monday 12 March.

b. Rather than rotate every hour as it was suggested last week the team decided to leave this decision to each individual in that if you want to sit down ask somebody in the group to swap with you.

c. It was agreed that everybody is still giving 100% effort to the team and therefore this is no longer an issue at present.

2. At the last meeting there was a concern that the reserves can easily be left out of the day to day running of the team. It was suggested that the reserves (Lisa and Liz) should get together with Coleen and Sue and approach Mike for any thoughts or concerns he has if the team decides to rotate with the reserves. This sub-group could also think of any other possible solutions to this problem and report this information back to the team at the next meeting. On request on the team Debbie has attached a rota for this rotation.

3. Lisa volunteered to submit to the next meeting a list of all the people who the team could contact in case of problems. Angela can then put contact names and phone numbers to this list.

4. There was markings in the machine to aid changing the bradman over but over time these have worn off. As Shane is the person carrying out these changeovers presently, it was suggested that he put these marks back on the machine. This will help the other members of the team when they are being trained in this process.

5. It was agreed that another meeting take place on Thursday 13 March at 0700am for the sole reason to review the training package Debbie has made. Debbie will not attend this meeting but she will make herself available at this time if the team need her.

6. It would be beneficial for the team if Debbie gives some sort of training to the trainer (Shane). Although at present Shane knows all the skills on the machine, he may not necessarily know the skills to train people. Debbie will have this information for the next meeting.

7. The team raised a concern that they did not know what product had to be build on what day. To solve this Angela will give the team a list of customer dead line days so the team understand what product has to completed by what day. This information will be given to the team by next meeting.

8. Debbie suggested that at present Shane has a lot of responsibility and the role of a leader on top of this may be to much. The team needs to think about this and next meeting decide whether it is going to be Shane or somebody else. When this is decided Debbie will train them in leadership skills.

9. A problem was suggested for the team and that is Efficiency. This is a big subject so the action plan so far is;

a. Sue and Steph to record the efficiency every day and record all the problems the team had. All this information can then be presented to the team at the next meeting.

b. To be able to write these issues down the whole team must be involved and so it was agreed that 5-10 minutes every day should be spent solely looking at the problems of the day. A point was made that at this point the team should not try to solve these problems but just collect the information.

The next meeting is on the 18 March 1997 at 0700-0800.

Thank-you all for your contribution to the above.

ROTA FOR BRADMAN TEAM

To Mike	Week No.	To Mike	Week No.	To Mike	Week No.	To Mike	Week No.	To Mike	Week No.	To Mike	Week No.	To Mike	Week No.	To Week	Week No.
MARCIA SUE	12	LIZ STEPH	17	STEPH LISA	23	LISA LIZ	28	LIZ MARTIN P	35	LIZ MARTIN	40	LISA MARK	45	LISA SHANE	46
COLEEN STEPH	13	MARCIA COLEEN	18	LIZ COLEEN	24	STEPH MARTIN P	29	STEPH SHANE	36	MARTIN P SHANE	41	MARTIN MARTIN P	46	MARK COLEEN	47
MARTIN P MARK	14	LISA MARTIN P	19	MARCIA MARTIN P	25	SHANE MARTIN	30	MARTIN COLEEN	37	STEPH MARK	42	SHANE COLEEN	47	MARTIN STEPH	48
LISA MARTIN	15	MARK MARTIN	20	MARTIN SUE	26	MARCIA MARK	31	MARK SUE	38	COLEEN MARCIA	43	STEPH MARCIA	48	MARTIN P SUE	49
SHANE LIZ	16	SHANE SUE	21	MARK SHANE	27	SUE COLEEN	34	MARCIA LISA	39	SUE LISA	44	SUE LIZ	49	MARCIA LIZ	50

SELF MANAGED BRADMAN TEAM

Date of meeting 25 March 1997

Present
Steph Watkins
Lisa Wilks
Coleen Pinney
Sue James
Liz Mutlow
Martin Beven
Shane Palmer
Marcia Jenkins
Debbie Clayden
Angela Thomas
Mark Fever
Martin Parson

1. The team will start to rotating every hour for a trail of one week starting on 25-03-97.

2. Debbie is training Shane and Marcia on leadership skills on Friday 4 April at 1200 until1700hrs. Debbie will put out a memo nearer the time.

3. Efficiency

a. Colleen will continue to calculate it.

4. Daily Efficiency Problems. These were grouped together and are as follows;

a. **Cartons**

i. Falling in (8 cases and 2 days of continual problems)
ii. Not folding and ripping (2 cases)
iii. Marking (1 cases)
iv. Bending (1 case)
v. waiting (1 case)
vi. Punctured (1 case)

b. **Tape Machine**

Not sticking to the base and they had to be resealed (2 cases and continual issue for 1 day)

c. **Labels**

i. Mazda labels not coming off tamrod properly and making rejects (1 case)
ii. Not feeding (1 case).
iii. Running out of labels and ribbons on long runs.

d. **Bar-code**

Rejecting work as crinkle in ribbon and bar code not being printed properly (4 cases)

e. **Weight Check.**

Rejecting and all had to be weighed again.

f. **Timing out**

Called Mike Warren who didn't come on one occasion and Shane fixed on another occasion.

g. **Push rod bend** (1 case)
h. **Airofoils coming off** (1 case)
i. **Housekeeping.** Had to stop so photos could be taken. (1 case)
j. **Waiting parts** (1 case)
k. **Change overs.** 14 in one day and 9 in another. Each change over takes approx. 10 mins to complete.

5. The team decided to take the biggest problem which were with cartons. We then took the first carton related problem and asked why.

i. **Problem: Cartons falling in.**

	WHY		
a.	Not enough on the magazine	WHY	End of run so not filling up Run out of cartons Wrong cartons Time
b.	Not adjusted	WHY	Forgot Variation in carton size Ran OK. before
c.	Not tilted Properly	WHY	Moved position Rushing Can't reach
d.	Weight not on	WHY	Magazine full Told not to use it
e.	Soft Cartons	WHY	Storage (damp) Suppliers Quality of Material (recycle) Quantity (to many in a box) Transport (Damage during) Packaging (not firm enough)
f.	Arm Jamming	WHY	Cartons falling in making it jam. Take cartons off m/c still running Needs adjusting
g.	Operator Error	WHY	Rushing left run to low Lack of training

6. The team then took the first problem;
Problem: Cartons falling in.
WHY
a. *Not enough on the magazine* *WHY* *End of run so not filling up*
and suggested some possible solutions to the problem. These are as follows

i. Stop the machine to take the cartons off.
The team decided that they should all remind each other to stop the machine as a quick fix solution until more information is obtained on the sensors

ii. Have a sensor or alarm when cartons run low.
Marcia will obtain all the information she can by next meeting on a sensor that will alarm when the cartons are getting to low.

iii. Sensor to recognise rejects and adjust the clock as is necessary.

The team decided that Colleen and Shane will talk to Brian Gay who is already looking at this issue and have all the relevant information by next meeting.

b. *Not enough on the magazine* *WHY* *Run out of cartons*

i Linefeeder to check all the materials are their before the job is started. Martin is going to recheck this and the team will review this at the next meeting.

ii. Re-location of these materials.
Martin volunteered to look at relocating these materials as the boxes of cartons have to be passed under the conveyor or carried over the conveyor via the stairs.

7. There were many other issues that the team need to cover. These will be taken up at the next few meetings. Steph will write down all the occasions when the cartons have fallen into the machine. She will also write down all other issues that are being raised in the teams 10 minutes efficiency meetings which must continue. This information can then be used to show a difference the team is making.

8. The team then set a target of 60 % efficiency for the time they are running. This will then be reviewed at the next meeting.

9. A side issue was raised that the productions sheets are not suited enough for the Bradman Lake so all the team will review this and all the information written down and presented to the team at the next meeting.

10. A scrap bin is needed to collect the rejects and Angela will organise this for the team to have this week.

ADDITIONAL POINTS TO BE COVERED AT NEXT MEETINGS

11. It was agreed that every idea or problem that is encountered will be written down by Marcia who will present it to the team at the next meeting. This should continue.

12. Marcia has timed the machine a few times last week and will present this to the team at the next meeting.

13. As Debbie is not solely aware of all the issues on the bradman machine it was suggested she spend some time observing. Debbie will contact Angela for a suitable time to do this.

14. Ear Plugs are being found all over the floor near the Bradman Lake. Debbie will contact all relevant areas and ask they tell there employees to dispose of these correctly. The team should also monitor this situation and see who is dropping them.

15 The next meeting is on Friday 28 March 1997 at 0700-0800. As all overtime has to be authorised by Andrew Bonthron, Angela will inform the team if this day and time is not possible.

Thank-you all for your contribution to the above.

SELF MANAGED BRADMAN TEAM

Date of meeting 4 April 1997

Present	*Absent*
Steph Watkins	Shane Palmer
Lisa Wilks	
Coleen Pinney	
Sue James	
Liz Mutlow	
Martin Beven	
Marcia Jenkins	
Debbie Clayden	
Angela Thomas	
Mark Fever	
Martin Parson	

c.c. Debbie Clayden, Andrew Thomas, Angela Thomas, Andrew Bonthron, Collin Williams, Jane Tapsell.

	ACTION
1. Shane and Marcia will be informed of the date that leadership training will start	Debbie
2. Brain Gay was contacted and he has a sensor which could be used for when the cartons are running low. To attach an alarm to this will cost approx. £5.	Colleen/ Shane/ Marcia
3. Brain Gay was also contacted with reference to the sensor to allow for the rejects. This needs to be followed up.	Colleen/ Shane/ Marcia
4. The materials have to be checked before the start of a run.	Martin B
5. The inner cartons should be relocated to the opposite side of the conveyor to save the operators carrying large boxes over the conveyor or pushing them under the conveyor.	Martin B 4-04-97
6. The team were achieving approx. 57% efficiency last week so it was suggested that the team plot two efficiencies, one for the overall and for the actual hours worked (Minus the down time). It was agreed that the team write this on their production sheets for a record to be kept.	Team
7. The production sheets were explained by Debbie and Angela and the importance that the information on them were correct. It was also discussed that the down time and the amount of packs produced should both equal to 8.5 hours. It was agreed that the team double check this is happening to clarify the problems to be addressed.	Team start daily 04-04-97

8. Collin submitted a graph to the team that shows the main problem according to the information on the last 3 week's production sheets is maintenance issues. When you read the back of these sheets clearly maintenance is not the real issue but cartons falling into the machine is. Debbie went through the downtime codes with the team and discussed what could be adjusted but Angela needs to clarify this with Andrew Bonthron. — Angela/ Team

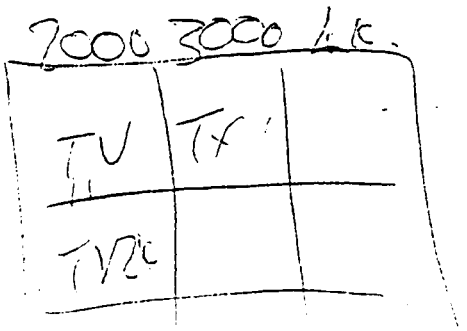
9. Debbie put to the team that a matrix could be made to show the amount per hour of every product that is produced. This could then be a visual aid for the team to use as a source of information. Debbie did suggest the team should not think that just because the machine have run at a particular speed it should remain at that speed. — Team

10. It was suggested that Gareth Armstrong could train a few team members on the set up of the machine. This will highlight any deviations in the manuals and would be a good opportunity for training of these operators. — Angela/ Shane/ Colleen

11. Debbie suggested that the weight should be used and the progress monitored by the team to see if it makes a difference — Team

With reference to point number 8, a number of downtime codes have been suggested, they are as follows;
Change over
Setting Problems
Waiting Material - Direct
- Indirect
Material fault
Machine maintenance
Team brief
Rework.

The next meeting will take place on Thursday 10 April 1997 at 0700hrs.



SELF MANAGED BRADMAN TEAM

Date of meeting 10 April 1997

Present	*Absent*
Steph Watkins	Lisa Wilks
Colleen Pinney	
Sue James	
Liz Mutlow	
Martin Beven	
Marcia Jenkins	
Debbie Clayden	
Angela Thomas	
Mark Fever	
Martin Parsons	
Shane Palmer	
Nigel Gillett	
Andrew Bonthron	

c.c. Debbie Clayden, Andrew Thomas, Angela Thomas, Andrew Bonthron, Collin Williams, Jane Tapsell.

ACTION

1. Colleen and Angela had a meeting with Glen who is trying to organise a blade build of approx. 45k. This will enable the team to slot jobs into the daily plan to try and reduce the amount of time spent on changeovers. The plan should be made available for the team today but Angela will follow it up if she hasn't received it. **Angela Colleen**

2. Debbie has now given the group a copy of the new production sheets the team has agreed it is more accurate and it now needs a quality number as soon as the audit is completed. **Debbie**

3. Leadership has now been arranged for Friday 18 April at 1200hrs. The people to attend this training are Shane, Marcia and Colleen. **Debbie**

4. The sensor for the carton feed has know been fitted and will be fitted to the machine today Angela and Nigel will ensure this is completed. **Angela Nigel**

5. The sensor to monitor the rejects has now been fitted and the team agreed that they have less disruption towards the end of each job.

6. The team will continue to monitor the amount of time they stopped for materials which was outside their control. **Team**

7.	The team have started to show a matrix of product verses the quantity produced. this seems to be going quite slow so it was suggested that at least 3 different products should be added to the matrix every week.	**Marcia**
8.	Gareth Armstrong is due to come out on cell today to show Shane, Marcia, Mark and Martin how to set up the Bradman. If he is too busy Angela will contact Gareth for a date when this can happen.	**Angela**
9.	Last week Debbie raised a concern that the female members of the team should get more involved with the setting issues. This week the team reported that they have attempted a lot of setting issues themselves (Friday) and are continuing to 'have a go' at some of the issues.	**Team**
10.	The weight on the carton feed is being continued to used.	**Team**
11.	Last weeks minutes stated that one of the leaders responsibilities is to photocopy all the graphs and charts the team produce and give it to Debbie who will send it to Jane. This is necessary to keep them informed of what progress the team is making. This was not carried out last week so Marcia now has the responsibility of ensuring Debbie receives this information.	**Marcia**
12.	Two efficiency are still being plotted (with and without downtime) and this must continue. Last week the team discussed many people issues and from the information the team provided efficiency still has not improved a great deal. The team made various suggestions which they think may increase there efficiency.	**Team**
a.	Down time is not being recorded accurately by each end of the machine. The team suggested that each end keep a record of the down time and compare it at the end of the shift to ensure it is correct. This was agreed and it should start Today.	**Team**
b.	As not all members of the team have a watch it was suggested that a clock be purchased and placed on the pillar so everyone can record the correct down time.	**Angela Nigel**
c.	It was suggested that the works orders be put into a rack so the team know the next job. The jobs are still recorded on the board but only 5 at a time so their is no chance of miss-understanding.	**Angela**
d.	An observation the team made was that the checked OK. labels take a lot of time and use up an extra person on the end of the line.	**Nigel**

e. The first offs are sometimes not being completed. The team agreed this must change. In order for the team to reduce the changeover downtime the first offs must be completed before the job starts. This is the responsibility of the two indirect people. The first 5 first offs should be be completed within the first hour of running. The team said that it only takes approx. 5 mins to complete one so 25 mins should complete the 5. If this cannot be done then the indirect person must tell the team who will try and organise for them to be done temporally until the indirect can continue with them. **Indirect operators**

f. The team have also observed that there seem to be a bottle neck for waiting for blades that have to be pinned and clipped, graphiting and airofoiling. **Nigel**

13. In order to reduce the danger of when Shane is off there is nobody to cover him the team decided that Martin Bevan was to stop pre-kitting on Monday and spend all week with Shane on training. **Shane Martin**

14. It was then decided that either **Mark, Martin or Marcia** will pre-kit for the time that Martin is training. When there are issues with materials Angela should be informed straight away in order to support the team and keep the machine running.

15. The team also highlighted a problem with other people using the printer and leaving a mess. This could be monitored on who is using it and why. **Team**

16. The team should also stick to listed jobs on the board and if they are wrong they should be changed. **Team**

17. The next meeting is on Thursday 24 April 1997 at 0700.

18. Jane Tapsel will be on site on Friday 25 April to give the team the information on the question sheets that you completed.

N.B. *After the training Colleen, Marcia and Shane attended of Friday afternoon it came to light that the efficiencies are being calculated wrong for the operator efficiency. Debbie spend some time on the training course and explained how to calculate them. This should then be rectified on the production sheet starting from Monday 21 April 1997. The team are approx. 80-99% operator efficient (minus downtime).*

SELF MANAGED BRADMAN TEAM

Date of meeting ~~10 April 1997~~ 23 April '97

Present	*Absent*
Steph Watkins	Lisa Wilks
Colleen Pinney	Shane Palmer
Sue James	
Liz Mutlow	
Martin Beven	
Marcia Jenkins	
~~Debbie Clayden~~	
Angela Thomas	
Mark Fever	
Martin Parsons	

Apologies
Angela Thomas

c.c. Debbie Clayden, Andrew Thomas, Angela Thomas, Andrew Bonthron, Collin Williams, Jane Tapsell, Gareth Armstrong, Glen Harris.

		ACTION
1.	Colleen and Angela had a meeting with Glen he said he would organise a guide for a blade build. This could be organised better if Colleen, Angela and Shane saw Andrew Wilks as Andrew can organise a schedule for the Bradman-Lake	**Angela Shane Colleen**
2.	The Bradman lake production sheet is now completed but is awaiting a Q.A. number.	**Debbie**
3.	The leadership training is now completed	**Debbie**
4.	The sensor on the carton feed is now fitted but there are a few adjustments that need to be made. Debbie spoke to Angela who will look at this if it has not yet been completed.	**Angela**
5.	A problem was raised 2 weeks ago about jobs that run out of materials which was not the fault of the team. It was stated that these were one off instances but these one off instances seem to be increasing.	**Team**
6.	The team agreed last week that at least 3 products should be plotted on a matrix to show how many blades should be produced per product type. It was also agreed that Shane should be the allocated person to alter the speed dial. This must happen this week, if Shane is not available to adjust the dial then Angela must be informed.	**Shane Angela Marcia**

		ACTION
7.	This has been the fourth week that the team has discussed Gareth Armstrong coming on the Bradman-Lake and showing Marcia, Mark, Shane and Martin how to set up the machine. A date as yet still haven't been given to the team. If Gareth is too busy then could he organise somebody else to show the team as they are compiling some points/ concerns they need advice on.	**Gareth Angela**
8.	The female members of the team are continuing to get involved with some of the setting issues.	**Team**
9.	Marcia is responsible for copying all relevant information for Debbie but this hasn't happened this week due to her waiting for the information off Angela. Angela has explained the delay this week but it is important that Debbie is kept up to date	**Marcia Angela**
10a	As the team had no graph paper for one week the team have not been plotting their efficiency until yesterday.	
b.	The team suggested a clock be placed on the pillar but agreed in the week that they would use stopwatch. These have to be ordered but in the meantime the team can use Andrew Bonthron's	**Team**
c.	The team suggested that the works orders be put in a rack but this hasn't yet been ordered as Angela isn't sure whether a rack is what the team want. Angela needs to obtain clarification from the team for this issue to be resolved.	**Angela**
d.	A point was made last week that OK labels take a long time to put onto certain jobs. The team has had no feedback from Nigel if there is anything he can do.	**Nigel Angela**
e.	It was agreed last week that the 1st offs take approx. 5 mins and the first 5 should be completed within the first hour of running in the morning. It was given the responsibility of Shane/Martin or the indirect person to do this task. This must be completed regularly by these indirect people. If the indirect cannot complete the 1st off then they MUST inform the team. before the job starts .	**Shane Angela**
f.	The team made an observation at last weeks meeting that there is a bottle neck on pinning, clipping etc.. Although 2 extra people have been put on this jobs there are certain jobs that these extra people still hasn't alieviated the problem.	**Angela Nigel**
11.	Last weeks meeting the team, Angela and Nigel agreed that from Monday 21 April Martin Bevan would spend the week with Shane in order to learn how to deal with the setting issues. Unfortunately this training hasn't started yet as Martin Bevan has to show Martin how to pre-kit and linefeed before he is able to train with Shane.	**Angela Martin**

		ACORN
12.	A concern raised last week was that other people are using the printer and leaving a mess and there are occasions when the Bradman team need to use the printer and they cannot because other people are on it. Steph will monitor this and write down who is using it and when and this list must then be submitted Debbie weekly.	**Steph**
13.	The team are still unsure of the method of calculating the efficiencies minus the scrap so if Angela can arrange cover Debbie can go through this with each of the team. It should only take 10 mins each.	**Debbie Angela**
14.	A concern arose last week that Shane should go to break with the team. This started to take place but has stopped. Shane should go with the team for break but if something needs adjusting or changeovers then Shane should go later. Whatever the case the whole team should know why Shane is going to a later break and what he is doing while they are at break. At present this do not seem to be the case.	**Shane Angela**
15.	The team raised a concern that they had a lot of problems with the tape machine. Gareth Armstrong contacted the supplier who talked Shane through adjusting/cleaning these cutters.	**Team**
16.	The next meeting is on Thursday 1 May 1997 at 0700.	

DEVELOPMENT PLAN FOR THE SELF MANAGED TEAMS

Technical Skills	Team working Techniques	Problem Solving Techniques
Clipping Tool - Date Stamp	Training Techniques e.g. Training Matrix	Brainstorming
Centre Location Change on Harness	Leadership Skills	Monitoring Efficiency with and without Downtime
Slide-on Change of Length	Facilitation Skills	Monitoring Scrap Costs
Slide-on Change of Track	Meeting Skills	Planning Works Orders and Arrears
Harness Change of Length	Team Development Skills	
Harness Change Details	Organising/Planning Skills	
Fault Finding and Adjustments	Decision Making Skills	
Guards and Safety		
(10L First Harness)		
(10L One Hit Wonder)		

APPENDIX 6

OPTEL CORPORATION MANUFACTURING SURVEY COMPARISON – RAW DATA (1995 – 1998)

ESAT QUESTION	PERCENT FAVOURABLE – 1995	PERCENT FAVOURABLE - 1996	PERCENT FAVOURABLE – 1997	PERCENT FAVOURABLE – 1998
1. I like the kind of work I do.	75	65	72	70
2. My work gives me a feeling of personal accomplishment.	62	53		
3. I am satisfied with the fairness and respect I receive on the job.	50	41		
4. I am satisfied with the training I receive for my present job.	53	41	55	
5. I am satisfied with the recognition I receive for doing a good job.	32	25	25	
6. I am satisfied with my involvement in decisions that affect my work	45	35	39	
7. My immediate Supervisor/manager helps me to be an effective employee.	35	33		
8. Optel Corporation has a sincere interest in the satisfaction and well-being of its employees.	54	37	51	
9. I would recommend Optel Corporation as a good place to work.	74	59	72	80
10. Conditions at Optel Corporation allow me to be about as productive as I can be.	55	47	50	52
11. At the present time, I am (not) seriously considering leaving Optel Corporation.	78	64	85	71
12. From what I hear, our pay is as good as or better that the pay in other companies.	59	44		
13. Overall, our customers are satisfied doing business with Optel Corporation.	55	57		
14. I would recommend Optel Corporation as a supplier of telecommunications products and services.	77	72		
15. Our processes are improving to ensure our customers' needs are met.	77	68		
16.I believe actions have been put in place to address some of the issues raised by employees in the last survey.	45	33	54	
17. Considering everything, I am satisfied with Optel Corporation at the present time.	66	50	56	73
18. Overall, I am satisfied with my job.	71	55	61	

EXTENDED SURVEY RAW DATA – (1997/1998)

QUESTION	% FAVOURABLE 1997	% FAVOURABLE 1998
1. I have enough information to do my job well	**(PC) – 69**	**(EQ) –71**
2. I feel encouraged to come up with new and better ways of doing things	**(EMP) –45**	**(MO) –51**
3. I can clearly explain to others the long term business strategy of Optel Corporation	**(SL) – 27**	**(CO) – 28**
4. I have the authority to make decisions that improve the quality of my work	**(EMP) – 35**	**(EQ) - 47**
5. I feel valued as an employee of Optel Corporation	**(VP) – 45**	**(MIS) –47**
6. Processes and procedures allow me to effectively meet customer needs	**(PC) – 46**	**(EQ) - 49**
7. I feel free to take informed risks in getting my work done	**(EMP) – 39**	**(MO) – 47**
8. The people in my work group speak openly and honestly even when opinions differ	**COL) – 68**	**(MO) – 70**
9. My team gets the co-operation it needs from other work groups to achieve our business objectives	**(COL) – 46**	**(EQ) -48**
10. I receive on-going feedback that helps me to improve my performance	**(PRM) – 35**	**(EQ) -42**