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NEW FORMS OF WORK ORGANISATION IN THE CLOTHING AND TEXTILES INDUSTRY:

A Comparative Evaluation of Team Based Production Systems

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Master of Philosophy

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ABSTRACT

This thesis sets out to provide a thorough evaluation of the adoption of team based production in the UK textiles and clothing industry. This is achieved through analysis of an extensive databank of industry case studies which has been complied over a four year period as part of a research programme for the Centre for Work and Technology.

Empirical data is also drawn from other countries, particularly in the European Union and other industries, in order to locate the textiles and clothing industry in terms of its development and achievements in the area of work organisation.

Sociotechnical analysis is utilised as a framework for much of the discussion and itself is assessed as a tool for analysis.

The research findings as a whole are intended to provide a systematic review of the 'state of the industry' in the 1990s, particularly in relation to the emergence of new forms of work organisation. Conclusions indicate that whilst teamworking is being widely adopted across the textiles and clothing industry, applications still remain limited, as insufficient attention has been paid to the development of shopfloor employees. Whilst some teams are working 'semi-autonomously', there is still considerable scope for greater involvement, especially in relation to decisions over work methods. The implication of this is the need for development and training at management level for a wider understanding of the potential of teamworking. Greater access to information on alternative methods is thus needed.

CONTENTS

CHAPTER THREE

SYSTEM DESIGN AND STRATEGIC CHOICE

CHAPTER FOUR

THE QUALITY OF WORKING LIFE: NEW STRUCTURES AND NEW CULTURES

CHAPTER FIVE

EVALUATION AND CONCLUSIONS

LIST OF TABLES

LIST OF FIGURES

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CHAPTER ONE

INTRODUCTION, FRAMEWORK AND OVERVIEW

1. INTRODUCTION

1.1 AIMS OF THE STUDY

The clothing and textiles industry in the UK is currently undergoing considerable change in order to become more competitive in the global market. Change has been manifest in the form of new types of work organisation, and in particular team based production. This has had a considerable effect on the working lives of the personnel within companies and on the technical organisation of workflow. Shopfloor workers have been particularly affected by the previously unheard of demand for them to make decisions for themselves and perform a new range of tasks. Workplace design has also changed significantly due to the need for work to be organised in a more flexible way allowing for frequent change-over between styles and rapid throughput of products.

When research for this thesis commenced, little information was available regarding the manner and extent to which clothing and textile firms had adopted team based production systems. It was clear that such changes were being made in the industry, but no systematic study had taken place into the way in which these organisations were adopting such new forms of work organisation and the extent to which the changes were being made. This study primarily sets out to address this gap in knowledge through a detailed assessment of a large number of organisations who have adopted team based production techniques. As the changes have such a significant effect on both the social aspects of work and the technical elements of production, it assesses the current status of teamworking in the clothing and textiles industry within the broad framework of sociotechnical analysis. This is primarily accomplished through an evaluation of how quality of working life issues and technology can be interwoven to achieve a degree of 'fit', according to the culture of the organisation and its external environment, and also serves to re-assess the relevance of sociotechnical theory in the 1990s.

This is achieved firstly by tracking the pattern of change in work organisation and the economic environment in which UK industry is functioning. Chapter 2 assesses the move from Fordist

practices at the beginning of this century towards more flexible modes of production, variously characterised as 'Post-Fordism' and 'Flexible Specialisation'. The economic and policy implications for work organisation as a whole are thus addressed.

Secondly, an evaluation is made in Chapter 3 of the decision making process undergone when introducing an organisational change such as teamworking. In doing so conclusions will be drawn as to whether choices which are made are strategic or more incremental in their form. This will lead to an evaluation of the 'technical' components of teamworking, and in particular workplace design.

In the fourth Chapter, the focus of the discussion is on the quality of working life, both in terms of the new structures and the new cultures inherent in the changes in work organisation. Sociotechnical theory offers a relevant framework for analysis of team based production systems as it makes an assessment of the two primary elements effected by the introduction of teamworking as mentioned above. Through an evaluation of the 'social' and 'technical' elements of such a system, sociotechnical theory itself will be assessed as an analytical framework.

In drawing together conclusions of the main arguments in the thesis, the final Chapter will examine the approaches which have been adopted in the UK clothing and textiles industry. Discussion will include the manifestations of Scandinavian and Japanese approaches in particular, which have become apparent in the UK and resulted in the formation of a 'hybrid' form of teamworking. In summary, analysis of data will allow the following questions to be answered:

- How does the pattern or organisational restructuring fit into the pattern of the economic environment?
- Do managers of UK clothing and textiles firms adopt a strategic approach to implementing change, and if not why not?
- What are the effects of adopting Japanese techniques in a UK context and how does this compare with Scandinavian techniques?

- How can the social and technical elements of work organisation be balanced to achieve maximum benefit?
- Is sociotechnical analysis an effective tool for evaluating team based production systems?

2. THE NEED FOR STRATEGIC CHANGE

The past two decades have witnessed profound changes in the economic environment in which the clothing industry is functioning. First, increased international competition has forced companies to re-think their competitive advantages and secondly, a restructuring of the product market from that of a mass market of standardised goods to a more segmented market has placed growing pressure on organisations to offer a much more flexible service to their customers.

UK manufacturing in general "has increasingly needed to respond to the pressure of increasing quality and productivity levels from overseas, particularly from the Japanese [Kirosingh, 1989]. Manufacturing industry in the UK, with its traditionalist functional structures, was designed to meet the needs of relatively stable markets and technology ... characterised by a heavy reliance on hierarchical procedures, maximal differentiation of roles and functions, and extensive rigidity of organisational form and manufacturing process, accompanied by the organisation of work into a straight line flow" (Procter and Acroyd, 1996).

Various authors have argued that mass production is giving way to a new basis of production rooted in more flexible new technologies and working methods (see Adler,1985; Beaumont, 1987; Brodner, 1985; Katz,1985; Kern and Schumann,1987,1989; Kochan *et al*,1986; Piore and Sabel,1984; Sabel,1982; Streeck,1987; Tolliday and Zeitlin,1986; Totterdill, 1995) accounted for by the transformation of production techniques from Fordist mass production to Post-Fordism and Flexible Specialisation.

"By the Eighties, the rationale of the mass market had become saturated, offering few fresh opportunities for accumulation. Capital therefore sought to break down mass consumption into a series of specialised market niches from which higher returns could be extracted." (Totterdill, 1996). Flexible Specialisation is Piore and Sable's (1984) explanation of competitive success

under the suggestion that the decline of mass production is due to changing consumer tastes: greater affluence leads to greater consumer discretion and sophistication. This "new configuration is characterised by the increasing segmentation of markets and the consumption of production with a strong emphasis on high value goods" (Totterdill, 1996).

The clothing industry has not escaped the process of change, indeed it has faced additional problems due to the fashion-oriented and seasonal nature of the market, emphasising the importance of restructuring. There is a growing need for co-operation and a closely monitored relationship along the supply chain continuum, which in turn necessitates basic changes at a manufacturing level. Greater co-ordination between retailers and suppliers has arisen due to the increased use of electronic point of sale (EPoS) units in retail outlets which provide immediate feedback data on levels of sales and thus put pressure on all levels of the supply chain. Furthermore consumers are becoming more discerning; more fashion and quality conscious. These factors have culminated in an increasing need for *quick response* from manufacturers.

In order to meet these requirements of greater flexibility, and thus secure a competitive advantage, the clothing industry is now reassessing its traditional methods of production and its working practices, and is adopting more flexible approaches, namely in the form of teamworking. This has, however, proved difficult as the industry has been locked into a mass production culture and a reliance upon economies of scale, reinforced by Tayloristic management techniques. The move away from an autocratic management style to greater versatility through worker involvement and empowerment is difficult, thus making the change process both lengthy and arduous.

For some, Japanese companies have been extremely influential in contemporary manufacturing techniques, particularly the focus on cost reduction through the removal of waste and non-value adding processes. This has filtered into the clothing and textiles industry to some extent, in which Japanese systems such as the Toyota Sewing Systems are sold to organisations as ready-made products, with the aim of achieving rapid throughput and reducing the cost of work-in-progress to a minimum. It can be argued that the adoption of such systems results in the retention of Tayloristic principles, allowing little operator discretion and maintaining the very

formalised production techniques advocated by Taylor (the principles of Taylorism are described in Chapter 2 of the thesis) from which the industry needs to escape. As will be seen in Chapter 3 of the thesis, many organisations adopt such systems because they are unaware of any other alternatives. In an attempt to reduce costs and become more profitable, issues which are indirectly, and not so obviously, causing high costs, such as high labour turn-over and absenteeism, are not addressed.

Deldrige and Lowe (1996) demonstrate that whilst *some* Japanese plants achieve high productivity and quality, the transferability of Japanese techniques to Europe is questionable. "Our interpretation of these results is that the *influence* of the Japanese model may far outweigh its actual ability to deliver high manufacturing performance and "good work" for employees in countries which have very different institutional and cultural contexts" (ibid). Mass customisation represents a new competitive advantage to Japan "in a world of increasingly saturated markets and sluggish growth in demand for many manufactured products" according to Westbrook and Williamson (1993). However, although mass customisation has market appeal, it "can easily become a manufacturing and logistics nightmare. It is a strategy which critically depends on a high degree of manufacturing competence" (ibid).

The principles of Lean Production form a general frame of reference for Japanese style production methods and are summarised by Roth (1992) as teamworking, kaizen, zero-defect principle, just-in-time, customer orientation, efficiency of research and development, enterprise culture and integration of suppliers. In looking at approaches specifically associated with team based production, Kaizen and Total Quality Control are introduced in section 6 of this Chapter. The suggestion that teamworking is a form of 'lean production' is further discussed in Chapter 2.

The European school of thought which is emerging indicates that whilst Japanese models of increasing productivity may be relevant to Japan, European industry can gain competitive advantage from *innovation* in products and marketing for example. UK clothing and textile firms are able to improve their competitiveness through close proximity to the market and thus responsiveness to changes in market trends, addressing both the problems of seasonality and fashion content peculiar to the industry. One of the issues of major concern is the need for

greater awareness of alternative methods. In assessing alternative approaches, sociotechnical analysis is utilised as a theoretical framework. Unlike early explanatory theories, it is an 'open systems theory' which claims to take into account external influences on organisational change, rather than just looking at internal mechanisms, thus making it particularly relevant. It is also widely debated across Europe and is part of a mainstream movement stemming from early studies in the UK. It is therefore relevant to reassess its status in the context of UK industry.

3. THEORETICAL FRAMEWORK

3.1 INTRODUCTION TO SOCIOTECHNICAL THEORY

The concept of sociotechical theory was developed during the postwar reconstruction of industry (1949) in relation to which the Tavistock Institute had two action research projects. The first was concerned with group relations at all levels of one particular organisation. The other focused on the diffusion of innovative work practices which increased productivity without major capital expenditure. It was this second project which ultimately included both technical and social systems in its evaluation, leading to the need for a *new field of inquiry*. One of the Institute's postgraduate fellows, Ken Bamforth revisited the coal mine (Haighmoor, in South Yorkshire) in which he once worked, to find innovative work practices in place. The new form of work organisation consisted of

> *"a set of relatively autonomous groups interchanging roles and shifts and regulating their affairs with a minimum of supervision. Co-operation between task groups was everywhere in evidence; personal commitment was obvious, absenteeism low, accidents infrequent, productivity high. The contrast was large between the atmosphere and arrangements on these faces and those in the conventional areas of the pit, where the negative features characteristic of the industry were glaringly apparent. The men told us that in order to adapt with best advantage to the technical conditions in the new seam [short wall as opposed to longwall], they had evolved a form of work organisation based on practices common in unmechanised days when small groups, who took responsibility for the entire cycle, had worked autonomously." (Trist, 1981)*

The findings of this research programme closely match the development process of the manufacturing in the clothing and textiles industry, in which cottage based industry developed towards mass production, only to begin returning to production based on smaller group structures in which members had greater autonomy. The findings of this study seem to be

wholly appropriate to the analysis of modern day work organisation. The question lies in the *application* of the findings of the Tavistock Institute. This is explored further in Chapter 4.

Trist further explained how it had once been common for workers to make their own contracts with management and to work their own part of the face, thus enjoying "*responsible autonomy*" (ibid). Again, patterns of work organisation in the clothing industry closely reflect this, as some organisations are already assessing the possibility of creating business units within their factories and foresee that ultimately the teams of workers may well be responsible for their own contracts. This is already in evidence in some organisations (refer to case study companies D and FI for examples).

Sociotechnical theory relies on two essential premises. Firstly, organisations operate under a system which jointly includes social and a technical elements, in which performance is a function of the fit between these two systems. Secondly, every sociotechnical system is embedded in an environment that is influenced by culture, values and sets of generally accepted practices. Thus "in order to understand a work system, one must understand the environmental forces that are operating on it."(Van de Ven, 1981). Chapter 2 discusses in some detail the environmental factors leading to changes in work organisation for the clothing and textiles industry.

Trist indicates that socio-technical analysis is made at three levels: 'the primary work system', 'the whole organisation', and 'macrosocial phenomena'. The 'primary work system' involves an analysis of the principles of work design and method of work analysis. Organisational design can build upon the structural basis formed by 'primary work systems'; such as the development of self-regulating, semi-autonomous work groups. At the level of 'the whole organisation', analysis relates to the organisation in the context of a changing environment. The 'macrosocial phenomena' relates to environmental forces on single organisations, in which sociotechnical projects on an *industry-wide* basis are suggested to improve organisations' chances of survival in a turbulent environment (Trist, 1981).

Chapters 3 and 4 evaluate work organisation at the level of 'primary work systems', firstly through examination of the 'technical' elements and secondly the 'social' elements. These are

brought together in analysis of the whole organisation within the conclusions of Chapter 5, together with a critique of the effectiveness of sociotechnical theory as a tool for analysis.

In the development of sociotechnical theory, the concept of strategic choice in the decision making process became of core importance. The following thus serves as an introduction to relevance of strategic choice to this thesis.

3.1.1 Strategic Choice

The decision making process in the implementation of change constitutes an important element in the evaluation of work organisation. "The notion that organisation structure and behaviour are imbued with logic and rationality has been so pervasive that it has historically led most theorists to either (1) presume that choice behaviour must also be rational ... or (2) to relegate individual choice to a separate world of indeterminate practices" (Van de Ven and Astley, 1981).

Sociotechnical researchers refuted the idea that there was only one way to design work organisations. By combining desirable social and psychological properties of manufacture with superior technological capabilities, discretion in the design of a composite method that was tailored to the enhancement of the quality of working life as well as to the technical demands of machinery became available. The sociotechnical concept thus drew attention to the possibility of incorporating *real* choices into the formal design of the work system itself. This contrasts strongly with the deterministic way in which Tayloristic practices are imposed on manufacturing processes, in which decisions about the process are already made.

Further research subsequently took place into the decision making process during a period of change and was emphasised by the development of the concept of strategic choice by John Child in 1972. "Child criticised structural contingency theory for its deterministic explanation of organisational design as the product of technical demands presented by the environment, technology and size. He argued that decision making about organisational structure is not simply a matter of accommodating to operational exigency; it is equally a strategic event that includes reference to the value positions of the actors involved and the political processes in which they engage" (ibid)

Child explains that large proportions in variance in organisational structure are not attributable to 'contingent' factors, but that much is determined by the preferences of the decision maker themselves - the *dominant coalition*. This argument received support from Mead, 1956, Berger and Luckmann, 1966 and Weick, 1979 who ascribe little merit to technical necessity and suggest that organisational life is largely the product of choice and the way in which individuals construct their social realities. "Here, organisational change is not externally induced, as system structuralists argue. It arises from within, through human interactions that modify, change and transform social meanings, and therefore the structure of organisations. Organisational roles and structure provide a framework for action, but these are constantly susceptible to modification as people succeed in imposing their own definitions of reality upon the situation" (Salaman, 1980). Empirical findings indicate that decisions made by managers are incremental, based on their own value judgements and successes or failures frequently depend on the individual responsible for implementing the changes. For example, those who are unwilling to let go of responsibility and empower shopfloor workers to make decisions for themselves are very limited in the flexibility they might enjoy from the introduction of teamworking. Strategic choice is useful in defining the key variables used to analyse the technological changes of work organisation which are discussed in Chapter 3.

4. METHODOLOGY

The principle method of empirical data collection has been through the development of a data bank of case study evidence. However, in addition to this, empirical data has been accumulated through information collected from two company networks; the Teamwork Users' Group (appendix 2) and the Scottish Teamwork Users' Group (appendix 3), as well as detailed material from the monitoring and evaluation of implementations undertaken by Work and Technology (appendix 4). In addition to these, experience gained in other research projects in the clothing and textiles industry (appendix 5) has assisted in forming a wider knowledge and understanding of the industry. This *combination* of methods improves validity and assists in supporting findings quoted in the thesis.

Data from the case studies provides a broad 'snap-shot' picture of practices in both the UK clothing and textiles industry and other industries and countries for the purposes of comparison. Information from the two 'Teamwork Users' Groups' serves to verify much of this information,

looking in detail at very specific issues, such as payment systems. Finally, monitoring and evaluation data which considers the *process* of implementation over a longer period of time supports the case study data. Broadly speaking, empirical data is thus approached from three directions:

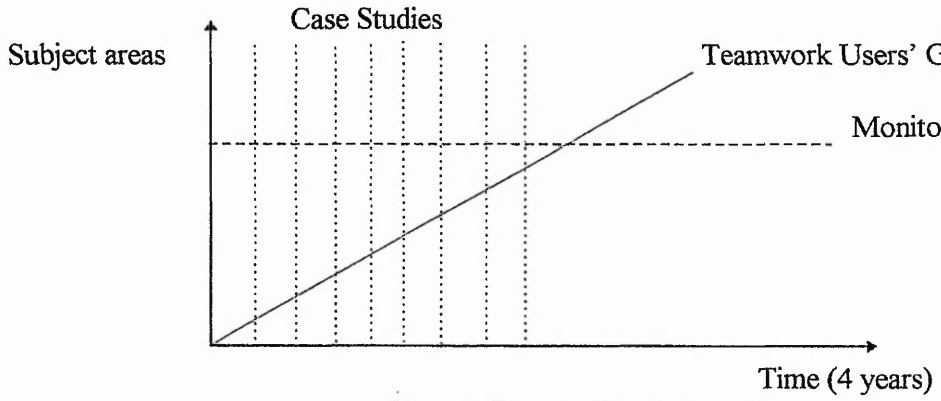


Figure 1. Sources of Empirical Data

Attendance at conferences and involvement in Work and Technology and European projects has also provided a valuable source of support data for this thesis and has informed many of the discussions which take place.

The case studies are used to analyse the comparative systems adopted by firms, indicating the key influences on the decisions made by management. Case study information is backed up by data from the two Teamwork Users' Groups and the Monitoring and evaluation process.

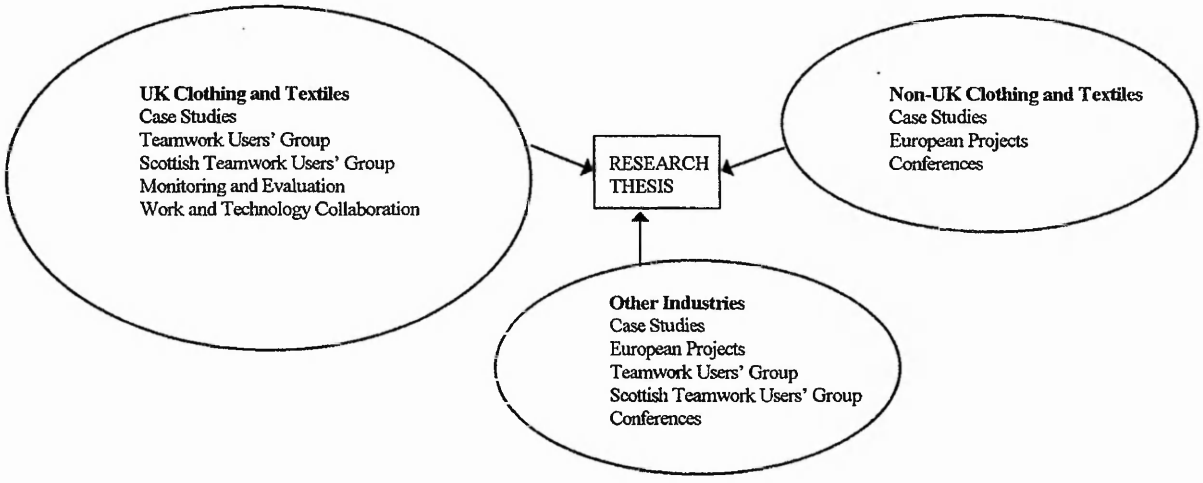


Figure 2. Data sources used for the different categories of organisation.

The core focus of the study is the UK clothing and textiles industry. In order to identify the relevant issues and to assist in the location of this particular industrial sector in the broader picture, it was necessary to seek information on the practices outside the UK and in other industries (see figure 2).

The advantages of using a variety of sources are highlighted by Yin (1994). "A major strength of case study data collection is the opportunity to use many different sources of evidence. The multiple sources of evidence allow the investigator to address a broader range of historical, attitudinal and behavioural issues. However, the most important advantage presented by using multiple sources of evidence is the development of converging lines of enquiry, a process of triangulation". Thus, any finding or conclusion in a case study is likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode.

Patton (1987) discussed four types of triangulation: data sources, evaluators, perspectives and methods. For the purposes of this thesis, the triangulation of *data sources* is utilised.

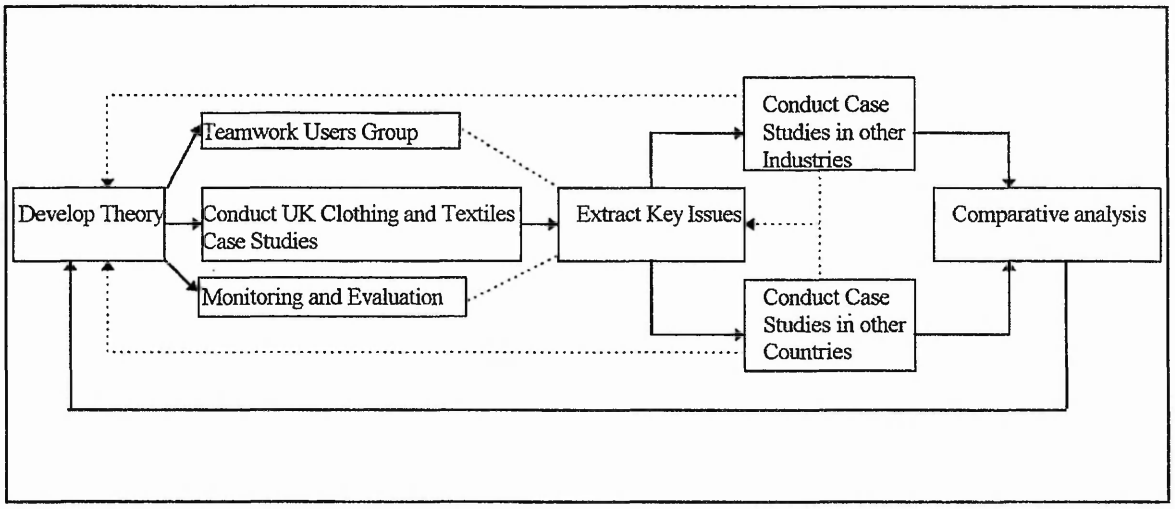


Figure 3. A Replication Approach

4.1 THE CASE STUDY APPROACH

Case study methodology has a long history of intermittent use in organisational psychology, though it has been more widely used within sociology, industrial relations and organisational

behaviour and has been significant in understanding formal and informal processes in organisations (Hartley, 1994). As Yin suggests, it is an effective means of "appreciating the complexity of organisational phenomena". In considering alternative methods of research, mainly experiments, surveys, histories and analysis of archival information, case studies were the favoured method. "In general, case studies are the preferred strategy when 'how' or 'why' questions are being posed, when the investigator has little control over events, and when focus is on a contemporary phenomenon within some real life context" (Yin, 1994). The utilisation of case studies assists in the expansion and generalisation of theory through the illumination of a set of decisions (or strategic choices), why they were taken, how they were implemented, and with what result (Schramm, 1971). For the purpose of researching changes in work organisation and analysing the decision making process it is therefore the most appropriate method.

The case study approach provides information regarding how and why changes are being made, in order to asses the comparative systems adopted by firms. Through interviews with personnel at all levels of the business it is further possible to assess the effects of change from a variety of viewpoints. The case studies provide thorough investigation into current practices, from which key research areas can be identified for further analysis. Hartley (1994) suggests that:

> *"Case studies are tailor-made for exploiting new processes or behaviours or ones which are little understood. In this sense, case studies have an important function in generating hypotheses and building theory... [they are also] useful in capturing the emergent and immanent properties of life in organisations" (Hartley, 1994)*

As Hartley (1994) points out, "the strength of case studies lies especially in their capacity to explore social processes as they unfold in organisations. By using multiple and often qualitative methods including observation, the researcher can learn much more about process than is possible with other techniques such as surveys. A case study allows for a processual, contextual and generally longitudinal analysis of the various actions and meanings which take place and which are constructed within organisations" (Hartley, 1994). Through discussions with operatives as a group, middle management and senior management, it is possible to gain a clearer picture of where discrepancies lie and opinions conflict. Observation of the teams functioning on the shopfloor assist in the understanding of the techniques used, but also verify information provided during the interview.

Finally, with regard to the concluding Chapter of this thesis, the case study methodology, as highlighted by Hartley, "may be essential in cross-national comparative research, where an intimate understanding of what concepts mean to people, the meanings attached to particular behaviours and how behaviours are linked is essential" (ibid). As it is of particular importance to cross-reference the UK context on an international basis, case study methodology thus seemed particularly appropriate.

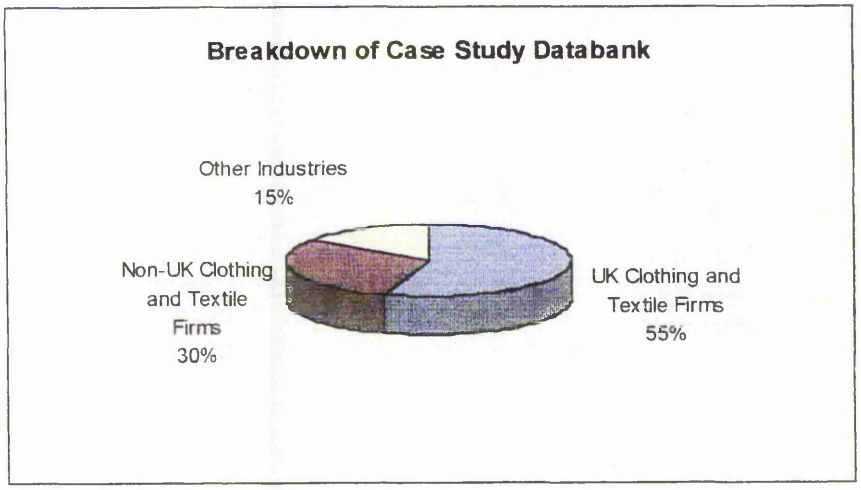


Figure 4. Total number of case studies = 44.

The case study approach utilises a number of methods, including interviews, participant observation, and field studies. In this case interviews with a variety of informants in the organisation were used, ranging from semi-structured to relatively unstructured, following issues as they become pertinent to the research. These are used in addition to questionnaires answered by operators in a selection of the organisations studied. A number of methods have been used which are both qualitative and quantitative, though the emphasis is generally more on the qualitative methods.

The pilot case study was carried out in April 1993, with the assistance of a second party for feedback. The success of the pilot was assessed and the lessons learnt for both research design and field procedures were discussed. From a methodological viewpoint, the corrections made enhanced the accuracy and increased the construct validity of the study. The necessary modifications were made to the interview technique and the questionnaire. A second set of case

studies was subsequently conducted in May/June 1993 and further modifications made to the technique. The original questionnaire was found to be too lengthy and was made considerably more succinct. Photographic data was considered to be a useful source of information for the thesis as it helped to convey important characteristics, particularly relating to workplace design. Wherever possible a second person assisted in interviewing. Interviews were tape recorded and in 14 cases entire teams were interviewed using 'group recall' methodology.

According to Middleton (1991), observational techniques, in depth interviews, attitude scales and task analysis are "typical field methods available for the examination of people's conditions and experience of work". Analytically they all share a common theoretical assumption and through the appropriate classification of people's activities and responses to questions, a view of what the 'real' nature of the working situation is like can be gleaned. However, to an extent, opinions on "how the world may or may not be" are imposed through these techniques. Similarly, when contradictory information is given difficulties occur in classifying what is being represented. Group recall thus aims to avoid both the imposition of "pre-defined interpretative dimensions... [and] incongruous information and perspectives offered by respondents". (ibid) Group recall is used to inform discussions about daily working practices as a means of gaining a full picture of the effects of teamworking on the operators' working lives.

Group recall is "based on the way people jointly construct accounts of their experiences in conversation with one another. Such accounts are not simply representations of the 'facts of the matter', but embody the elaborated significance for people in their engagement in the circumstances of their lives" (ibid). Creating such a forum for discussion allows members of the team to generate their own agenda of topics to define the 'nature' of their work and allows them to elaborate where appropriate. Both agreement and disagreement are important, as is the ability for members of the team to jointly construct accounts that recall significant aspects of their individual and shared working experience.

Middleton suggests that by placing communicative action as part of the analytical procedure, the following benefits are achieved. Firstly, a pre-defined structure is not imposed on the group, thus an "experience narrative" is produced which constitutes the meaning of working practices to them. Secondly, any contradictory elements provide an analytical resource, rather than a

methodological problem as well as being a resource for the team to construct an understanding about their work during their discussion. Finally, the process of talking in a group is constructive for the team itself as it assists them in forming their own vocabulary for articulating their working practices. It is thus suggested that joint recall of working experience should become an integral part of working practices and training.

The method involves discussing a team's working practices and experiences. The focus (but not the structure or content) of their account is guided by a number of broad areas concerning work experience, such as quality, skills and training, relations with management and so on. Group recall methodology encourages a joint production of accounts of working practices, referred to as 'situated talk', which allows the voicing of issues which are deemed to be important to the machinists, thus providing a rich analytical resource for the generation of new or unvoiced significances of work experience.

4.2 DATA FROM THE TEAMWORK USERS' GROUP AND THE SCOTTISH TEAMWORK USERS' GROUP

This is a consortium of a total of 44 different companies who have been members of the two Groups over a period of up to 3½ years. Information from these Groups relates to specific topic areas, such as team selection and payment systems, for which a questionnaire is compiled and subsequently analysed for the meetings of the groups by the author of this thesis. This has provided a secondary source of data, and has also helped ensure that the topics of most relevance to industry are discussed within this document. Further details of the functioning of these Groups can be found in Appendices 2 and 3. Contact with member companies from the two Teamwork Users' Groups allows analysis on different subject areas to be carried out over a period of time. In one instance, regarding the subject of payment systems, analysis of the same subject was approached 3 years later. The co-ordination of these workshops provides a regular opportunity to discuss very specific issues at length with a group of company managers and is thus a unique source of data.

Factory visits for the consortium of companies, also organised by the author, provides an invaluable insight into the way managers of companies interpret ideas, through their line of

questioning during visits and responses to visits. This assists in giving an overall impression of relevant issues.

4.3 DATA FROM MONITORING PROCEDURES

Monitoring and evaluation of organisations in which teamworking has been introduced by the Centre for Work and Technology (see appendix 4) also provides an extremely detailed source of data. The author visited these companies after teamwork implementation to assess the results of the work. This involved the amalgamation and analysis of all information compiled over the implementation period followed by interviews with all personnel involved in the change process. The team members are interviewed as a group and asked to complete a questionnaire devised by the Centre for Work and Technology. The questionnaire provides data on opinions and effects of teamworking. Data from these interviews is particularly useful in assessing the decision making process- analysing influences on decisions and differences between having a given set of choices or having no apparent choice at all.

5. DEFINITIONS AND METHODS OF TEAMWORKING

Approaches to teamworking which have been adopted by UK manufacturers have developed from two basic models forming a variety of hybrids, suiting the specific requirements of the business. The 'hybrids' utilise a combination of Toyota Sewing System (TSS) and 'Kanban' methods, with varying bundle sizes and workplace designs. The two basic models are as follows:

5.1 THE TOYOTA SEWING SYSTEM (TSS)

In the Toyota Sewing System, the sewing stations are grouped sequentially and are generally in a 'U' shaped configuration. Operators walk with the 'product in the making' along the succession of work stations within their 'pitch'. Operators' skills overlap so production can be balanced, and a single garment / product is manufactured at a time, and being 'pulled' though production, as opposed to the traditional method of 'pushing' production. The TSS concept is part of the Japanese philosophy of Just-In-Time manufacturing, described below. The system

requires an overcapacity of machinery to allow for the overlapping skills of the machinists and the flexibility needed to convert from one style to another with minimum disruption.

"TSS in principle is a total management production system, not simply and only a way of organising the sewing room. It was a system developed with the assistance of the Research Institute of Japanese Ministry of Trade and Industry to help reduce manufacturing times from diversified small products, small lots and very short cycles" (Toyota Apparel Equipment, 1993).

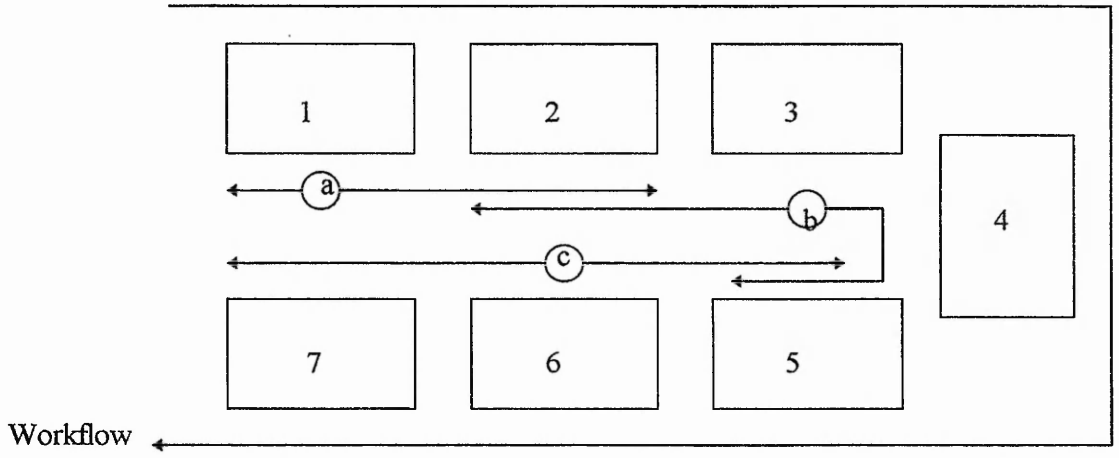


Figure 5. The Toyota Sewing System

5.2 THE KANBAN METHOD

The kanban system was developed in the Japanese automotive industry as a means of controlling stock levels. A colour coding system indicated the urgency of re-stocking of work in progress on the production floor. It has been transferred for use in the clothing and textiles industry to ensures a maximum work in progress level within the team. The 'kanban' is a fixed, predetermined level of work in progress which is allowed as a buffer between work stations. The operator should move to a new operation once their 'kanban' is full. The term is used interchangeably for the number of garments allowed between workstations i.e. "a kanban of 3 garments", with the original meaning of a (colour coded) card giving 'authority to proceed'. The garments move around the team sequentially, but unlike the TSS the operators can move to any workstation in which they are trained, providing the kanban is not full.

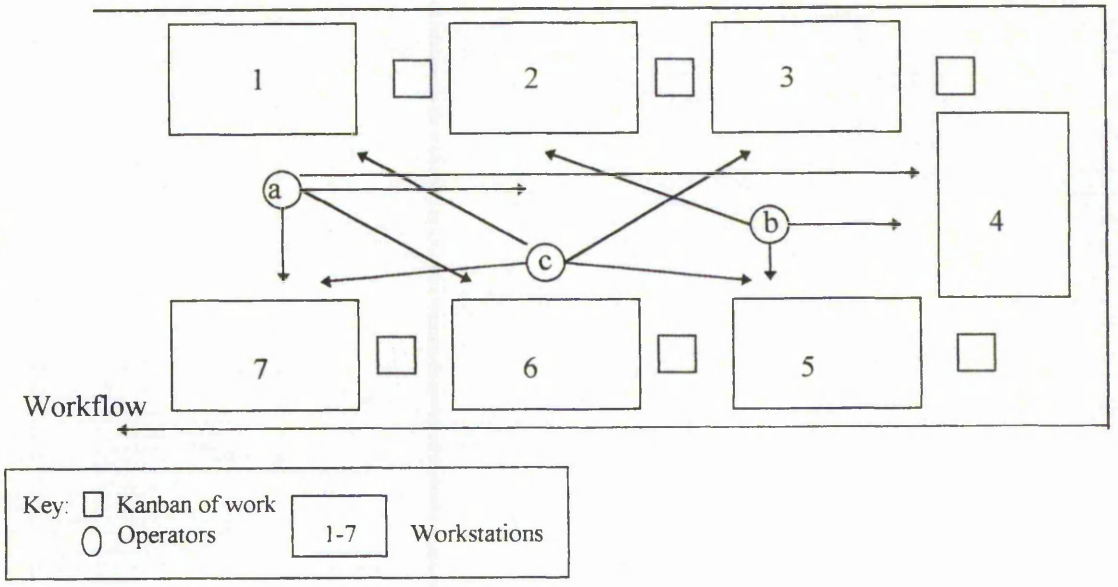


Figure 6. The 'Kanban' System

In most cases researched for the thesis, approaches which have been adopted are built upon these two basic models. The photograph below provides a good example of one such 'hybrid' in which operators are standing (as is common to TSS) and working with small bundles of work, and on un-sequential work stations (as in the 'kanban' method):

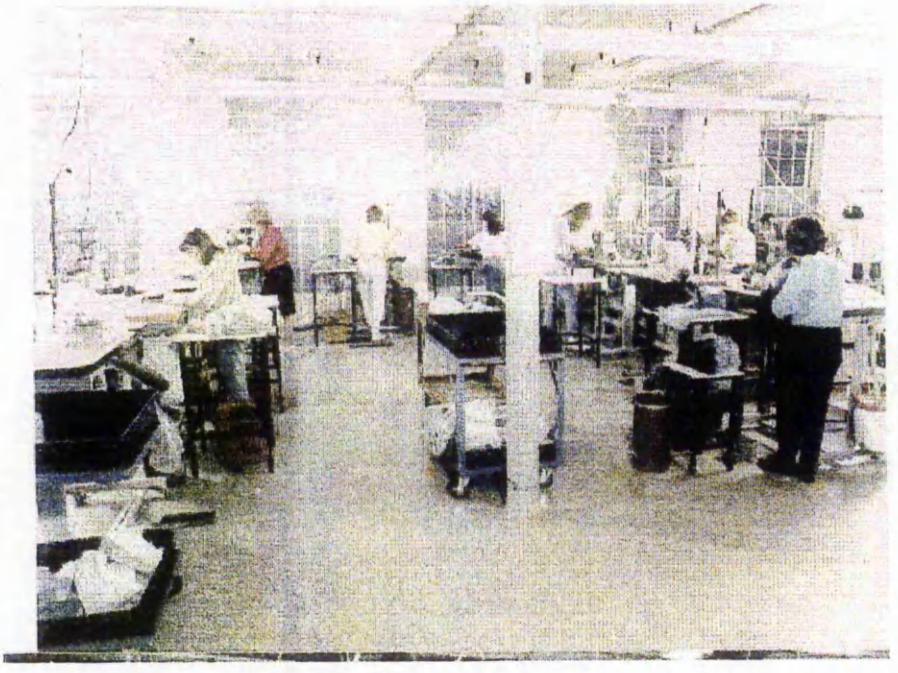


Figure 7. A combination of 'Kanban and TSS'

For both systems, visible boundaries distinguishing teams from conventional production are sometimes used "such items as group productivity, quality and attendance charts, posters, T-shirts, banners and uniform colours of equipment within each module aid in distinguishing modules" (Carrere and Little, 1989).

What differentiates the classes of teamworking is the *degree of control* team members have over their work. In the TSS, operators typically have less control over their work resulting from the rigidities of the system, thus differentiating it from the kanban system. For example, the 'pitch' times are usually decided by work study engineers, with overlapping sequential operations. They therefore have no real discretion over the sequence of tasks or method of manufacture they utilise. With the kanban method, operators are supposed to decide for themselves how they will work and when they will move. However, this is not always the case and operators may have little discretion over task allocation if management style is such that decisions are already made for them, or they are insufficiently multi-skilled to do more than one or two tasks. Cultural factors of the organisation thus have a profound influence on the degree of autonomy team members have over their work.

A suggested means of identifying shopfloor teams, is by assessing whether they meet the following basic criteria:

- Operators are multi-skilled and perform more than one task
- Operators are responsible for their own quality and work towards a common goal
- Operators are able to make their own day-to-day decisions and have the support to do so
- A team manufactures an entire product or an entire sub-component of a product
- Payment is for the group, not individuals
- Work in progress levels are low
- An opportunity is given for open discussion amongst members
- Teams remain as a cohesive unit, so members are not exchanged between teams

Knapp *et al* distinguish between self-managed teams and semi-autonomous teams in relation to the motor industry in Australia: "Self-managed or self-directed teams, semi-autonomous or directed teams, and traditional work groups constitute the most common day-to-day or 'on line'

forms of work teams. Self-managed teams tend to be associated with the Socio-Technical Systems adopted by the Swedish car-makers Volvo and Saab in the 1970s and 1980s, whereas semi-autonomous teams are frequently associated with the Lean Production System developed by Toyota and the Japanese automotive industry" (Knapp et al, 1996). They suggest that the commonalties between all types of teamworking lie in the interdependency between and responsibility for work and the co-operation and support from one another to complete their daily tasks.

According to Wright and Edwards (1996), the label of 'high involvement' work systems is a subject of growing controversy. If a system is given the label of 'teamworking', it should not be automatically assumed that it is therefore 'high involvement'. The term is identified with a distinct set of work practices including: "production organisation through teamworking, self directed groups and job rotation; multi-skilling and functional flexibility; information sharing through team briefing and works councils; incentive payment systems; and flattened job hierarchies" (ibid). The European definition of teamworking encapsulates the need for greater participation from workers and by implication suggests that teams *should* be 'high involvement teams'. These issues are further discussed in Chapters 3 and 4.

5.3 OTHER APPROACHES

Applications of teamworking principles elsewhere in Europe differ in design, with alternative focuses on working methods. In a Danish company (case study EC) for example, a focus on communication lead to operators sitting facing each other in a circle, with more emphasis on the overall management and planning of the system than the precise production techniques. The principles of multi-skilling and autonomy are factors which remain similar between the individual approaches. Japanese approaches on the other hand take a more formalised approach to change, as can be seen in Chapter 2.

5.4 TEAMWORKING IN THE WIDER CONTEXT

The definition of teamworking has often been described in terms of a shopfloor strategy with few implications for the wider organisational culture. "A weakness often reinforced by

machinery manufacturers and consultants who sell 'modules' as off-the-shelf solutions" (Totterdill, 1995). In fact the adoption of team based practices *throughout the business* becomes increasingly necessary as teamworking develops on the shopfloor, and though many organisations begin the change process with shopfloor teams, they soon find that the support systems needed for the successful progression of the teams are often in need of most attention.

Beyond the shopfloor, organisational teamworking can be present in or between departments within the business and at management level. The introduction of 'team briefing' for example is used as a means of discussion and conveyance of relevant information throughout the business. In conducting briefing meetings, strategies are discussed at senior management levels, and the information is communicated to middle management for discussion / implementation at shopfloor level. It can be an effective means of filtering information *downwards* through the system, but may be considered to be undemocratic.

The formation of project teams or cross-functional teams in conjunction with team briefing can be more effective through the involvement of employees at all levels of the organisation. Cross-functional teams have regular meetings to discuss issues concerning the whole business and are able to discuss matters openly and honestly, which previously they did not. This assists in the smooth running of the business, without the opportunity to blame mistakes or problems on other parts of the organisation. Similarly, such organisations may also have project teams, which are formed to solve a particular concern. These would be formed on an ad-hoc basis, depending on the issue in question and the personnel most appropriate to the problem, and then disbanded once the problem was solved. This again aids communication between departments within the business and ensures personnel feel that they are part of the whole business as they are better able to see where their role fits in. It also engenders an atmosphere of trust and co-operation.

The interrelations between shopfloor teams and the organisation as a whole are complex because of the new demands placed on other departments. The more control and autonomy operators have over their work, the more interaction between departments becomes necessary. For example, if targets which have been set are considered to be unattainable, team members will want to discuss the matter with the work study engineer. The collective voice of a team is far more powerful than that of an individual, thus more

notice is taken of the complaints from teams. The pressure this puts on other departments can be considerable, as previously disguised problems begin to surface.

It can be broadly argued that European models tend towards a 'social' focus with greater worker discretion whereas Japanese models tend towards a more 'technical' focus. The degree of self-direction and autonomy which team members have over their work is discussed in some detail in Chapter 4 of the thesis. In summary, teamworking is not just a new shopfloor strategy, it requires an entirely new management style able to create an atmosphere which fosters innovation through workforce commitment and motivation.

6. OVERVIEW OF CURRENT PRACTICES

Before introducing the theoretical context in which this thesis develops, it is relevant to provide a broad overview of some of the key issues raised in the case study programme. Detailed analysis of some of the most pertinent issues are included in subsequent chapters, however it is considered appropriate at this point to include an overview of current practices in order to contextuallise the debate and provide a summary of the 'state of the industry' as far as teamworking in clothing and textiles is concerned. This section thus defines the issues to be discussed, summarises the current practices and begins to discuss some of the implications of these practices as a means of introduction. A table of data can be found on the following two pages.

6.1 OVERVIEW OF EMPIRICAL DATA

The following table provides a summary of the companies cited in this thesis. It groups them into UK clothing and textiles firms (of which there are 24), non-UK clothing and textiles firms (of which there are 11) and firms in other industries or sectors (of which there are 9), totalling 44 companies. A further breakdown is given of their main products and customers, indicated in the graphs below. In addition, the percentage of shopfloor teamworking adopted by the companies at the time of the interview and the number of employees are also detailed in order to give an overall picture of the empirical data.

A	Leisurewear and Men's Underwear	235	10	Y	1986	Major Retail Chain and Party Plan	England	Case Study & W&T visit	N
B	Lingerie	185	8	N	1992	Major Retail Chains	England	Case Study	N
C	Ladieswear	150	100	NA	1993	Major Retail Chains	Scotland	STUG visit	Y
D	Outdoor clothing and accesories	120	100	NA	1990	Multiple Stores and Chains	England	Case Study	Y
E	Outer jackets and trousers	86	12	Y	1996	Retail chains and services	Wales	Monitoring	Y
F	Ladies skirts and childrenswear	113	50	N	1990	Major Retail Chains	Scotland	Case Study	N
G	Lingerie	200	18	Y	1992	Major Retail Chains and Own Shops	England	Case Study and TUG visit	Y
H	Jumpers and childrenswear	145	100	NA	1994	Major Retail Chains	England	Case Study	Y
I	Kitchen Textiles and Boxer shorts	20	20	N	1993	Wholesalers and small independants	England	Visit with W&T	N
J	Knitwear	200	5	N	1994	Subcontractors	Scotland	Monitoring	N
K	Ladies trousers and ski-pants	220	100	NA	1990	Corporate uniforms	England	Case Study	N
L	Curtains and accessories	230	60	Y	1991	Specialised retail outlets	England	Case Study and EWAT case study	Y
M	Ladies uniforms	130	54	N	1987	Corporate wear	Scotland	Case Study	Y
N	Wool / Cashmire spinning	100	16	N	1994	Clthing manufacturers	Scotland	Monitoring	N
O	Ladieswear	80	100	NA	1992	Own retail outlets	Wales	Case Study and TUG visit	Y
P	Bridalwear	100	100	Y	1992	Own retail outlets	Wales	Case Study	N
Q	Leasurewear and men's underwear	450	40	Y	1990	Major Retail Chains	England	Case Study	Y
R	Men's shirts	200	100	NA	1992	Major Retail Chains	Northern Ireland	Case Study	Y
S	Lingerie and ladieswear	30	15	Y	1995	Retail chians and independants	England	Monitoring	Y
T	Ladieswear and Childerenswear	150	100	NA	1993	Major Retail Chains	Scotland	Case Study	N
U	control panties and body suits	160	80	Y	1990	Major Retail Chains	England	Case Study	Y
V	Lingerie	200	50	Y	1993	Major Retail Chains	Scotland	STUG visit	Y
W	Swimwear	200	12	Y	1993	Major Retail Chains and Independants	England	W&T visit	Y
X	Lingerie	100	100	NA	1992	Major Retail Chains	England	Case Study	N
AC	Suits and overcoats	85	100	NA	1990	Multiple stores	Netherlands	MP Case Study	N
BC	Party dresses / evening wear	30	20	N	1989	Clothing manufacturers	Denmark	BW Case Study	N
CC	Jeans	200	30	Y	1991	Major Retail Chains	Belgium	MP Case Study	N
DC	Ladies coats and jackets	30	100	NA	1990	Wholesalers	Denmark	Case Study	N
EC	Outer jackets	30	15	N	1993	Corporate wear	Denmark	Case Study	N
FC	Childrenswear	300	100	NA	1991	Major Retail Chains	USA	Case Study	N
GC	Childrenswear	400	100	NA	1991	Major Retail Chains	USA	Case Study	N
HC	Knitted leisurewear	100	100	NA	1994	Major Retail Chains	Portugal	Case Study	N
IC	Lined skirts	285	2	Y	1991	Small, high quality independants	Germany	Case Study	N
JC	Men's suits	210	100	NA	1993	Wholesalers	Finland	Case Study	N
KC	Babywear	150	20	Y	1992	Major Retail Chains and Independants	Portugal	Case Study	N
AI	Lables	70	100	NA	1994	Large manufaturers of paint, cosmetics	Scotland	STUG visit	N
BI	Machine Tools	191	100	NA	1994	Machine manufacturers	Germany	Case Study	N
CI	Central Heating Boilers	600	100	NA	1992	Builders Merchants and C/h installers	England	Case Study and TUG visit	N
DI	Porcelain	120	66	Y	1993	Specialist retail outlets	Germany	Case Study	N
EI	Cars	4200	100	NA	1993	Car dealerships	England	Public open day	N
FI	Car hoses	350	100	NA	1995	Car assembly plants	France	EWAT Case Study	N
GI	Cars	3000	100	NA	1993	Car dealerships	England	TUG visit	N
HI	Car panels and sub-assemblies	3500	100	NA	1993	Car assembly plants	England	TUG visit	N
AS	[Care for the elderly]	30	100	NA	1994	[The elderly!]	Sweden	EWAT Case Study	N

A	TSS and Kanban	Y	Y	On and off-the job prior to teamworking	Y	Y	Group piecework	None
B	TSS	N	Y	Separate department	Y	Y	Basic + incentive	New members, layout and allocation of tasks
C	TSS	Y	Y	Training school + on-the-job	Y	Y	Group piecework	Quality
D	Hybrid	N	Y	During production	Y	N	Flat rate, no bonus	Calling meetings and covering for absenteeism
E	Hybrid	N	Y	On and off the job	Y	Y	Flat rate	Meetings, layout and division of tasks
F	TSS	Y	Y	Training school + off the job	Y	Y	Flat rate	None
G	Kanban	Y	Y	Training school + cross training	N	N	Group piecework	Covering absenteeism and daily probelm solving
H	Hybrid	N	Y	On-the-job	Y	Y	Flat rate, no bonus	None
I	Kanban	Y	Y	On and off the job	Y	Y	Flat rate	Allocation of tasks
J	Kanban	Y	Y	On and off the job	Y	Y	Flat rate	Allocation of tasks
K	TSS	N	Y	Training school + on-the-job	Y	N	Group piecework	Daily probelm solviiing
L	Hybrid	Y	Y	On-the job	N	N	Performance bands	None
M	TSS	N	Y	On the job with trainer	N	N	Basic + bonus	None
N	Hybrid	N	Y	On and off-the-job	Y	Y	Flat rate	Oil changes
O	Kanban	N	Y	Cross training	N	N	Skills based	Daily problem solving and new members
P	Kanban	N	Y	Basics in training school + cross training	N	N	Basic + bonus	Task allocation and new members
Q	Hybrid	N	Y	On-the-job	N	N	Flat rate, no bonus	Task allocation, problem solving, newmembers
R	Hybrid	Y	Y	Cross training	N	Y	Group piecework	None
S	Hybrid	Y	Y	On and off-the-job	Y	Y	Flat rate	Quality, meetings, task allocation
T	TSS	N	Y	Training school	Y	Y	Group piecework	None
U	TSS	Y	Y	Training school and on-the-job	Y	Y	Skills based	Task allocation, meetings, seclection of new members
V	TSS	Y	Y	Training school and cross-training	Y	N	Group pieecework	Quality, problem solving, meetings
W	Kanban	N	Y	On and off-the-job	Y	Y	Group piecework	Layout, task allocation, meetings
X	Kanban	Y	Y	On-the-job	N	Y	Group piecework	None
AC	Hybrid	N	N	On-the-job after teamworking established	Y	N	Skills based	Comments on timings
BC	Hybrid	Y	Y	Training instructor, on-the-job	N	N	Group piecework	General decisions
CC	Hybrid	Y	Y	Cross training	N	N	Skills based	Administration
DC	Hybrid	N	N	Training school + on-the-job	Y	Y	Group piecework	Over-time, absenteeism cover, holidays
EC	Hybrid	Y	Y	Trainer and off-the-job	Y	Y	Flat rate	Ordering, collection of pieces, administration
FC	Kanban	Y	Y	Training school + on-the-job	Y	Y	Flat rate + bonus	Task allocation
GC	Kanban	N	N	Training school + on-the-job	Y	Y	Hourly rate	Task allocation
HC	TSS	Y	Y	Training school	Y	Y	Group peicework + indiv	None
IC	TSS	N	Y	Internal and external	Y	Flat rate	Flat rate	None
JC	Hybrid	N	N	On and off-the-job	Y	Y	Group pay + individual b	None
KC	TSS	N	Y	On-the-job	Y	Y	Flat rate	None
AI	N /a	Y	N	On the job	Y	Y	Fixed wage	Overtime, ordering goods
BI	N /a	N	N	Cross-training	Y	Y	Fixed wage	Buying new equipment
CI	N /a	N	N	On and off-the-job	Y	Y	Fixed wage + PRP	Buying new equipment, meetings, selection
DI	N /a	Y	N	Trainer on-the-job	Y	N	Individual piecework	Allocation of tasks
EI	N /a	N	N	Trainign school + on-the-job	Y	N	Fixed wage	Meetings
FI	N /a	N	Y	On-the-job	Y	Y	Fixed wage + PRP	Meetings
GI	N /a	N	N	Training school + on-the-job	Y	N	Fixed wage	Meetings
HI	N /a	N	N	Training school + on-the-job	Y	N	Fixed wage	Meetings
AS	N /a	N /a	N /a	On and off-the job	Y	Y	Fixed wage	Meetings and training needs

Main products	Main customers	No of employees	Date of first team	% TW
UK textiles and clothing				
Underwear	Major retail chains (7)	100 - 235	1986-93	8-100 (av. 38)
Ladieswear	Major retail chains (2), Subcontractors (1), Own retail outlets (2)	80-220	1990-94	5-100 (av. 81)
Leisurewear	Major retail chains, (1) smaller retail chains and independents (1)	30-450	1990-95	15-40(av. 28)
Outerwear	Retail chains and independents (1), Independents and services (1)	120-160	1990-96	12-100 (av. 56)
Childrenswear	Major retail chains (3)	113-150	1992-94	50-100 (av.83)
Menswear	Major retail chains (1)	200	1990	100
Other (Household textiles, swimwear)	Wholesalers and small independents (1) Mail order and independents (1) Airline (1) Manufacturers (1)	20 - 230	1987-94	16-60 (av. 37.5)
Non-UK Textiles and clothing				
Ladieswear	Specialist shops (1) High quality independents (1)	30-285	1989-91	2-20 (av.11)
Leisurewear	Major retail chains (2)	100-200	1991-94	30-100 (av.65)
Outerwear	Multiple stores (1) Corporate wear (1) Wholesalers (1)	30-85	1989-93	15-100 (av.72)
Childrenswear	Major retail chains (3)	150-400	1991-1992	20-100 (av. 73)
Menswear	Wholesalers (1)	210	1993	100
Other industries				
Labels	Large manufacturers of paint, cosmetics etc (1)	70	1994	100
Machine tools	Machine manufacturers (1)	191	1994	100
Central heating boilers	Builders merchants and central heating installers (1)	600	1992	100
Porcelain goods	Specialist retail outlets (1)	120	1993	66
Automotive industry	Car dealerships (2) Manufacturing plants (2)	350 - 4200	93-95	100
Service sector				
Healthcare for the elderly	The elderly! (1)	30	94	100

NB. Numbers in brackets (x) denote the number of companies in this category.

Table 2. Overview of Case Study Companies

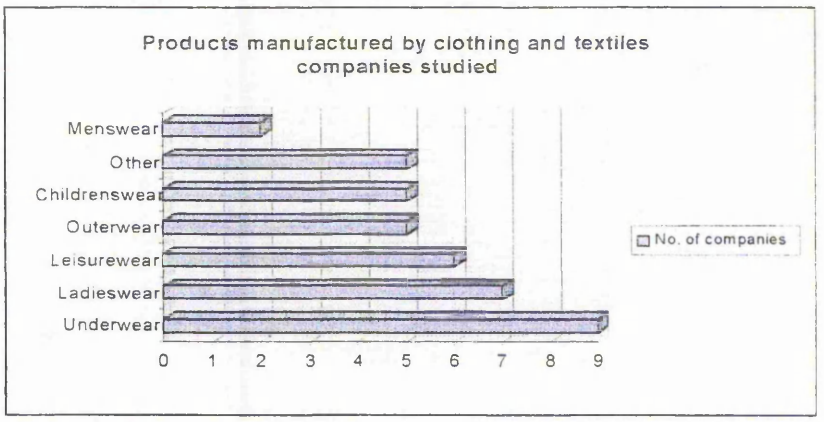


Figure 8 . Total no. of companies = 35 (See appendix 6 for details of categorisation)

As can be seen from the above chart, a broad range of products is covered by the databank, ensuring that a balanced perspective of the approaches utilised by textiles and clothing companies is achieved. This is further supported by the empirical data on companies from other industries, the breakdown of which is given in the pie-chart below:

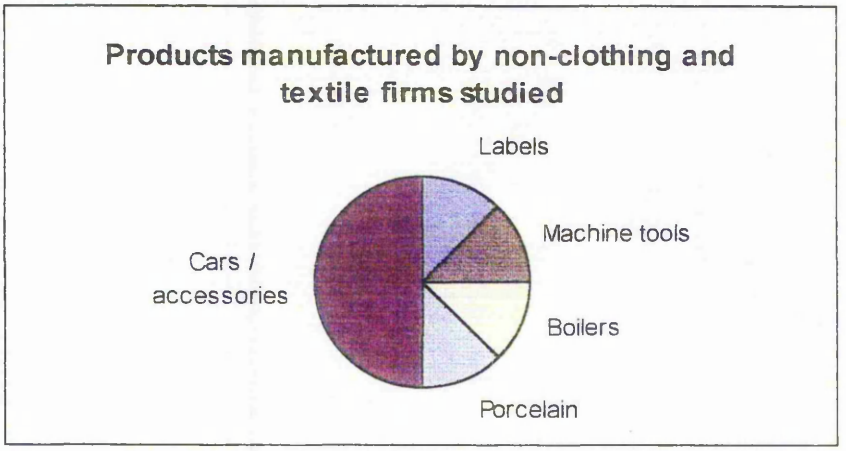


Figure 9. Total number of companies = 8

From the case study databank, it is evident that in the clothing and textiles sector, major retail chains formed a significant proportion of the customer base for the companies studied, with 54% of them supplying such outlets. The second largest customer base was independent retailers, which accounted for 16% of customers. This is indicated in figure 10 below.

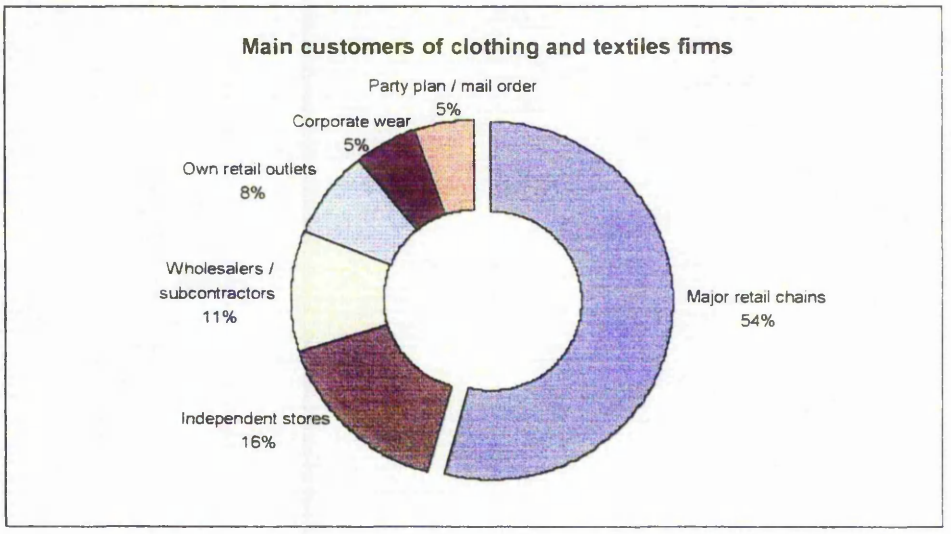


Figure 10.

Over half the companies studied are already operating with the entire shopfloor using team based production and of those who are partially teamworking on the shopfloor, 31% plan to extend it further, based on their success. Of those who are already 100% shopfloor teamworking, some are developing the philosophy throughout the business.

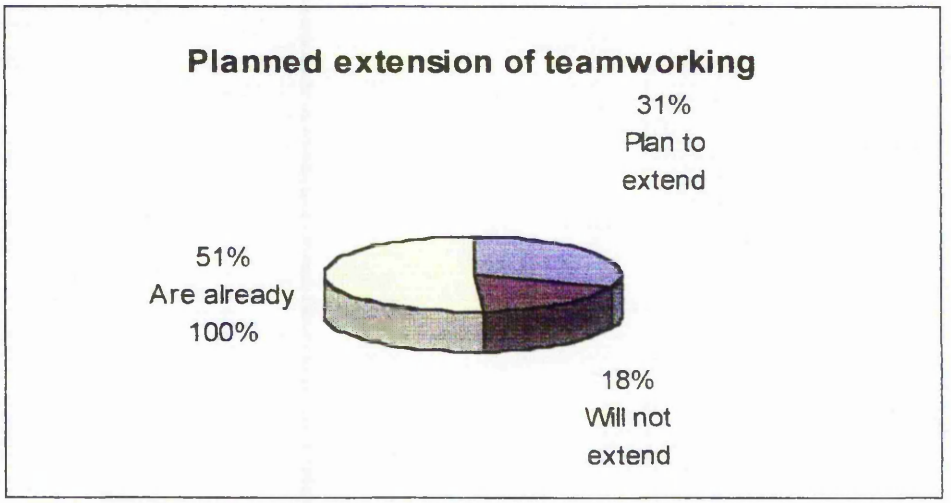


Figure 11.

The majority of companies interviewed for the case studies introduced teamworking in the early 1990s (see figure 12 below).

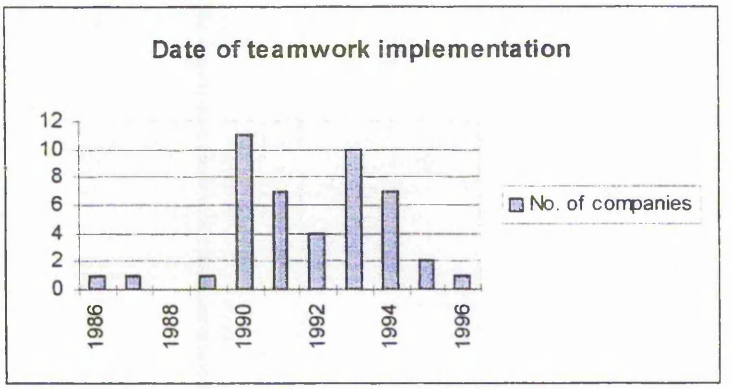


Figure 12. Date of implementation 1986-1996

The companies who began to change in the late 1980s therefore struggled to gain information directly related to clothing and textiles as it was seen to them as being a new concept of production. In the UK, the establishment of a 'Teamwork Users' Group' has proven to be a useful means of learning for participating firms, despite a traditional lack of willingness to share information.

6.2 SOURCES OF INFORMATION

6.2.1 Exhibitions / Seminars

For 5 companies, initial awareness stemmed from the IMB machine fair held in Cologne in 1984 in which the 'Toyota Sewing System' was on display and played a major part in raising awareness of the adoption of team based approaches. However, this and machine fairs in general offered little information relating to the necessary training and cultural changes that would have to be made as the focus was purely on the technology. Apart from being the only alternative to traditional production that many managers had seen before, it was familiar to them. When external consultants offered to implement such a system, the familiarity made it an attractive proposition. Others went back to their companies and tried

it out themselves and made their own modifications to suit the needs of the business. Two companies also attended relevant seminars on the subject.

6.2.2 Own ideas /previous employment

Eleven of the companies interviewed developed the concept of teamworking from their own ideas and experiences in other clothing factories in which they had worked, and 6 had knowledge from other divisions within the same company where teamworking had already been introduced.

In order to develop their knowledge further, 27 of the 35 company managers had since visited other companies in different sectors, and read bulletins and industry magazines to try and grasp more detail of the concept. Interestingly, 6 of the 8 which did not visit other companies were from outside the UK. This can be attributed to the fact that many of the UK companies interviewed for the case studies are members of the Teamwork Users' Groups. Goldratt's book 'The Goal' featured as an important source of information in 4 of the UK companies interviewed.

Those who investigated teamworking a little more deeply generally found there was more to it than changing the shape of the production layout, and for them teamworking was seen as a longer term strategy of change. These broader concepts of teamworking have tended to follow initial shopfloor teamworking where it was realised that the philosophy really ought to be adopted throughout the business, and so companies began to progress in this direction. Problems associated with approaching change in this way are that the support functions for the teams are not in place when they start, resulting in a struggle for success. It is only when the teams start production that loop-holes become glaringly apparent. If they are resolved first, the teams have a better chance of performing well from the start. For example, in Company S, the teams once operational refused to accept badly cut work because they had been trained to highlight quality problems when they arose. In summary, the primary sources of information utilised by company manager can be broken down as follows:

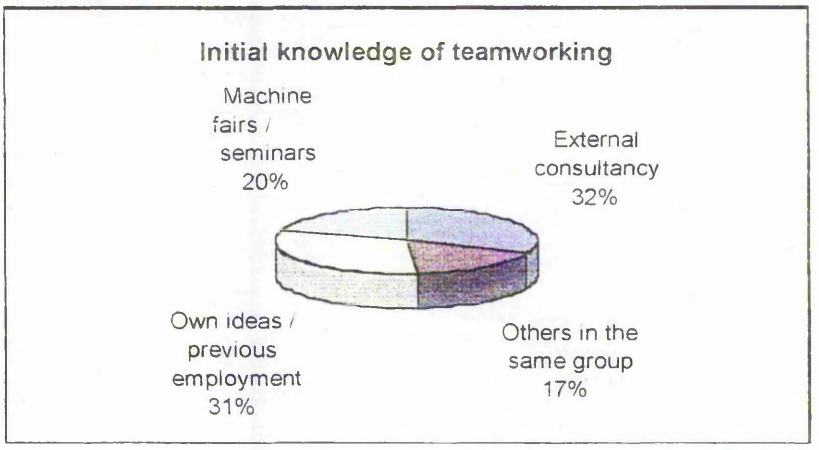


Figure 13. Initial knowledge of teamworking

It became evident in three cases that companies had tried to implement team based production on a previous occasion, but failed. They then retried a number of years later, this time hoping to learn from their mistakes. It was important to identify the reasons for failure in these cases.

In one, the payment system was considered to be the cause of failure, where piecework was taken out and a flat rate introduced, resulting in reduced motivation and slow work. However, by looking deeper into the case study, the 'culture' of the organisation was not necessarily ready to take such a big step. A flat rate was introduced in an atmosphere of mistrust, under authoritarian management. Managers did not trust machinists to work at their usual speed, and the machinists saw no reason to prove them wrong. They have now re-introduced teamworking with an extremely complicated incentive based payment system and are still struggling with motivational problems.

The remaining two examples had the same problem - no project "champion". Having realised the need for one person to take charge and move the process along, whilst providing constant support for the teams, these two companies re-introduced teamworking with a project leader and found the second attempt to be much more successful and rewarding. Other case examples would not consider themselves to have 'failed', but are

currently experiencing problems in maintaining team motivation. With hindsight they would plan more effectively, keep better records during the initial implementation and offer more training.

6.3 WORK PLACE DESIGN

In the sample of 44 companies (which includes industries other than clothing and textiles) 43.2% of teams made the complete product within their own unit. The automotive industry in particular affects these figures as teams work on components of the vehicles, rather than the car in its entirety. This compares with 54% of just clothing and textile firms, with the sample size being 35 companies. In clothing and textile cases where the complete product is not made on the team, the product-in-the-making is either taken off the team to specialised machinery, and then returned to the rest of the production process or taken off for completion elsewhere. In these cases the design of the production process is determined by the cost and availability of the capital equipment. Operations typically excluded from the teams are the application of motifs / embroidery, hanging, studding, bagging and pressing. Clothing and textile cases where operators work in teams, but make sub-assemblies of garments rather than the complete garment were apparent in Denmark, The Netherlands and Finland.

The production teams typically operate on a 'pull through' system in which the first garment passes through the entire team, 'pulling' behind it subsequent products. In the clothing and textiles industry, the teams are predominantly 'U' shaped, where 26 out of 35 (71.4%) companies operated using this design. Twelve operate a TSS, whilst 10 have a kanban system and the remainder have hybrids of the two. Hybrids are typically a combination of the TSS and kanban systems or are developed around existing technology and facilities. External assistance was used with 23 of the 35 examples.

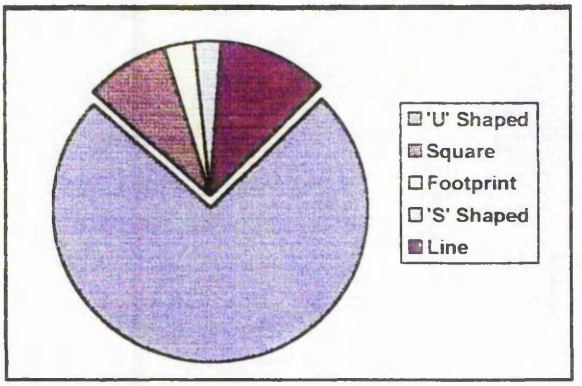


Figure 14. Workplace design of clothing and textile teams. Sample size 35.

In three cases, all of which utilised external consultancy, the companies introduced a siren system to summon help when the teams had problems. Two of these later abandoned them as being stressful and unnecessary. Overhead displays for measuring performance are popular in the clothing and textiles industry as well as other industries. Out of 43 manufacturers, 22 (51.2%) use some form of electronic measurement systems and overhead displays.

6.4 PILOT TEAMS

Pilot teams are recommended to assess the potential benefits of teamworking and identify the implications on the factory as a whole, particularly departments which will need to support the teams. Experimentation also assists in monitoring difficulties encountered during implementation in the hope of avoiding similar mistakes when introducing more teams. Most companies introduced a pilot team for these reasons and then allowed the system to 'sell itself'. Out of 44 companies, 33 introduced pilot teams and 11 changed production all at once. Those which changed production at once varied considerably in size, product and system type, as can be seen from Table 2.

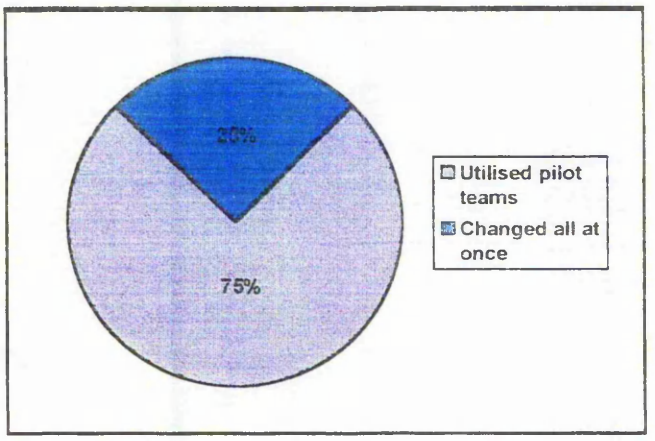


Figure 15. Utilisation of pilot teams. Sample size 44.

6.5 PAYMENT SYSTEMS

In many cases the payment structure for the pilot teams is not well organised or communicated. Management themselves are often unsure what the final payment system will be as they do not want to commit themselves to something they fear may be unsuccessful. Commonly, operators are therefore paid their average whilst teamworking is in the pilot phase, during which time the final payment system is decided. This conflicts with the needs of the operators who, in some cases, feel the stress of not knowing for a reasonably lengthy period of time what their payment will be. Four categories of payment used for teams are: productivity based payment; a fixed rate with bonus; a fixed rate without bonus and skills based payment. These are also detailed in the third chapter.

Operatives have been used to working on an individual piece rate basis for a long time, and when customers were demanding long runs of the same product the system worked well. They were able to build up their performance levels on a particular product line and obtain financial reward for doing so. However with the increasing demand for short runs, operators have been forced to change styles more frequently, and are therefore likely to lose out financially with the continuation of piecework. For the majority of members of the Teamwork Users' Group, payment before teamworking was indeed on a piecework basis, with only 3% paying a flat rate.

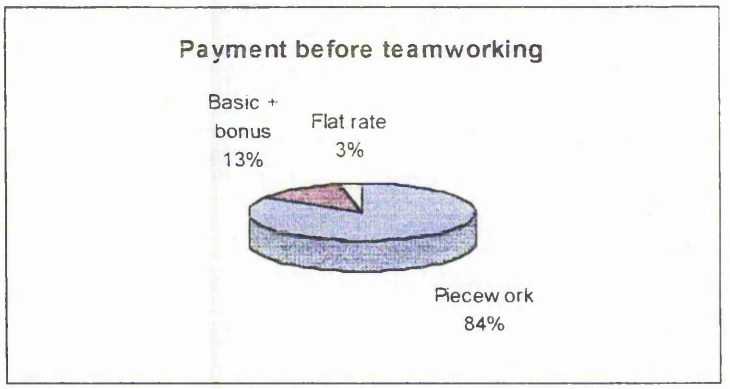


Figure 16. Source: Teamwork Users' Groups I and II and Scottish Teamwork Users' Group. Sample size = 30.

The use of piecework in a team detracts from the whole ethos of teamworking, as individual targets become of prime importance, and quality and team cohesion receive little attention. The benefits of a move away from piecework are easily recognised, but there is an in-built fear of change. Because of this fear, managers sometimes try to incorporate piecework into the payment systems chosen. However, though the motivation factor has previously been inextricably linked to the payment methods, discussions and experiences have highlighted that job satisfaction is also important to operatives.

Data from case studies and Teamwork Users' Group questionnaires helps to identify the types of payment systems adopted by companies. From a sample totalling 64 companies, analysis identified four main categories of payment system: *i) Fixed rate, with bonus, ii) Productivity based payment, with bonus iii) Skills based payment iv) Fixed rate, with no bonus.* These are detailed in Chapter 3.

From 64 company responses, 14% of managers chose a fixed rate with bonus as their payment system, 38% had productivity based pay, 11% skills based and 37% a flat rate. Of the 37% with a flat rate and no bonus, 30% accounts for companies from other industries. The following

diagram indicates the proportion of companies adopting the four categories of payment mentioned above, these are detailed in Chapter 3:

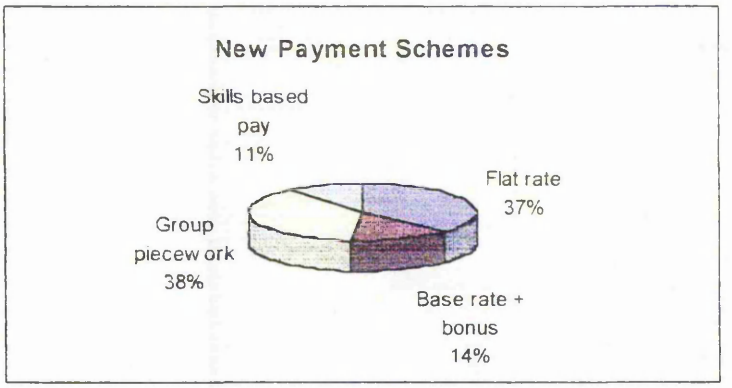


Figure 17. Source: Teamwork Users' Groups I and II, Scottish Teamwork Users' Group and Case Study Databank. Sample size = 64.

6.6 TEAM SELECTION

There are two main schools of thought in the team selection process. The first is that teams should consist of volunteers, in which either individuals select their own team members or they simply volunteer themselves for teamworking and management then decide on the precise mix of individuals. The second is that management select team members themselves, as they need to control the mix of skills, personalities and so on. Arguments for both sides are strong, although a combination of both is perfectly feasible. In the cases where the organisations are entirely using team based production, operators have had no choice in the matter. Of 23 companies in the Teamwork Users' Group, 9 used management selection techniques, whilst 8 asked for volunteers and 4 opted for both. Interestingly 2 of the companies originally asked for volunteers, but later changed their methods and selected team members themselves. The reasons for this were they needed to "balance by capacity" or found it was "impractical just to ask for volunteers. The teams need a good mix of skills at the beginning and volunteers may not have these" (Scottish Teamwork Users' Group).

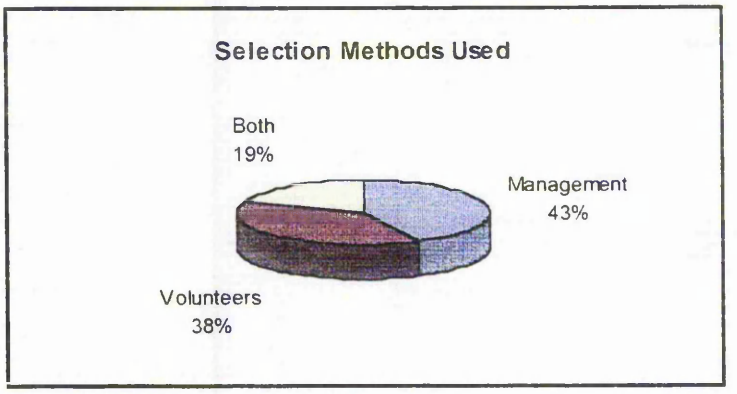


Figure 18. Source: Teamwork Users' Group. Sample size = 25

6.7 TRAINING

Training at all levels of the organisation becomes necessary when teamworking is introduced, in order to ensure employees understand their roles in the change process and are able to carry out the tasks required of them effectively.

6.7.1 Operator Training

Skills training for operators is extremely important for flexibility to be achieved from the multi-skilling process. This also gives the machinists the variety which they particularly appreciate from teamworking (see chapter 4). Adequate training on new skills is therefore necessary before the teams are expected to start producing garments. Skills training simultaneously to the implementation of teamworking is not uncommon as is cross training on an ad-hoc basis. Fifty percent of the companies interviewed utilised on-the-job training for teaching new skills, either via cross training or utilising a training instructor, whilst the remaining 50% used a combination of a training school and on-the-job training.

A problem caused by cross training is that operators feel under considerable pressure to reach targets set for them, whilst at the same time trying to teach a fellow member a new skill. Additionally, 'bad habits' can be passed on this way.

Team building training is also necessary to ensure the operators are able to work as a team and discuss problems and ideas they may encounter whilst working. Of the same sample of 44 companies, 75% claim to offer team building training, whilst 25% do not. Of the 75% who do offer team building training, 75% used external training providers to deliver the necessary training. In cases where teambuilding training was considered unnecessary, the teams experienced difficulties in solving production problems and many of the companies are now seeking advice on such training. There is no correlation between the company size and the use of team building training. However, there is some pattern emerging relating to those which used external assistance and those which provided team building training. All those who used external consultancy had some form of team building training and only 4 companies provided such training themselves, without external assistance.

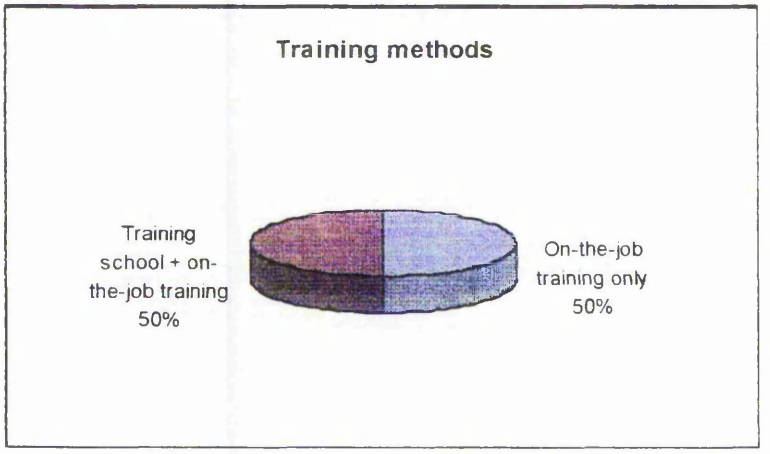


Figure 19. Source: Case Study Databank. Sample size = 44.

6.7.2 Supervisor Training

The change in supervisory roles has been one of the most difficult issues to address for company managers. If teams are to become self-managing, what will the supervisors do? Role definition, particularly for supervisors and team leaders has therefore been a contentious issue. The lack of clarity of the new role of supervisors caused uncertainty, particularly as they were unclear about whether their role would continue. In one case a supervisor misunderstood her new role and handed over all responsibility to the team

members and subsequently resigned. Also, in coping with the changes, supervisors sometimes feel uncomfortable with low levels of work in progress. In some cases supervisors are re-trained to become trainers for the operators, to alleviate the pressure of multi-skilling operators. Companies have addressed the issue of changing supervisory roles in many different ways, for example, training them to become sample machinists instead. One of the benefits of teamworking is considered to be a reduction in costs through a reduction in the direct:indirect worker ratio. This is often achieved by the 'natural wastage' of supervisors or their enforced redundancy. This is discussed further in chapter 4.

6.7.3 Management Training

Ensuring management themselves work as a team and that all planning procedures and support systems are able to cope with the changes are necessary for the smooth implementation of teamworking. In most cases studied, managers themselves had no training, as the focus for them was on the shopfloor. Though many managers recognise that they do not necessarily work together as well as they perhaps should, this is not an issue pertinent enough to make them act on this fact. The difficulties of empowering the workforce and the new pressures placed on management were issues of concern in the Teamwork Users' Group meeting on this subject. It was generally considered that the workforce were given little empowerment and should be given more, though managers were unsure of how to tackle the problem. It was perceived that an 'us and them' culture still exists in some companies, though teamworking has helped break down some of the barriers.

It emerged that 'people' skills necessary for teamworking are very different to traditional working as the need to motivate others becomes more important. The questionnaire also indicated that with hindsight, managers would start training earlier, would give more training, would develop a more structured training programme and would train with a longer term view. The pressures on management included the threat of job loss for middle management, budget constraints, the loss of a 'safety net' in planning and the need to give more support and encouragement to teams.

6.7.4 Support Staff Training

A common problem faced by companies, which has been recognised in hindsight, is that the mechanics and other support staff are not paid enough attention. In many cases they were ignored and left out of the training procedures and therefore struggled when they were asked to implement the changes to the equipment. More support was needed. Similarly, cutting room staff found it difficult to adjust to the new pressure placed on them to produce first quality cutting. This typifies the poor communication in organisations, particularly between departments.

6.8 COMMUNICATION

Effective communication throughout the whole organisation is essential to ensure a full understanding of changes which are being made. Companies have found that if people are fully aware of any potential changes and feel they have some input into discussions, then an atmosphere of trust can be created. Team meetings form an important means of communication in teamworking and provide an open forum for discussion for the team members. In 5 companies, team meetings were introduced in the early stages of implementation, but have subsided after some time. The majority of companies (21) have meetings on an ad-hoc basis, typically to discuss new styles or resolve problems. In 17 cases regular team meetings occur, varying in frequency and duration. In one case teams never had meetings. In cases where they do continue, they are commonly used to react to problems, rather than discuss new ideas. Few companies had cross-functional teams in which different departments met to discuss specific issues relating to the business. In cases where meetings were held and feedback was given, reactions were positive.

6.9 MOTIVATION

Motivation does not only affect work performance, but also has implications in labour attraction and retention and absenteeism levels. If work is challenging and achievement is encouraged, it is

more likely that operators will be motivated to work. Motivation to perform a job within the requirements and aims of the organisation and to be creative in order to contribute to the development of the organisation and the operator can result in job satisfaction. The fact that most operators interviewed would not change back to line working if given the option indicates a certain amount of satisfaction from the changes. They like the variety, the opportunity to voice opinions and the friendlier atmosphere created by the changes. In cases where commitment to teamworking is not displayed by management, teams have motivational problems. This is particularly so in the case mentioned above in which blame for failure was placed on the payment system. The enthusiasm of a project leader motivates team members to ensure teamworking is successful. Many organisations still believe that teams need financial motivation. In such cases, organisations will not move away from an incentive based payment scheme and 'checkmates' are used to monitor performance.

6.10 TEAM AUTONOMY

Fundamental to building a sense of responsibility is giving employees discretion and control over job related decisions. For example, small displays of trust in giving operators a budget to solve a problem can have great effects. Motivation through enriching operator's work can be achieved through adding *depth* to a job by giving operators more control, more responsibility and discretion over how their job is performed.

The level of empowerment in UK companies is low in comparison with others, especially in Scandinavian examples. In as many as 12 clothing and textiles firms, operators have no additional opportunity to make decisions for themselves. There is no link between the payment systems or soft skills training received by these teams. Of those who can make decisions, typical areas of responsibility are calling team meetings, deciding on new team members and having an input into their work station layout. Some are also able to discuss technical details of the products they manufacture and are able to input new ideas where appropriate. This in itself is a significant change to those working on traditional production and a large step towards greater worker empowerment. However, in most cases teams do

not have any input into the setting of production targets, and little input into the production process itself. The concept of becoming more involved in processes both upstream and downstream of the manufacturing process is still a long way away in UK cases. In Denmark, for example, machinists discuss the design of garments and produce lay plans and carry out the cutting themselves. This would be considered to be a waste of resources in UK companies, as too much 'off-standard' time would be taken.

6.11 FURTHER DEVELOPMENT

Whilst the implementation of teamworking into the entire factory is slowly becoming more common, as more information is becoming available, some managers are still reticent, mainly due to the resistance of other managers who are "anti-change". Some organisations have 'removed' managers who are unwilling to adapt their approaches to managing, whilst others are struggling on with opposing views. Further development of teams in terms of enhancing working practices of existing teams is an issue not really addressed by many of the companies. In seeking the continuous motivation of their teams, they are however finding that the issue of empowerment and discretion discussed above is a potential means of further progression.

6.12 MAIN BENEFITS

The benefits of teamworking as stated by 42 of the companies interviewed for the case studies are many and varied, but can be classified into three broad areas, benefits to the manufacturer, the customer and the workforce:

To the manufacturer	*Companies citing these as benefits*[1]	*Total no. of co.s*
Flexibility - Multi-skilling allows new products to be put on teams if run out of work	B,C,E,F,I,J,M,Q,R,T,V,W, BC,CC,DC,EC,JC,AI,FI,HI, AS	21
Cost savings through reduced stock levels (cut work, finished stock and WIP)	K,Q,R,S,T,V,AC,CC,DC,E C, FC,GC,AI,CI,DI,HI	16
Reduced absenteeism	B,D,E,F,I,M,Q,S,V,AC,DC, GC, JC,BI,FI	15
Reduced labour turn-over	B,D,G,I,K,M,U,AC,GC,CI	10
Reduction in cost per standard minute (reduction in direct: indirect ratio, time spent examining..)	B,D,K,U,AC,GC,CI	7
Team members are motivated to work harder	M,V,W,EC,FI,HI,AS	7
'Off-standard' cost savings (less machine downtime and increased operator utilisation, less time spent on final examination)	B,K,O,P,U,W	6
Increased productivity	G,L,U,CI,HC,HI	6
Turn-around from a loss-making to a profit making situation	D,F,N,JC,BI,	5
Increased efficiency	B,O,DC,DI	4
Cost saving suggestions from operators	BI,CI,HI,AS	4
Improved planning forced by the change to teamworking	L,AS	2
Saving in floor space	U	1

Table 3: Benefits to the Manufacturer

To the customer	*Companies citing these as benefits*	*Total no. of co.s*
Improved quality	B,D,E,G,H,I,L,O,Q,S,V,W, X,N,BC,HC,AI,BI,CI,HI,GI AS	22
Reduced throughput time	B,C,F,G,Q,R,S,TI,J,N,P,U, V,CC,AC,AI,GI	17
Improved delivery performance	B,H,J,L,T,X,AC,DC,JC,KC GI,HI	12
Ability to respond to what is being sold, ratio changes easier	C,F,R,S,T,U,X,EC,JC,GI, HI	11
Fast change-over for new styles	C,F,M,R,T,U,EC,GC,JC	9
Faster adaptation to new styles by team members	C,F,I,J,EC,JC	6
Improved relationship with customers	I,L,JC,AI,AS	5
Not losing orders because able to respond quickly	K,L,JC	3
Ability to offer a wider variety of goods	T,JC,AS	3
Reliability / QR winning orders	U,DC,AI,CI	4

Table 4: Benefits to the Customer

[1] Differing sectors and locations are denoted by the company codes - single letters (e.g. A) are UK clothing and textile companies, two letter codes ending in 'C' (e.g. AC) are clothing and textile firms from other countries, those ending in 'I' (e.g. AI) are from other industries, and those ending in 'S' (e.g. AS) are from other sectors.

To the workforce	*Companies citing these as benefits*	*Total no. of co.s*
Happier workforce through improved working environment and atmosphere	B,F,I,K,O,Q,S,T,U,V,W,AC BC,EC,AI,FI,HI,AS	18
More discretion to solve problems	O,S,U,BC,EC,AI,FI,HI,AS	9
Greater variety, thus less boredom	O,Q,S,T,U,EC,FI,HI,AS	9
Opportunities to voice opinions	Q,S,U,W,EC,AI,FI,HI,AS	9
Increased average earnings / alternative to piecework	B,U,AI,HI	4
Improved communication flow between operators and management	Q,S,U,FI,HI,AS	6

Table 5: Benefits to the Workforce

As can be seen from the above tables, flexibility, quality and a happier workforce are the three most common benefits enjoyed by organisations adopting teamworking. Manufacturers themselves see the greatest benefits being to the business as a whole, primarily through cost savings. Benefits to the operators take a low priority and in the majority of cases are secondary benefits. This is discussed in chapters 3 and 5. It is notable that cost savings enjoyed through suggestion schemes are only evident in non-UK clothing and textiles companies and non-clothing and textile firms, implying that either operators do not come up with cost saving ideas or the companies omitted this from their suggested benefits or that indeed the systems are not in place for operators to make suggestions. It is likely that the third scenario is the case.

6.13 PROBLEMS

Problems associated with teamworking indicated by companies seem to be less apparent than the benefits, suggesting an overall improvement for the organisations who have introduced teamworking. Notably though, many of the problems mentioned below relate to the operators, but are caused by the system. Lack of acceptance from other operators in the factory is common, and often an 'invisible wall' is created between teams and traditional production lines. Reasons suggested for this are lack of awareness for non-team members, differences in payment systems and a physical division between teams and

traditional lines. The change in payment for teamworkers can also be problematic, particularly for 'high-flyers' who have a reduction in their usual pay.

Other problems relate to team dynamics and motivation. Some companies complained that their teams were not motivated to work, others noted personality clashes within teams as a common cause of problems, whilst some suggested that they were having trouble persuading teams to make their own decisions. The recognition of the need for teambuilding training suggests that some companies are starting to recognise the link between these problems and the deficiency in training. Finding the time to train operatives was stated as another problem.

Further difficulties faced by companies were the reluctance of some senior and middle management to change particularly in relation to 'losing control' through empowerment; a lack of acceptance from the cutting room; the selection of team leaders by management and the creation of a team of high performers.

The short-term outlook from some senior managers also caused some difficulties. A small number of companies found that results did not appear as quickly as they expected, so they had to convince the board of directors that it was worth waiting longer and were under a great deal of pressure to prove the potential financial benefits.

6.14 SUMMARY

In summary, companies who have introduced teamworking themselves, or with the use of external consultancy have implemented change in a manner which lacks strategic direction. For most it has been a question of learning by their successes as well as their mistakes. This is partly due to a lack of information available, but partly due to poor management practices in the industry. Where time has been invested in systematic and continuous training, results have been good. In cases where teamworking has been introduced as a means of 'cost-cutting' and 'rate-fixing' it has not.

Chapter 2 traces the economic restructuring and changing patterns of work organisation which have led to the organisational changes discussed in this thesis. It introduces the key theoretical developments which have explained the changes in work patterns over the last century, locating socio-technical theory in the overall picture.

CHAPTER TWO

ECONOMIC TRENDS AND WORK ORGANISATION : MATCHING THE PATTERN

1. INTRODUCTION

This chapter highlights the underlying importance of economic trends to the changing nature of global markets through a review of core literature and an analysis of the limitations of Fordism and the emergence of new concepts of production such as Flexible Specialisation. Further examination of the economic and competitive reasons for the clothing and textiles industry changing the fundamental organisation of its production to that of a more flexible, quick response method, through the implementation of teamworking is thus introduced. It is argued that the pattern of work organisation has followed a distinctive path over the last century from that in which cottage based industry predominates to the rise of mass production followed by the introduction of more flexible modes of production. This in turn has reflected the pattern of economic trends during the same period, in which markets have shifted from being localised to mass and then to segmented.

Peeters and Pot (1993) suggest four such factors giving rise to new forms of work organisation, namely technology, the consumer market, the labour market and government policy:

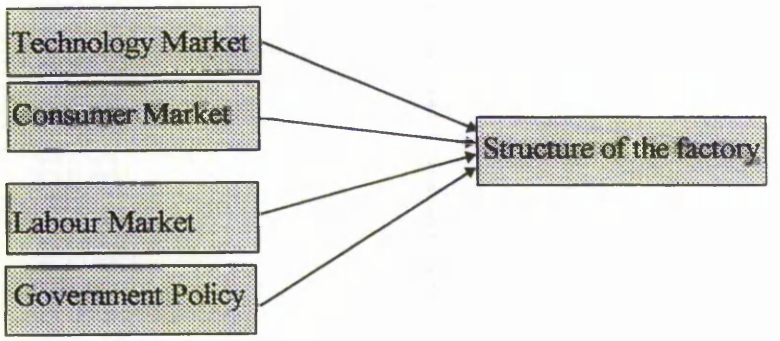


Figure 20. Influences on the structure of the factory (Peeters and Pot, 1993)

Towards the end of the cottage based production era in the late nineteenth century, technology was developing at a rapid pace and was becoming more widely available, encouraging

organisations to pursue economies of scale. The labour market was somewhat open to exploitation as there were few employment laws to protect workers and unions were weak. At the same time government policy encouraged mergers of small companies which resulted in a merger boom and the development of large enterprises. The saturation of existing local markets resulted in a changing market base, which was further influenced by the globalisation of the economy, opening up new markets to consumers and putting pressure on organisations to produce on a mass production basis in order to compete with imports.

This was compounded by producers such as Henry Ford who aimed to 'create' demand for the Ford 'Model T', coupled with new approaches to management, such as that proposed by Frederick Taylor, in which emphasis was placed on maximising efficiency through the division of tasks. A combination of these forces lead to the ultimate demise of craft production. This is discussed in some detail in the following section.

In section 3 it is argued that mass production is now breaking down and giving way to pressures from the same sources. The technology market continues to progress and influence work organisation, consumers are becoming more discerning about quality, variety and speed of delivery, the labour market is demanding improved working conditions and government policy is now positively encouraging the development and progression of small-to-medium-sized enterprises (SMEs). All these factors point towards smaller more flexible organisations.

The emergent changes have been explained in terms of Flexible Specialisation (Piore and Sabel, 1984 and Wood, 1989) and Post Fordism (Aglietta, 1979). Post Fordism suggests that flexibility can be achieved *numerically* through the hiring and firing of staff according to the quantity of demand. Flexible Specialisation on the other hand advocates flexibility within the organisation through flexibility of the workforce and technology, namely *functional* flexibility. In other words, functional flexibility offers economies of *scope*, allowing companies to respond to changes in the *nature* of demand by movement between different types of product. Depending on the route which teamworking takes and the factors which influence it, *functional* flexibility can be sought through job enlargement or job enrichment contingent to the capabilities and desires of the workforce and the management style.

This chapter will develop firstly by explaining the transformation from craft production to mass production, under the influences of Taylorism and Fordism. It will then detail the 'crisis' which led to the emergence of new forms of work organisation and the resultant responses, indicating where teamworking fits in to the overall picture. The role of Sociotechnical theory as a means of evaluating these changes will then be discussed and the focus will move to the changes which have occurred in the clothing and textiles industry.

2. CRAFT PRODUCTION TO MASS PRODUCTION IN A CHANGING ECONOMY

2.1 CRAFT PRODUCTION

In the UK in the nineteenth century, there existed two types of market. On one hand, there was a mass urban market resulting from the migration of peasants to the cities as a consequence of the loss of control of their land through the reorganisation of agriculture. This market was served by '*putting out*' system. The cottage workers maintained some of their independence; they retained their own tools, organised their own work and there was little division of labour, "some historians see the putting out system as a phase of *proto-industrialisation* - the period between the emergence of the putting out system and the consolidation of the factory"(Landes, 1969).

On the other hand British tastes remained more varied than for example in the United States because industry provided employment in rural areas, helping stabilise provincial tastes. This market was served by the abundant supply of both skilled and unskilled workers so that entrepreneurs were not driven to look for labour saving devices.

In craft production "small producers were typically involved in independent commodity production, often based on the family structure" (Thompson and McHugh, 1984). They generally owned their own equipment and worked to their own rules, supplying their goods to the market place. Craft production functioned using the concept that machines and processes

could enhance a worker's skill, allowing them to embody their knowledge in increasingly varied products. The more flexible the machine, the greater the scope for "productive expression".

The less rigid technologies were craft systems where skilled workers used sophisticated general purpose machinery to produce a wide range of goods for constantly shifting markets. In this case economic success "depended as much on co-operation as on competition" (Piore and Sabel, 1984).

A combination of the emergence of a market economy and the need to use power driven machinery coupled with the necessity for division of labour, led to the demise of the 'cottage industry' and the rise of the factory organisation.

2.2 MASS PRODUCTION

"The late nineteenth century saw a transformation in the process of production that almost constituted a second industrial revolution. In Britain the first industrial revolution was centred around cotton, coal and iron, and had been based on simple technology, small firms, and relatively small capital requirements. The second, centred around chemicals, electricity and steel was based on scientific developments, large scale plants, and systematic organisation, both through mass production and the 'scientific' management associated with 'Taylorism' in the US" (Smith, 1981). These developments took place in the US and Germany in particular, whose domestic industry was protected by the state. Britain retained her markets in finance and commerce by operating the old system, but lost markets to the new industrial competitors. Driven out of the market by these rivals, Britain turned to the underdeveloped world "where Britain's long-standing financial, commercial, and political connections gave a decisive although temporary advantage, allowing her to produce the old products in the old way." (ibid). Between 1872 and 1902 Britain's exports of manufactured goods to the US and Europe had dropped from £116 million to £73.5 million per year and imports from these areas had risen from £63 million to £149 million. "These trends reflected the displacement of British manufacturers by newly industrialised rivals".(ibid). As a consequence, British manufacturing then also turned to

large scale mass production, but at the same time retained some of its smaller enterprises. This is what Piore describes as *Industrial Dualism* which explains the persistence of small firms.

2.2.1 Industrial dualism

An economy cannot be composed of mass production firms alone for the simple reason that the special-purpose machinery required for mass production cannot itself be mass produced. It in fact needs to be built according to a logic which is a mirror image of mass production: production must be continually reorganised as it operates within a limited market, thus workers need the necessary range of skills to adapt to changes. "Thus industrialisation should, according to the dualism theory, revitalise at least part of the craft sector - reorienting it towards its own ends" (Piore and Sabel, 1984).

Similarly small firms continue their existence aiming for fluctuating markets with constantly low levels of demand which are too small or uncertain to encourage mass production. In this way dualism interprets modern craft production as a necessary complement to mass production.

Industrial Dualism, indeed has limits of its own as it does not account for the *industrial districts* of the nineteenth century, which in themselves question the classical view of economic progress.

2.2.2 Industrial districts

The term Industrial Districts, first applied by Alfred Marshall to Lancashire and Sheffield, depicted specific regions which specialised in particular industries. In the industrial district, small firms adopted new technologies without becoming larger and large firms that from the start used sophisticated technology did not produce standardised goods. "The technological dynamism of both these large and small firms defies the notion that craft production must be either a traditional or a subordinate form of economic activity. It suggests instead that there is a craft alternative to mass production as a model of technological advance" (ibid).

Industrial districts succumbed to mass production for two principle reasons. They were either encouraged to convert to mass production by national governments who were attending to more general prophesies for economic development rather than the

performance of specific regions. Or they were tempted by their own discoveries to convert to mass production at the cost of permanently changing both their structure and their environment. Also institutional supports of flexibility became obstacles to innovation and further more, the search for ever more productive and flexible machinery was worthwhile (Piore and Sabel, 1984). It is argued that Industrial Districts have since enjoyed a revival however, particularly in regions of Italy, for example Emilia Romagna (see Brusco, 1982).

The 1930s saw important changes in the structure of British industry, with an increase in the size and concentration of firms; the growth of new industries with a more technological base, catering for domestic industry, and the end of dependence on the old staple industries. (Smith, 1981). The mid 1960s saw further structural changes when a Ministry of Technology was created by the Labour government; The Industrial Reorganisation Corporation, to help rationalise and merge UK firms so that they would be larger and more able to compete on an international plane (see Aaronovitch, 1981). This "undoubtedly contributed to the large-scale merger boom of the sixties which increased the rate of concentration and altered the structure of an number of industries" (ibid).

The guiding principle of mass production was that the cost of making any given product could be dramatically reduced if human skill were to be replaced by machinery. Every task was fragmented into small steps which could be performed faster and more accurately than the human hand. "The more specialised the machinery - the faster it worked and the less specialised its operator needed to be - the greater its contribution to cutting production cost." (Piore and Sabel, 1984).

2.3 THE INFLUENCES OF TAYLORISM AND FORDISM

The principles of Taylorism, according to Lane (1989), are particularly adapted to the production of large quantities of standardised, relatively cheap goods by special purpose machinery as demonstrated by Henry Ford in the first decades of this century with the Ford Model-T.

The Ford Model T saw the culmination of a century of experience of mass production. The Ford Motor Company was founded in 1903, at which time building automobiles was the job of skilled craftsmen. In 1908 Ford launched the Model T and later it was in such great demand that special engineering talent was employed to revise the production method of the company. "The key element of the new organisation of labour was the endless conveyor chain upon which car assemblies were carried past fixed stations where men performed simple operations as they passed" (Braverman, 1974). At the time it was mainly used for sub-assembly units, but by 1914 the first endless chain was inaugurated for final assembly. By 1925 they were able to produce as many cars in a single day as they could in an entire year in the early history of the Model T. Continuous conveyor systems for final assembly of cars are still apparent today.

A trend towards systematic management was already identifiable by this time, however Taylor's input into its development was principally concerned with time and motion study. Taylor drew his inspiration from a statement by President Roosevelt : "The conservation of our national resources is only preliminary to the larger question of national efficiency". His aim was to reduce the waste of 'human effort' through the study of their precise movements, which he considered to be less tangible and less visible than the waste of materials such as iron or coal, but equally as important. The thrust of his argument was that "in the past the man has been first; in the future the system must be first". (Taylor, 1908). In his paper, Taylor explains the "great loss which the whole country is suffering through inefficiency in almost all of our daily acts", that the "remedy for this inefficiency lies in systematic management", and his aims are to "prove that the best management is a true science, resting upon clearly defined laws, rules and principles as a foundation" (ibid)

The aim of scientific management was to gain "maximum prosperity for the employer, coupled with maximum prosperity for each employee". Taylor argued against workers being ultimately responsible for doing their job *as they saw fit*, and suggested that "each man should daily be taught by and receive the most friendly help from those who are over him, instead of being, at one extreme, driven or coerced, and at the other, left to his own unaided devices". (Taylor, 1908)

Perhaps in Taylor's favour he did recognise a need to introduce some form of systematic training, where it was apparent that there were maybe 50-100 methods of carrying out each element of work. However, this was approached in a way which completely disempowered the worker and decisions were made entirely by management under the strong belief that "one type of man is needed to plan ahead and an entirely different type to execute the work"(ibid). Taylor believed that the workers themselves could not begin to understand the science of the methods used, or even use them without the help of "those over him".

In implementing scientific management practices, written instructions as to the best way of doing a piece of work were prepared in advance by the planning department and given to the operator, with a 'functional foreman' to ensure understanding, a method still practised today in manufacturers maintaining traditional production systems. Initially workers complained "why, am I not allowed to think or move without someone interfering or doing it for me!" (ibid). Their protestations were met with some sympathy, with the suggestion that "the workman should be given full credit for improvements, and should be paid cash premium as a reward for his ingenuity" (ibid) - a modern-day suggestion scheme.

In criticising Taylor's methods of developing scientific management in a modern day context, firstly it would seem that he selected the very best operators to find the maximum efficiency of a task and then expected everyone to adjust to the new 'norm'. Secondly, many people lost their jobs even though they might have been "the most intelligent, hardest working and most trustworthy". Finally at the turn of the century there were few employment laws and unions were weak, so workers were unable to protest about the changes enforced upon them.

The reasoning behind the division of labour was that the narrowing of tasks allowed workers to perfect their skills faster and waste less time in changing operations. However, the cost which off-set this was that of the inflexibility resulting from such work organisation. Similarly, as Marx noted, the introduction of automatic equipment also increased the rigidity of production as the preceding and following operations also had to be adjusted to keep pace with the new machinery, thus making it more difficult to swap resources to alternative uses. The spread of task-specific machinery led to a reverse of the traditional relationship between workers and the

instruments of production. Whereas the worker had once defined the product, the product now defined the worker. "To Marx, it was this subordination of the worker to the product that marked the transition from the use of tools to the use of machines" (Piore and Sabel, 1984).

Braverman (1974) revived Marx's scathing critique of the capitalist factory, believing that capitalist management systematically degraded work through Tayloristic principles of the division of labour, followed by the adoption of machinery to take the place of the worker. (Walker, 1989). Braverman sees Taylorism as "fundamental to the development of monopoly capitalism" (Lane, 1989) and focuses on the control strategy which enabled management to increase capital accumulation by increasing worker output - it assumed direct control over the labour process and led to the degradation of shopfloor work. Braverman spells out how work has become fragmented, monotonous and meaningless, robbing workers of the opportunity to apply skill or operate discretion. It is closely monitored by management and labour has become cheap to substitute.

"Despite a lot of worker resistance to the implementation of Scientific Management and even considerable hostility towards it by management, Taylorism... has nevertheless won a widespread and enduring acceptance among management. There is no doubt that Tayloristic forms of work organisation have gained management huge increases in productivity, achieved both directly and indirectly through enhanced control over the labour process" (Lane, 1989). Despite what has been said, there was certain flexibility in Fordism - indeed central to Taylorism was the idea that workers were disposable, thus firms were numerically flexible. However, the division of tasks can be referred to as the rationalisation of the technical preconditions of work. "Taylor's advocacy of the principle of maximum decomposition of work tasks implied the minimisation of skill requirements - deskilling - in the resulting manual tasks" (ibid). It introduced two new forms of division of labour, firstly, the separation of mental labour from manual labour, and secondly the divorce of direct from indirect labour.

In Braverman's thesis of the labour process, he suggests that workers are deskilled as a result of management's compulsion to maintain direct control, thus there could be no end to Taylorism without an end to capitalism. Wood suggests that supporters of Braverman will therefore

believe that any restructuring and managerial initiatives will always involve labour intensification and the enhancement of managerial control and that new forms of management such as quality circles and teamworking still fall within the Tayloristic regime of worker control.

The diffusion of Taylorism has not always resulted in the adoption of all its elements and frequently involved a merging with other managerial techniques and philosophies of work organisation to suit specific national needs. "All too often changes in work organisation are automatically assumed to be a move towards non-Taylorist and innovative forms of management. Any transformation of work is approached in terms of whether it reverses Taylorism or represents an abandonment of Fordism, and a move towards autonomous working arrangements, as exemplified by craft working. New forms of work organisation may co-exist with many of the elements of Taylorism, as they reflect management's need for co-operation and developments with their product markets" (Wood, 1989). This statement is extremely credible and is supported by case study evidence which indicates that traditional production systems remain in place *along side* new forms of work organisation, in which operators are encouraged to be more innovative in their practices and are given more discretion over their work, but still work in an environment where targets are set for them and planning is carried out by a separate department.

"The role of scientific management and conventional methods of management in the restructuring and productivity improvements of the 1980s has certainly been overshadowed by the emphasis on flexibility and structural change. In most cases, for example in Britain, the calls for management to manage, to set and stick to work standards, however, all echo Taylor's words" (Wood, 1989).

2.4 LIMITATIONS OF TAYLORISM

At the turn of the century, Taylor attracted attention with his schemes of routinisation of production by the transfer of skill from the shop floor to a central planning bureau. According to Piore and Sabel, modern historians found that Tayloristic principles were not readily adopted

in redeploying labour, even in the plants in which he was personally responsible for reorganising. (Nelson, 1980)

Taylorism never penetrated Britain to the same extent as the USA, as it had to interact and adapt to pre-existing national economic strategies, managerial culture and industrial relation systems and above all the apprenticeship based qualification structure of the workforce.

One reason for the half-hearted and inconsistency of the adoption of Taylorism has been due to the co-existence of a small 'craft sector' in which work is characterised by a relatively low division of labour and high level of discretion, with mass production, dominated by semi-skilled workers engaged in monotonous work (Lane, 1989). The second reason, according to Lane relates to the employers' strategy. In mass production industries, a high division of labour and a rigid separation of planning and implementation is accompanied by a structure of control which is neither fully committed to task control or 'responsible autonomy'. Workers in Britain have by default adopted a relatively high degree of control over the organisation of the labour process. This is attributed by Lane to both the social origins and low level of technical training of managers.

In addition, early approaches to management, such as Taylorism seemingly took no account of the environment in which they were operating, instead they were more concerned with manipulating the internal variables of an organisation, in the achievement of specific goals. Since the 1960s closed systems approaches have been frowned upon, though they have not disappeared as theorists continue to search for the key ingredients to organisational success which can be internally controlled, for example Peters and Waterman (1982) where successful organisations are one which "create and manage a distinctive culture that satisfies employees and customers alike .. people's needs for meaning, elements of control, positive reinforcement and behaviour determinant of belief are largely psychologistic in character the cultural solution is secured within the organisation" (Thompson & McHugh, 1984).

2.5 LIMITATIONS OF FORDISM

"Henry Ford's adaptation of Taylor's ideas to the operation of specialised machinery further intensified both division of labour and its intensity which became dictated by the machine" (Lane, 1989). Post-Fordism goes beyond the simple injection of teams. "Some see it as a merging of direct and indirect work, while others as the development of certain supervisory functions to previously non-supervisory grades, or as the end of the division between production and white-collar work" (Jessop *et al*, 1988). "Although none of these developments is incompatible with team working their distinctiveness seems to be the collapsing of hierarchy and not just fusing of lateral relations. All such developments represent some pretty fundamental moves away from the original Fordist conception with its emphasis on a clear specification of individual jobs and separation of supervisory and managerial roles from operational duties" (Wood, 1989).

The transformation of work which Marx identified as the division of tasks and rationalisation of motions happened in many industries with the advent of mass production. However, the deskilling of work and unemployment due to automation is not universal. This is particularly true of the clothing industry, which has seen few technical advances on the sewing shopfloor, particularly at needle point. (Marx, 1967). In this case the principle reason is that the supplanting of people by machines has been limited by the simple technical difficulty of mechanising any labour process, the reason being that humans are extremely skilful and even what is considered 'unskilled' work is still beyond the reach of many machines. Reality was in fact inverted by Frederick Taylor whose work was based on "fitting uneducated workers to clever machines" (Walker, 1989).

Through what Piore and Sabel describe as the *Second* Industrial Divide, the pattern of work organisation thus reached its final and current phase, a return to craft based production, or *Flexible Specialisation.*

3. THE 'CRISIS' OF MASS PRODUCTION

3.1 A CHANGING PATTERN OF ECONOMIC TRENDS

Britain's post-war economic decline is widely seen to have long historical roots, going back as far as the middle of the last century (Lane, 1989). A relatively low rate of investment, low labour productivity and an insufficient development of technically skilled manpower, allied to an unstable macro-economic environment, high inflation and conflict-ridden industrial relations, resulted in relatively low growth rates and failure to restructure manufacturing towards newer and more technologically advanced branches. (Lane, 1989).

Then, during the 1950s and 60s the economic structure produced prosperity and social stability. Industrial countries grew rapidly and steadily. Inflation was moderate and unemployment was low. Economic expansion was widely dispersed and there was a general feeling off well-being (Piore and Sabel, 1984). The economic situation in the UK during this time enjoyed a long boom. However this period of success did not last and towards the end of the late 1960s, the industrial world entered a time of crisis. Then in the late 1960s the stock exchange created a secondary market in issued shares, making take-over or share swap very easy, the consequence of which was a huge merger boom in which nearly half the quoted companies vanished as a result of take-over. The result was a smaller number of large firms which were "difficult to manage and lacked strategic direction" (Williams *et al* 1989).

Between 1960 and 1975 Britain's annual growth rate fell from 9.6% to 5.8% (Blackaby, 1979), whereas France's economic growth rate surpassed that of most OECD countries, excepting only Japan (Lane, 1989). The impressive annual growth rate was attributed to government economic planning and intervention, including investment in technological advance. During the 1970s French economic performance began to deteriorate, but still remained superior to that of the UK, however, it lost ground compared with Germany. During the 1980s GDP growth rates suffered a further decline and in 1982 fell below those of the UK. During the 1950s and 60s the German economy began to overtake both France and the UK in terms of GNP and the period of the late 1950s to the early 1970s became known as the 'German Economic Miracle'. From the

mid-1970s onwards, however, the oil shocks and general world recession also effected Germany, which suffered because "it had not restructured its manufacturing sector sufficiently from traditional to modern sectors, required by a changed international division of labour and demand on a world market" (Lane, 1989).

To some extent, the differences in economic growth of these countries can be attributed to the management styles, as well as a willingness to invest. "Whereas German top management puts a strong strategic emphasis on product design and development and on process innovation - backed up by considerably higher inputs in R & D expenditure - British top management concerns itself with these objectives only in exceptional cases" (Lane,1989). British management does not adopt a sufficiently long-term perspective in the areas of investment, development and training which in itself is partly caused by the restrictive lending practices of British banks. "Comparative figures on industry-financed R & D show that investment in R & D is significantly higher in Germany than both Britain and France" (Lane, 1989). Additionally, the differing structures of the boards of directors and ownership of shares in these two countries contributes to the disparities in growth rates (See Ormerod, 1994 and Galbraith, 1994).

Thus, the UK economy entered a period of 'crisis'. "The crisis began with widespread expression of discontent and social unrest; then came the raw materials shortages, followed by rapid inflation, rising unemployment, and finally economic stagnation". (Piore and Sabel, 1984). Piore and Sabel suggest two main reasons for this occurrence. The first focuses on external shocks to the economy, the political response to which was based on a false or incomplete understanding of the endangered institutions. This is divided by Piore and Sabel into five overlapping episodes: the social unrest of the late 1960s and early 1970s; the shift in 1971 of the international monetary system to a regime of floating exchange rates; huge increases in oil prices accompanies by food shortages in 1973-9; further increases in oil prices as a result of the Iranian revolution, shaping events from 1979-83; and finally a deep world-wide economic downturn beginning in 1980 prolonged by high US interest rates.

As can be seen in figure 21 below, the UK's real GDP growth rate is last but one in a wide-ranging international comparison, standing at only 52% growth rate in a 22 year period, and

"After five years of economic recovery, British manufacturing output is now (1987) no higher than it was in 1979". The cause of which is not only due to 'orthodox policy instruments', but also the 'management problem' of British Industry, according to Williams et al.(1987). In the mid-1950s in Britain, more than 90% of goods consumed were British made, 30 years later, less than 65% were British made and by 1983 the balance of trade for Britain was in deficit for the first time. From 1980-85 there was a growth rate of 3% and a reduction in industrial action. However, these figures do not stand up to close examination and raise doubts as to whether these changes were sufficient for a regeneration of manufacturing industry. The reason for this sharp tilt in the balance of trade has been described by Williams *et al* as being caused by the fact that as competition for domestic and foreign markets intensified, significant differences in the capacity of advanced countries was revealed in their ability to reorganise production of high quality goods, where competition was based on non-price characteristics. "The UK was the least capable of the advanced manufacturing countries and her relative inferiority was reflected in a decline in her share of world trade in manufactures".

The crisis of the 1980s was averted by the "windfall gain of North sea oil which directly provided oil exports and indirectly saved oil imports" and by 1985 the UK was the world's fourth largest oil producer. This was expected to last some time, but when oil prices were halved, the UK fell further back into deficit. The crisis was therefore merely postponed, rather than eliminated. By the middle of 1985, output was still below its original rate in 1979, and recovery had been concentrated in the oil industry and employment growth had been more strongly focused on the service sector. The political and social agendas of Margaret Thatcher "were powerfully motivated by the logic of free-market economies .. The deregulation of financial markets in the 1980s; ... the deregulation and increased flexibility in labour markets, a topic which is presently the subject of a fierce debate among the political classes of Europe; the privatisation of state-owned industries; reductions in welfare programmes - all these themes flow from the logic of competitive equilibrium" (Ormerod, 1994). "The whole emphasis of economic policy in the West in the past ten to fifteen years has been to implement free-market 'solutions' to problems. Labour markets must be made 'flexible'. Industries in the public sector should be privatised. Financial markets should be freed of tiresome restrictions and deregulated" (ibid). Free market policies have lead to a number of conspicuous failures over the past decade.

Deregulation of the labour market and new laws on trade unions activity, restricting their ability to function, are examples - "British unemployment remains very high, at over 10 per cent of the labour force, or just under 3 million people. This compares to an average of under 0.5 million in the more regulated, corporatist policy regime of the 1950s and 1960s" (ibid).

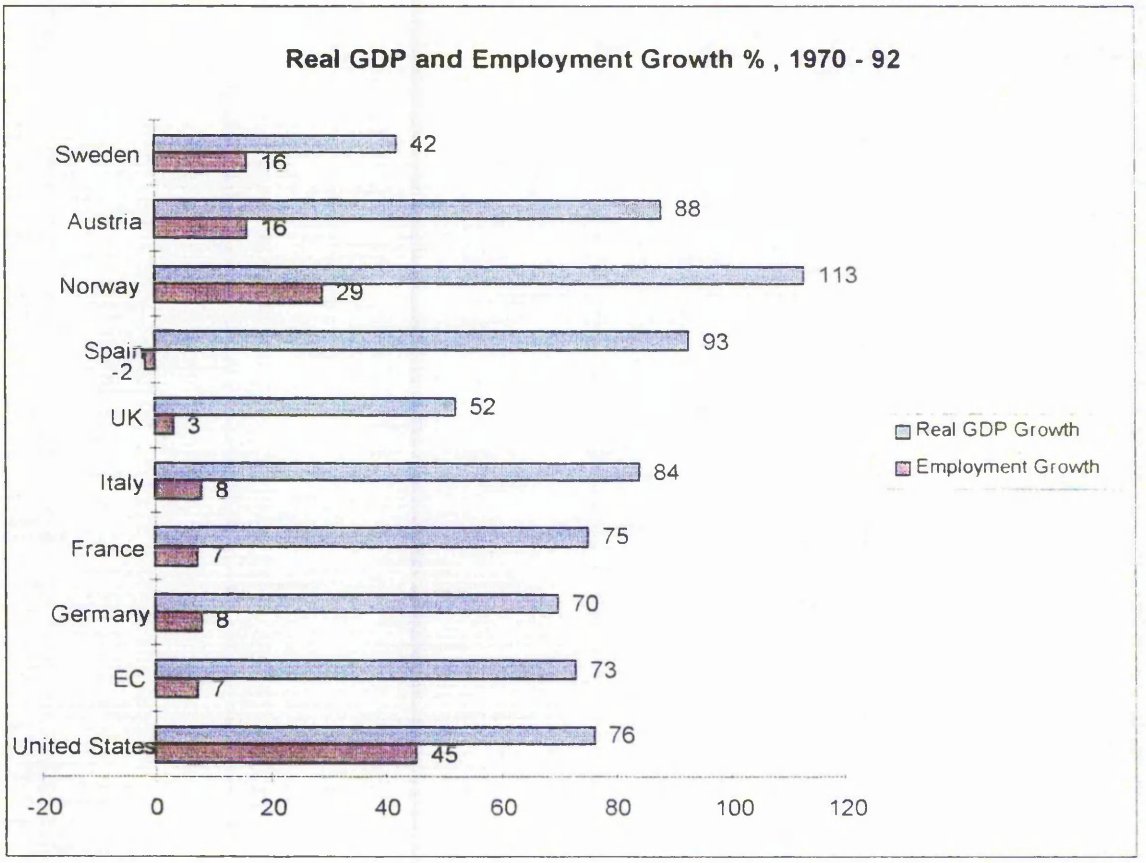


Figure 21. Real GDP and Employment Growth 1970 - 93 (Ormerod, 1994)

In a 1996 conference entitled 'Manufacturing Matters', Deldridge and Lowe discuss the fact that the Conservative government was focusing its attentions on the service sector, with little concern for the survival of the manufacturing sector, highlighted by the fact that from the 1960s to 1995, the percentage contribution of manufacturing to the UK's GDP had dropped from 35% to 21%. Kitson and Michie (1996) point out that the manufacturing sector is however fundamental to the continuing growth of advanced economies which require a large and competitive manufacturing sector "in order to generate sufficient exports to pay for necessary

imports and because of the symbiotic relationship between the manufacturing and service sectors". A lack of commitment to the development of the manufacturing sector can only result in economic disaster for the UK. Focus must therefore shift towards support for the continuation of the manufacturing sector.

3.2 POLICY RESPONSES

"It was a significant contribution of John Maynard Keynes to economic thought to suggest that the modern economy might well enter upon an equilibrium of underemployment and low performance... Economic pessimism (and nothing could be more pessimistic than the idea of an underemployment equilibrium) destroys confidence and inhibits consumer demand and industrial investment" (Galbraith, 1994). Stock market speculation and diminished bank lending , mergers and acquisitions are considered by Galbraith to be temporary causes of underemployment.

The saturation of existing markets led to a new regime of accumulation, thus affecting the free-market economy. Different economic approaches would thus effect the responses. Keynes believed that a free-market economy is unable to survive without political intervention as it could not communicate efficiently the potential level of demand to companies and individuals in the economy. The system could only inform people about the actual level of demand on which decisions are made as to how much to produce, how many people to employ, what to spend and so on. "If in some way the market economy could function so that decisions were taken on the basis of the potential level of demand, more goods and services would be produced, more people employed, and more would be spent. Of course, companies and individuals might be aware in principle that the potential level of demand is higher than the actual level...But no single company has an incentive to act on that basis. For if it does, alone, the result will simply be that its increased production remains unsold" (Ormerod, 1994). Keynesian demand-management seeks to stimulate economic growth, as represented in the diagram below, however, inflating demand does not necessarily increase production or employment because of the delay factor between boosting demand and increasing production:

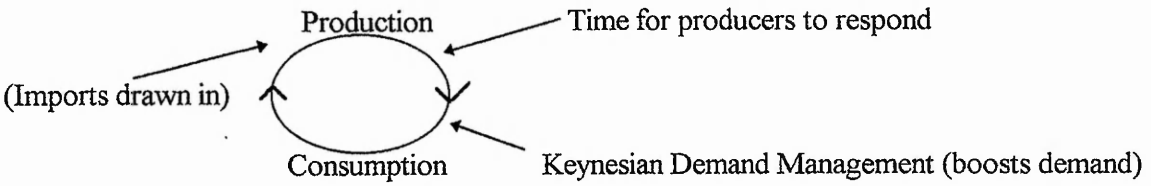


Figure 22. Keynesian demand-management

As indicated by Peeters and Pot (1993), government policies can have an important effect on the structure of the factory. Liberals and neo-Marxists suggest that intervention in the economy has a slowing effect on growth and deters investment, and that if it is possible to protect industry from state intervention, then there would be no 'logjam' in the economy. (Piore and Sabel, 1984). Both arguments "broaden into a profound condemnation of mass political participation and government's attempts to control economic development" (Piore and Sabel, 1984). The view of Piore and Sabel is that it is easy to find examples of unsuccessful government intervention in the economy, but that it would be difficult to argue that it always leads to disaster. Government policies to encourage merger booms or the development of SMEs cannot be ignored.

The role of politics in the classical view, except when it slows growth by limiting the market, is extraneous to economic development. Piore and Sabel however believe that both the rate and direction of growth depend on the distribution of economic entitlements, and because this is connected to the state's power to privilege and penalise groups and activities, economic development reflects politics.

Williams *et al* similarly believe that intervention can have little effect on UK competitiveness, as most solutions are short term. Once tariffs and barriers are lifted the economy will revert to its previous state with a jolt. Cutler *et al* accepted that policy initiatives which tackled poor education of management and supported research and development were worthwhile in the long term, but argued that they were unlikely to improve competition performance in the medium term. Williams *et al* (1987) are more sceptical they suggest management training will not necessarily improve performance and question the government's ability to pick the 'winners' of

potential research and development activities. (See Williams *et al* and Aaronovitch *et al* for further discussion on state intervention and industrial policy).

Williams *et al* put much of the poor economic position of the UK down to inadequate management, suggesting that they "consistently take poor decisions about the priority of different problems and execute their strategies in a way that is generally inept". They go on to say that "the classic British mistake is to suppose that manufacturing efficiency can be obtained by buying in machines ... but production is an activity where what counts is not what you have but the way you use it" (Williams *et al,* 1987). They further suggest that there is a huge gap between the Japanese 'kanban' technique of controlling work in progress and the British achievement of poor production planning and late deliveries. "This kind of general evidence demonstrates conclusively that Britain has a massive management problem which persists in a manufacturing sector which is leaner but not fitter". (ibid)

The second level of explanation relates to the limits of development in the postwar economic system to accommodate the spread of mass production technology. This was due to the saturation of industrial markets; third world development strategies to encourage the growth of domestic industry; and the 'trends' in consumer taste towards diversity and customisation and the exhaustion of world supplies of raw materials used in manufacturing.

The increased rate of production was no longer dependant on the organisation of labour, but on the control management had over the pace of assembly, thus having the power to subject the workforce to an extraordinary intensity of labour.

In considering many dimensions of the 'crisis' of Fordist production methods, Walker suggests that writers have seized upon different realms of the labour process as the key to contemporary mechanisation. The Braverman school is occupied by the detailed division of labour in basic conversion activities and the disintegration of craft type production in the face of Taylorism, while advocates of Flexible Specialisation are more concerned with the possibility of sustaining craft-type production due to advances in generalised machinery which remains within the sphere of conversion labour by the individual worker or small workshop. "Braverman exaggerates the

purely technical degradation of labour under capitalism, and it is this that leads him to underestimate worker resistance to capitalist offensives" (Wood, 1989). Fordism had as its focal point the problems of manual assembly and mechanisation of the transfer of materials in the production process. "Fordism still represents a powerful model of transfer, specialisation and work integration at the level of the factory, with continuing relevance to certain kinds of mass production" (Walker, 1989).

Explanations for the effects of the crisis took different courses, but in fact had the same impact. The Post Fordist explanation was that flexibility could be achieved numerically, through hiring and firing staff according to demand. Flexible Specialisation suggested flexibility could be sought *within* the organisation through better use of the workforce and technology. In both cases the result was the development of more flexible models of production. In the case of the clothing and textiles industry, markets have always been fragmented by their seasonal nature. Expansions of the market have been approached either in terms of value or volume. Due to the saturation of the mass market, manufacturers must aim to extend their markets in terms of *value* unless they are able to penetrate new foreign markets for which volume production may be appropriate. The division and sub-division of manual tasks is inappropriate for organisations aiming for increases in value of their products.

4. NEW REGIMES

The economic crisis of the 1970s and 80s resulted in responses at macro and micro level. At macro level, global-economic policy makers addressed world-wide unemployment and stagnation with instruments of domestic economic control. At micro level, organisations themselves developed strategies to counter the crisis and meet the performance requirements which had been set during prosperity.

From the second industrial revolution onwards economic downturns periodically enlarged the craft periphery with respect to the mass production core. "What is distinctive about the current crisis is that the shift toward greater flexibility is provoking technological sophistication - rather than regression to simpler techniques. As firms faced the need to redesign products and

methods to address rising costs and growing competition, they found new ways to cut the cost of customised production. The more they narrow the gap in cost between mass and craft production, the easier it became to draw customers away from the formerly cheaper mass produced goods" (Piore & Sable, 1984).

4.1 DIVERGENT RESPONSES

Piore and Sabel suggest that the responses to the crisis at micro level was for organisations to diversify into other markets through the formation of conglomerates. This was achieved either through creating new subsidiaries or by merging with going concerns. This however proved to be unsuccessful as the economic shocks affected all industries, and risks in other markets were cumulative, not offsetting. Another was to become multi-national in order to achieve economies of scale no longer obtainable through the extension of the domestic market by producing a good that could be sold in many national markets simultaneously. Hidden costs of this strategy consisted of labour problems; inventory and quality control costs; inflexibility of designs; and fluctuations in the exchange rate, none of which were accounted for.

Further responses then emerged and "during the first half of the 1980s the debate on new forms of work organisation took a new and more dramatic turn", namely through Flexible Specialisation (Lane, 1989). Piore and Sabel regarded this new strategy as a reaction to world-wide economic changes, where various economic developments combined to undermine this stability. "This new form of work organisation is not the result of direct or indirect pressure from labour but is usually initiated by management in response to changed market requirements". Change has been manifest in different ways, with the emergence of a 'Scandinavian' approach and a 'Japanese' approach, forming two very different ends of a spectrum, on which UK approaches have drawn upon to produce a range of hybrids.

4.2 'FLEXIBLE SPECIALISATION' AND WORK ORGANISATION

According to Piore and Sabel, the other, more successful corporate response often emerged in smaller, newer firms who learned to withstand the fluctuations of the market without the need to

shelter themselves. Some of the success stories were explained by the firms taking advantage of low wages in developing countries, "but some of the most prosperous companies were in mature industrial areas : the 'Third Italy', which stretches from the Venetian provinces through the centre of the country to the Adriatic Marches; in Austria, the area surrounding Salzburg; and in Germany, parts of Baden-Württemberg" (Piore & Sabel, 1984). These regional economies created new products and processes to build markets in their particular industries and by the end of the 1970s their principles became the model of industrial developments in certain regions and in the case of Japan and Germany of whole nations.

Wood (1989) however sees a number of problems in using the 'Third Italy' as a prototypical case of a new network economy because he believed that they could not provide fundamental innovation as their flexibility was limited. Being flexible to meet fashion changes is not the same as making major innovations independently of the large firm's dominance in research and development.

Firms which are considered to be *Flexibly Specialised* have the capacity to continually reshape their production process through the reorganisation of its components, and at the same time are specialised in the boundaries of the products they make, their physical location and the strength of their culture.

The degree to which the economy influences work organisation and the extent to which manufacturers can influence the market place is a debate which should first be considered. In criticising Flexible Specialisation, Wood questions whether consumer tastes really are becoming more differentiated, or whether it is in fact more a question of more diverse products becoming more widely available - are changes demand or supply led?

Whereas Piore and Sabel suggested a 'rupture' away from Taylorism and Fordism, both of which are automatically associated with mass production, to flexible specialisation, Wood questions the use of Taylorism as a benchmark against which change is judged. In the 1970s, Braverman argued that it would be impossible to move away from Taylorism without first ending capitalism. "Fordism is a more wide-ranging strategy of organising production which involves

linear work sequencing, the moving assembly line, the use and refinement of dedicated machinery ... Taylorism may be and has been applied in small-and medium-batch production, but Fordism is a strategy of work organisation and mechanisation oriented to mass production and mass marketing" (Wood, 1989). Wood argues that it is a mistake of Braverman to assume that Tayloristic principles are only applied in Fordist frameworks.

"As Sabel's idea about Flexible Specialisation developed the implication was that neo-Fordism was a kind of step on the way to Flexible Specialisation, or even that it was a pathological and temporary response to the assumed crisis of mass production. Exploring the space between Fordism and Flexible Specialisation is then an examination of managements' adaptation to the problems of the former without their fully embracing the latter. The restructuring of tasks under neo-Fordism for Sabel would be the adoption of 'quality of work' schemes, that is increased functional flexibility, but no genuine teamworking which he sees as a hallmark of Flexible Specialisation" (Wood, 1989). For regulation theorists, neo-Fordism arose not so much from changes in demand or technology as Flexible Specialisation theory would suggest, but from a crisis within production.

Two arguments for believing that Flexible Specialisation is possible are firstly that the application of computers favours flexible systems; it also restores human control over the production process. It is believed that computer technology mirrors the economy, not as it is, but how firms would like it to be. The second is that under appropriate conditions of competition, increased efficiency occurs with flexibility at every level of technological development; by adapting and specialising the equipment to the task or operation. This situation theoretically benefits short run / craft production. The spread of Flexible Specialisation however depends on the "creation of institutions that resolve the micro- and macroeconomic problems of growth along the new technological trajectory" (Piore and Sabel, 1984). Piore and Sabel suggest that Flexible Specialisation could compliment mass production in an *international* economy, where mass production facilities might migrate to underdeveloped countries, leaving industrialised countries to adopt high-tech industries and the traditional dispersed conglomerations in garments, footwear and textiles to revitalise through the fusion of traditional skills and high technology. However, they conclude that mass production is declining at a more

rapid pace than Flexible Specialisation is spreading. Piore and Sabel suggest that Flexible Specialisation has the potential to emerge in the US via two routes. The first is through mass production firms flattening their hierarchies and giving lower level supervisors more authority in order to speed adjustments to shifting markets and to lower the costs of producing small lots. The other is through the re-emergence of industrial district, this time through districts of high technology.

Piore and Sabel view Flexible Specialisation as superior as it promotes more 'human' working conditions and less hierarchical and adversarial management / labour relations. Critical debate of their work has centred on whether a more humane design of jobs and a more satisfying form of work organisation is compatible with the principles of capitalist production or whether it is a more subtle form of exploitation which allows more comprehensive and intensive utilisation of labour power. The following explanations of new forms of work organisation seek to clarify the differences in job design:

Job Enlargement: The combination of two or more tasks horizontally, thus offering lengthening work cycle times.

Job Enrichment: Vertical integration of tasks, allowing the execution of tasks such as planning. This tries to overcome excessive specialisation and inject some discretion into the job. It also encompass a more holistic approach to work allowing operators to see their work from start to finish.

Job Rotation: Rotation of tasks in succession rather than executing all the tasks continually. This gives management flexibility.

*Semi-autonomous work gro*ups: Permits job enlargement or enrichment to work in accordance with the differing capabilities and preference of the individual group worker as well as furthering their social and communication needs and skills. "Management reaps the benefits from this arrangement in terms of obtaining greater flexibility, superior collective 'problem solving' capacity, as well as being able to rely on mutual social control of group members" (Lane, 1989).

Criticisms of Flexible Specialisation

In criticising Flexible Specialisation, Wood (1989) states that it "works by violating one of the assumptions of classical political economy: that the economy is separate from society. Markets and hierarchies - the two categories that dominate contemporary theory and practical reflection on the organisation of industry - both presuppose the firm to be an independent entity". However, with Flexible Specialisation it is difficult to distinguish where society ends and economic organisation begins.

Flexible Specialisation theorists believe that new management initiatives break away from labour process theory of management control. "Functional flexibility, teamworking, quality of work life programmes and Japanese quality circles ... all herald a new regime of production rooted in the new technology" (Wood, 1989) and job redesign and increased worker participation which the normative organisational theorists had been campaigning for are becoming a reality. Kern and Schumann recognise that "labour is no longer seen as expendable and that there is an increasing realisation of the qualitative significance of human work performance" (Kern & Schumann, 1987). "The crucial choice, when there is an industrial divide, concerns technology... now with what Piore and Sabel see as the saturation of demand, fragmentation of markets, and fresh technological opportunities, the technological paradigm is again at issue, with distinct possibilities of a revival of craft production" (Wood, 1989).

Secondly, Flexible Specialisation is in danger of assuming that all new technology is inherently flexible and this flexibility is being used. Thirdly Wood suggests that the new patterns of work organisation and the latest idiom of flexibility are not necessarily as big a 'rupture' from Fordism as Flexible Specialisation assumes (see Wood, 1989).

Walker also criticises the work of Piore and Sabel by highlighting the fact that the second industrial divide took place on the basis of improvements in mechanical processing when major revolutions in chemicals, agriculture and electricity had already taken place and had "utterly changed the face of industrialisation in this century" (Walker, 1989).

Advocates of Flexible Specialisation such as Piore and Sabel have general purpose machinery in mind, applied to situations where one has to switch rapidly from one output to another. In this case, flexibility means adaptable machines, shorter set-up times and a broadly skilled workforce. (Walker, 1989).

"Piore and Sabel are extreme, so their over-concentration on the potentialities of new technologies in the 1980s means that there is a neglect of the job losses, unemployment, tightening of performance standards, labour intensification, changing employment contracts and reduction of the power of trade unions and workers' representatives which have characterised the decade" (Wood, 1989). Similarly, the Flexible Specialisation debate focuses on new technologies, which is not appropriate to the (labour intensive) clothing industry.

4.2.1 The Scandinavian Approach

The focus of Scandinavian approaches to new forms of work organisation have been on the improvement in quality of working life, placing greater emphasis on the social implications when changing the working environment than on the technical methodology. As will be seen from the case study examples, particularly examples from Denmark and Sweden, much effort has been put into training, problem solving and communication skills. For example, in Company DC, teams received external 'soft' skills training before starting teamworking. The course included production planning, quality awareness, instruction techniques and psychology. In addition a psychologist was employed for 4 days to train operators in problem solving, co-operation and communication. The Swedish example from the case study data (Company AS) is from a nursing home for the elderly, in which nursing staff are now responsible for organising their own work, planning their own holidays and making decisions which were previously the responsibility of their line manager. Teams were trained in administration, computer skills, finance, planning and the 'political system'.

Skills beyond traditional sewing skills were part of the training for operators in Company EC in Denmark where machinists cut samples, hand lay patterns, draw markers, cut the pieces and carry out finishing processes such as fusing and packing.

In some cases operators were more involved in discussions to change, and teamworking has been taken a stage further where operators have direct contact with customers and will carry out tasks up and down the production process. In Company BC for example, the suggestion to change came from the employees themselves and the machinists who wanted to change could do so, resulting in the formation of one team of 6 operators. When the other employees decide that they want to change to, the management will organise it for them. "Plenty of time was spent in meetings and discussions whenever needed". New applicants are interviewed by the team members and the supervisor.

The sense of there being plenty of time, with no sense of urgency is also a characteristic of these examples. The Swedish example paints a picture of an approach which certainly had no sense of urgency to change. When the organisation decided to introduce teamwork, it took 6 months of planning, followed by 6 months of discussion before any decisions were made.

Fröhlich and Pekruhl, (1996) identify 'shapes' of teamworking associated with Scandinavian and Japanese approaches and suggest that in its *ideal* form, the Scandinavian approach has the following traits:

1. "Membership in a work group is voluntary. Employees are not forced into group work.
2. Group members can chose the fellow members they want to work with.
3. Members can chose their 'leader' or speaker from their own ranks to deal with the rest of the organisation.
4. Group members can decide on the internal division of labour and work rotation.
5. Group members have different skill levels that permit them to help each other and to learn.
6. The tasks should be rather complex and conceived as a 'rounded whole' to allow for variability of work, different degrees of task difficulty and to allow identification with a 'whole' product.
7. In regard to technology, the performance of the work group should be as independent of machine pace as possible". (Fröhlich and Pekruhl, 1996).

Fröhlich and Pekruhl argue that Scandinavian efforts to enhance the Quality of Working Life "took place in a period of full employment or even an over-heated labour-market, when it was difficult to recruit employees for certain industrial jobs and to motivate them to stay in firms" (ibid). Thus the general economic climate at the time assisted in the success of the approaches.

4.2.2 Japanese Models

"The development of the Japanese transplant manufacturing sector in the UK economy has been relatively rapid. In 1981, 17 Japanese manufacturing enterprises in the UK employed just 3,000 people. By 1994 this total was estimated to have grown to over 60,000, primarily in the engineering sector." (Munday and Peel, 1996). They suggest that the problem with analysing the performance of Japanese systems in the UK is in comparing like with like, "eight Japanese plants in the UK not only facing a different operation environment, but also having to manufacture a high proportion of the finished product in-house compared to their Japanese based counterparts" (ibid).

In his paper entitled *'Japanese-style' Manufacturing Methods and the Process of Organisational Change*, Mitton (1996) discusses the extent of emulation of Japanese style manufacturing methods in the British electrical / electronic and automotive industries. Survey findings were that 98% of British owned establishments and 95% of foreign owned establishments used one or more 'Japanese' production technique (quality circles, statistical process control, total quality control, just in time, operator responsibility for quality, continuous improvement / kaizen, reduction in set up time or cellular manufacturing). Of all the Japanese owned establishments, 71% used 4 or more of these techniques. Mitton looks at the 'degree of fit' between personnel policies and new production techniques. Personnel policies included "a policy commitment to job security, a policy of no compulsory redundancies, flexible job descriptions, teamworking, single status, performance related pay, appraisal schemes and formal assessment of workers, rationalisation of job categories, personnel specialist involvement in technical change and the absence of union recognition" (Mitton, 1996). In the survey findings, 16% of British owned establishments utilised six of the 11 policies / practices, compared with 57% of the

Japanese owned establishments. The 'degree of fit' was measured according to whether personnel policies were already in place before the technological changes or whether they were introduced as a result of them. Organisations with a good 'fit' were considered to be those which used a large number of Japanese techniques and had the personnel policies already in place, those with a low level of fit did not have the personnel policies in place. 12% of British owned firms had a high degree of fit, compared with 43% of Japanese owned firms.

Ostrowski *et al* (1996) describe the sudden rush of Western companies to adopt Japanese practices in order to achieve 'lean production'. This is following a glut of case studies of successful implementations. "Unfortunately, lost somewhere in the rush to embrace 'leanness' was the complementary issue of 'fitness', and its meaning in particular organisational and industrial contexts". In their paper they explore the analogy of company 'fitness', observing the impact of information technology, the ability to recover from shocks, new competencies and possible limitations of leanness.

In their study of a cluster of Japanese manufacturing 'transplants' into greenfield sites in the Midlands, Elger and Smith (1996) analyse the relations between shopfloor workers and management and conclude the following. The necessary personnel and administrative policies for the transferral of Japanese techniques were not adopted by the firms. Instead they adopted them on an ad-hoc basis as problems arose. This resulted in management addressing recruitment and retention problems or output and quality variations on a piecemeal basis and a general lack of strategic vision. Each work place was further characterised by the differences in employment policies, such as operating with a piecework payment system, employing female workers for assembly operations or levels of union membership.

Japanese work organisation stresses innovation through improved relations between managers and workers, improved communication and feedback between production steps. These strategies bear little resemblance to the classic concerns of Taylorism for the dissection of tasks or Fordism with the sequential linkage of steps in the assembly process. They have not however

completely forsaken Fordist assembly line principles, as they have pushed forward in other realms of labour process improvement (Walker, 1989). In relation to the mechanisation of the production part of the labour process, Braverman was wrong to think that Taylorist principles would work effectively, because human self regulation and creativity are not amenable to crude strategies of fragmentation and mechanical repetition (Varaiya, 1987). Even basic acts of work integration also involve skills such as communication, organisation, co-operation and competition. In Taylorism work integration is also most completely absent and in Fordism dimensions such as inventory and slow response time to errors were lost. Some commentators argue that Japanese innovations exploit these 'lost dimensions' of production.

Lean production "eliminates any discretion" and groups work at a higher speed than traditional mass production, resulting in "creative tension". In Japanese group work it can be summarised that "work pace depends entirely on machine pace, that tasks are highly standardised and repetitive, and that vocational skills permit changes between short-cycled operations only." Fröhlich and Pekruhl, (1996). Standardisation is key to continuous improvement, in a group individual members can suggest improvements, but must gain agreement from other team members before any changes are made. Once the decision is made, and the task has been designated, there is little autonomy in task execution, instead it is standardised. Collective autonomy is thus limited to task design rather than task execution.

In considering Japanese managerial practices, it is extremely important to bear in mind the industrial system in which it functions, which is bound together by 7 critical elements:

1. A unique management style
2. Advanced technology
3. Abundant capital
4. Supportive government
5. An incredible international network for intelligence and co-ordinated action
6. Effective vertical and horizontal links among companies
7. A strong sense of national mission

"So ingrained in the thinking of all Japanese is the need for efficiency and productivity that Japan frequently is referred to as the 'productivity culture'." Reasons for Japan's success are described by Wickens (1987) as:

1. Emphasis on productivity and technology
2. Forward looking product diversification
3. Effective use of suggestion systems
4. Belief in the concept of Total Quality Control (TQC)
5. Commitment to robotization
6. A unique union-management relationship

Japan today leads in the use of industrial robots, thus robotization means that companies no longer need to be located in areas of low-cost high quality workers. Wickens sees this 'amazing invasion' of Japanese industry by robots as a means of "widening the competitive edge Japan holds over the West"(ibid).

"..human resources are clearly seen as the means to effective development and use of state-of-the-art technology. Therefore, rather than being contradictory, the great importance attached to both technology and human beings results in a healthy synergism...unlike managers in the west, Japanese managers in manufacturing view production as an interactive system. Staff and specialists are an integral part of the manufacturing system, and even staff take-overs of operations are considered to be desirable when quality performance is at stake" (Reitsperger and Daniel, 1988).

Flexibility, Quality Consciousness and Teamworking are seen as a tripod where the elements are "indivisible and interdependent - loose one leg and the structure falls..these three legs combined with common terms and conditions can be major determinants of success for any company. They are by no means unique to Japan but are practised in Japan to a greater extent than anywhere else. They *are*, with modification, transferable.." (ibid).

Kaizen

Oliver and Wilkinson (1992) note that for many commentators, "Kaizen is *the* distinguishing feature between Japanese and Western organisations". Kaizen is a Japanese industrial philosophy, managing the art of *continuous improvement* for everyone within an organisation through a suggestion system. The idea of a suggestion system originated in the USA, and was slow to catch on in Japan: "In the 1960s companies began to integrate suggestion plans with a variety of small-group activities such as quality control circles and *jishu kanri* (autonomous control) teams. With this sort of appealing combination, the number of suggestions increased rapidly." (Wickens, 1987). Theoretically it cannot be faulted. Kaizen has the following principles, it:

- Enrols everyone in pleasing the customer
- Achieves continual improvement from working in teams
- Gives the workforce responsibility and power
- Improves the work through improving the workforce
- Brings workforce commitment through job security
- Means quality is free
- Means spreading the message
- Is a revolution in management
- Takes time
- Challenges management
- Must be driven from the top
- Is a never ending journey

(Source : BBC video)

But when examples of its success are quoted, the approach seems less attractive. Malloch (1996) offers Kaizen as an example of one particular 'Japanese Style' management technique in a UK engineering firm making diesel engines and describes how the company received training for Kaizen from an American agency which did not work, but then

became successful when a Japanese producer bought a share of the company and showed them how it was done:

> *"They showed us how they used Kaizen. The Japanese were much more focused and aggressive than the KIA [Kaizen Institute of America]. Everything - but everything - that did not add value was seen to be waste and had to be removed. They changed our mindset. The attitude was 'here is a stopwatch: go out and measure the waste'" (Malloch, 1996).*

This is followed by a description of how they went out onto the shopfloor and recorded every detail of operators' movements on video to evaluate how movements could be reduced to a minimum:

> *"you go out and video it and watch it again and again; and record every little detail - even if he walks for two seconds to pick up something - you get right inside the process and you begin to understand it. You begin to realise that what the operator is doing is not necessary. He should not do it. So you eliminate it from the process. Even process engineers and industrial engineers do not get into the process in depth the way that Kaizen does."*

The re-introduction of such Tayloristic principles is typical of Japanese work systems. Malloch described the advantage of using such a system was that workers become more involved and participation increases. The time taken to produce these figures and the time lost from absenteeism resulting from the intense nature of the work cannot possibly be outweighed by the time saved by making an employee move in such a prescriptive manner.

Total Quality Control (TQC)

"Total Quality Control is a philosophy - even a way of life - that permeates every phase of the process of management in Japan" (Goldman, 1993) it is the responsibility of each and every employee. In his study on the implications of Japanese techniques in Western organisations, Goldman focuses on the implementation of Total Quality Control (TQC), which seeks to

"enhance productivity, profits, human interaction, and customer satisfaction by making quality the foremost organisational objective". Goldman argues that the TQC "depicts a holistic framework for investigating and implementing quality measures such as quality circles, quality control departments, quality control specialists and zero defects. He further suggests that it provides an alternative to the Western "participative management" movement.

"A far reaching, intercultural challenge facing Western theorists and practitioners is whether TQC is a viable philosophy for non-Japanese organisations, and whether it can be put into practice".(Goldman, 1993). Goldman suggests that Japanese techniques *can* be successfully implemented by Western organisations, particularly TQC which is a hybrid of "Western and Japanese theory and praxis".(ibid)

It is wrong to think that the introduction of quality control circles (which originated from Deming and Juran in the 1950s) will automatically improve quality, they "work in Japan because they are part of the total philosophy which puts quality first and to which everyone is committed...To believe that QCCs can simply be introduced into the UK and be successful, without other fundamental changes in attitude, is a delusion" (Wickens, 1987).

If operators are given responsibility for their quality at source and the time to take corrective actions for faults, such an organised system would become superfluous to requirements.

The management of inventory is something which has been noted by the Japanese in the adoption of JIT. These methods have been equated to flexible production, but though they offer flexibility in relation to final demand, they also result in a rigidity due to the lack of buffer stock (Walker, 1989). Some Japanese companies have re-thought the integration process of production, which not only means a redirection from Fordism, but the establishment of a new starting point, away from Tayloristic division of tasks between labourers and management, so workers become more involved in oversight and management in production. This can be achieved through new kinds of work teams, less structured job assignments, reduced management hierarchy or hands-on managerial participation in work (Walker, 1989).

"There are of course limits to the amount and kind of flexibility firms need. Complete job flexibility and constant toing and froing would, for example, conflict with the principle of team building inherent in both Japanese and Swedish models. Furthermore, much of the flexibility sought in the 1980s has simply involved people accepting more responsibilities, being more prepared to cover for people and taking care over their quality, time keeping and general behaviour" (Wood, 1989).

Wood suggests that JIT manufacturing "turns Taylorism on its head" but it does follow Fordist modes of production as "much of the Japanese management model is a hybrid of existing theories of organisation, allied to important new discoveries, particularly the just-in-time production method, new forms of quality control and the value placed on close relations between suppliers and final users (Sayer, 1986, Wood 1988, 1989). But nothing in these innovations necessarily implies an end of mass production" (Wood 1989).

Similarly, in using Fordism as a starting point (as with the labour process theory and flexible specialisation), questions about Japanese management practices have been reduced to a discussion of whether they are a continuation of Fordism or not. This results in the side-stepping of important issues, for example in looking at the way Japanese style 'employee involvement' represents basic innovations, without necessarily reversing all aspects of Taylorism or negating the central principles of mass production (See Dohse *et al*, 1985; Monden, 1981, 1983; Sayer, 1986; Schonberger, 1982; Wood, 1989).

4.3 FLEXIBILITY AND TEAMWORKING

The concept of teamworking has its historical roots as early as the 1920s with the work of Elton Mayo. This was further developed by the Tavistock Institute of Human Relations[1] in the 1950s, which at the time was a major contributor to the field of work organisation, and resulted in the formulation of 'sociotechnical theory'. The main thrust of the Institute's research programme

[1] Founded in 1946 with the aid of a grant "from the Rockerfeller Foundation to undertake action research in the broader social field outside the mental health area with which the Tavistock Clinic was concerned." (Van de Ven and Joyce, 1981).

was subsequently expanded and, during the 1970s, such projects were initiated in "almost all Western countries, in North America as well as Europe, and the approach became linked to a wider movement that concerned the quality of working life" (Trist, 1981).

New forms of work organisation, such as teamworking have been adopted globally. However, due to the variations of its origins it has not come to mean the same thing in different parts of the world. The emphasis in the Japanese approach has very much been on the technical development of work flow, in comparison to the focus of the working environment and workplace culture of Scandinavian countries. In the case of the UK, organisations have a greater tendency towards a focus on the technical advantages of teamworking, whereas the improvement in working conditions, though important, have played a secondary role.

Parry *et al* agree with this and suggest that although there has been a long history of interest in teamworking in the UK, the rekindling of interest lies in "improving product quality, reducing lead times, and creating organisational responsiveness to achieve and maintain competitive advantage" as opposed to quality of working life (1996). They further suggest that teamworking has the potential to reshape the entire organisation and can be viewed as a core competence in doing so. "It can be seen as a possible key to unlocking potential, creating flexibility and integrating across organisational boundaries" (ibid). This discussion is examined in detail in Chapters 3 to 5.

According to Wood, the fundamental transformation of work commenced in the 1980s, when governments began to debate methods of reducing labour market rigidity as well as overall organisational flexibility, and at the same time organisations themselves became concerned with job flexibility, multi-skilling and an increased ability to hire and fire. This has become particularly pertinent during the 1990s where short term contracts and fewer employment rights are becoming the norm.

Atkinson (1985) noted that organisations were principally developing two forms of flexibility - numerical and functional. Numerical flexibility is concerned with enhancing the firm's ability to adjust labour inputs to fluctuations in outputs. This is common in the UK clothing sector where

operators are sent home if there is no work available for them. Functional flexibility on the other hand relates to the workers themselves, their skills and the ability of the firm to reorganise the workforce according to production demands. "In Britain, while both emphases have been present, because of the relative ease with which employers can make redundancies, aided by the distinctive 'voluntary redundancy' system, much of the concern has been with the balance between non-standard and regular contracts" (Wood, 1989). Atkinson later proposed a core-periphery model in which he suggested that in order to obtain flexibility, firms maintained a core of permanent workers offering functional flexibility and whilst maintaining numerical flexibility with a periphery of temporary workers and subcontractors who adapted to fluctuations and changes in demand as and when necessary. He was particularly concerned with the extent to which there is an explicit strategy on the part of the employer to become more flexible and adapt more of a Japanese approach to labour utilisation and subcontracting. Wood suggests that this model, apart from being too simplistic is also inaccurate as the core of workers are often becoming more 'functionally flexible' whereas the periphery workers are perhaps not so multi-skilled or flexible. Some groups may have secure employment but not be included as the core of the business, and other 'peripheral' workers, for example part-time workers, may be central to the functioning of the business.

Wood suggests that functional flexibility may enhance the skill level of some workers, but others remain low skilled. In Atkinson's model numerical flexibility is necessary to sustain functional flexibility of the core. Whilst not totally neglecting diversity in workforces, Piore and Sabel do not appear to underplay its importance when judged against the significance they have given it in their previous work. In contrast Kern and Schumann have been explicit about the possibility of increased segmentation following new production concepts. (Kern & Schumann, 1987).

"Economies of scale, so central to the Fordist conception, no longer need be such a determining force in competitive advantage. The new technology offers the possibility of reducing break-even points, so small-and medium-batch production become more viable even in what were once exclusively mass-production industries ... There will be the re-emergence of what Sabel (1989) calls regional economies' built around a network of flexible firms in which no one firm is dominant, or by implication, especially large" (Wood, 1989).

Friedman's (1977) strategy of responsible autonomy tries to encompass the adaptability of labour power by encouraging workers to operate their discretion and in order to achieve this workers should be given status, authority and responsibility. This would require the reduction of supervisory labour and the introduction of employment security. Friedman suggests that employers usually adopt this strategy as a response to employee unrest. The weakness of Friedman's argument is that he fails to consider the need for systematic vocational training of the employees in order for them to adopt responsible autonomy.

"Although the development of functional flexibility, teamworking , and quality circles may be limited and should not be automatically associated with multi-skilling or up-grading, they may be important parts of such processes" (Wood, 1989).

Similarly, although there is a high level of unemployment in Britain, creating a large source of labour, it is not on the whole the right 'type' of labour to restructure work organisation in line with new production concepts. This is primarily due to the decline in the apprenticeship system and vocational training in comparison with other countries. "A survey by *Incomes Data Services* (407, 1988: 5 in Lane, 1989) shows that although there are few examples of exemplary practice, showing a genuine commitment to multi- or dual-skilling, in general companies are not prepared to offer the systematic and lengthy training required" (Lane, 1989). This, however, is not to say that manufacturers have not been seeking functional flexibility. In Britain, management seeks functional flexibility from a core labour force and numerical flexibility from a peripheral labour force.

"On many accounts the conventional factory appears to be at the brink of the greatest technological and organisational change since Henry Ford popularised the principle of standardised production" (Jones, 1989) He suggested that skilled workers will remain in flexible manufacturing systems, which questions the presumptions of technologists that labour can be replaced by computerised machines and of 'academics' who suggest there will be a core of computer aided experts and a periphery of unskilled labour.

New forms of work organisation sought the inclusion of greater worker autonomy, greater task variety, self regulation of work speed, sequence and methods, more opportunity for co-operation between workers and a more holistic work structure, permitting the completion of tasks from start to finish. At the same time, employers' concerns with the market place began to mingle with these organisational issues and management became increasingly concerned with increasing flexibility of production structures and labour deployment to cope with market changes.

Under a capitalist regime work was divided, simplified and co-ordinated by the management, thus maintaining control of the labour process. In new forms of work organisation, a Marxist approach is taken where 'simple co-operation' is achieved by organising workers in groups (with team leaders), a great deal of which is carried out informally through personal contact and the exercise of collective judgement (Walker, 1989).

Lane suggests that up until the early 1980s work reform attempts have not fundamentally changed the old Tayloristic style of work organisation, but they should not be dismissed.

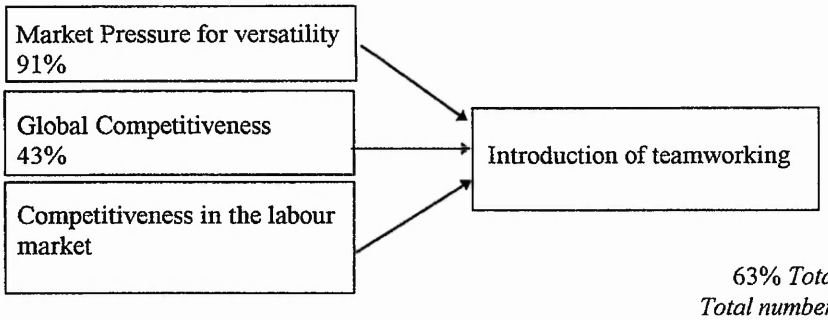
Finally, with a long tradition of 'minimal involvement' of industrial relations, mutual trust and co-operation can not be easily developed. Many studies have shown that management cannot and does not feel confident about the existing balance of control (See Institute of Manpower Studies (IMS), 1984., *Competence and Competition)*. Instead of being part of an overall strategy, empowerment of the workforce is regarded as a contest of strength between management and labour, and the focus is removed from the overall goal.

"The example of Britain shows, contrary to the claims of Piore and Sable (1984), that countries without a pervasive craft ethos will not necessarily remain wedded to the old model of industrial organisation. Instead managements in such countries are more likely to develop a hybrid strategy, combining an only partially changed market orientation - a low-cost mass production orientation predominates over a concern with versatility - with a high tech version of production organisation along the old Tayloristic lines" (Lane, 1989). Lane summarises the factors contingent on the new forms of work organisation in the UK as follows:

Management	Lack of confidence and therefore hesitancy about technological innovation and lack of competence to handle the more complex variety
Labour market supply	A shortage of skilled labour and an absence of flexibility in existing skilled labour.
Training system	A haphazard and underdeveloped system and a general reluctance by management to making long-term investment required.
Employment relationship	Relatively low degree of employment security. Segmented international labour market.
Industrial Relations system	An adversarial system based on a 'minimum interaction' employment relationship. Incompatibility with notion of worker responsibility for production flow and product quality. Management still struggling to re-establish control.

Table 6. Extracted from "factors supporting or inhibiting the move towards Flexible Specialisation: a comprehensive perspective" (Lane, 1989).

With these problems in mind, it would seem impossible for British industry to develop at all. However, despite these barriers, positive steps are being taken to achieve flexibility and greater worker participation. It is relevant to note the companies' own explanations for changes to more flexible modes of production using empirical evidence. It should be highlighted here that few companies offered just one reason for changing their production system; most restructured for a combination of reasons. Analysis of data from the 35 case studies identified three broad reasons for introducing team-based production. As can be seen from the diagram below, the majority of companies changed as a *response* to market pressures, global markets and labour retention and recruitment difficulties. This ties in with previous propositions that management lack strategic direction, and with Lane's suggestion of labour market problems. Details of the reasons for change are discussed later in this chapter.



63% Total number of companies cited: 35
Total number of reasons for change cited: 35

Figure 23. Factors influencing the decision to transfer work organisation to team based production

The above diagram is similar to the Peeters and Pot model of factors influencing the structure of the Dutch clothing industry (see page 46). Differences lie in the company's perception of government intervention and technological influences. Whereas these two factors are considered important in the Dutch clothing industry, they seem of little relevance to the teamworking firms visited for the case studies. Before entering into the detailed reasons for change, the theoretical framework should first be introduced.

5. THE ROLE OF SOCIOTECHNICAL THEORY IN UNDERSTANDING CHANGE

Sociotechnical analysis is utilised as a starting point to assist in the understanding of the change process described above. Unlike early explanatory theories, it is an 'open systems theory' which claims to take into account external influences on organisational change, rather than just looking at internal mechanisms, thus making it particularly relevant. It gives management a central role in creating structures which are able to respond according to external influences, thus through the acquisition of information, management are more able to eliminate uncertainty. "The failure of many individual restructuring exercises has been due to the fact that there has been a lack of recognition that work has to be analysed within a sociotechnical system in which social and technical relations have to be redesigned together and in which change in one area excites a whole chain of adjustments in other parts of the organisation. In other words, changes have been too piecemeal and not radical enough in their scope" (Lane, 1989).

5.1 BACKGROUND

Sociotechnical theory states that the production system designed will consist of two primary elements, the technology, consisting of equipment and methods of operation used to transform raw materials into products, and the sociology, which includes the work structure that relates people to the technology and to each other. Analysis assists in the identification of "key sub-systems", namely the technical system, the formal role structure and sentient (individual feelings or sentiments) and the relations between them in the 'conversion' process. "Management's task is to create a sociotechnical system in which the two dimensions are jointly optimised and mutually supportive. There is some choice at organisational level, but there are defined limits set by the need for economic validity" (Thompson & McHugh, 1984).

Most of the basic concepts employed in the field of sociotechnical studies can be traced back to a paper by Trist and Bamforth (1951) of the Tavistock Institute of Human Relations, London. There they studied the social and psychological consequences of the longwall method of coal-getting and described how the formation of a composite work group in mining led to productivity improvement, lower costs, less absenteeism, reduced sick leave and fewer accidents (Carrere & Little, 1989). Emery and Trist found that the optimum level of grouping can be determined only by analysis of the requirements of the technological system. They further postulated that the grouping of workers produces its main psychological effects when the work roles are such that the workers relate to each other through task performance and interdependence. When the task orientation is established, the worker should have an adequate range of mutually supportive roles with respect to performance and carrying stress that arises from the task (ibid).

It was realised through the studies on the coal mining industry that if the technological system was optimised at the expense of the social system, then the benefits of the new technology could not be optimised. The same would be true if the social system were optimised at the expense of the technological system. However, it was later suggested that the same technological system could in fact provide a choice of social system, at least within a range of feasible alternatives (Trist *et al.*,1963). This theory has emerged as a significant approach for the design of

organisations, "especially at the people and technology interface" (Cummings, 1977). It is therefore a useful means of assessing the design of team based production, in which the interface between the employees and their technical working methods is so vital.

In order to measure the effectiveness of a sociotechnical system, the degree of importance placed on the technical system in comparison with that of the social system is analysed. An electronics company in Idaho based their organisational changes on sociotechnical theory and are used as an example of how the two elements are supposed to be measured (Taylor, 1985). The area of analysis considered first it the technical system of the organisation.

5.2 TECHNICAL ANALYSIS

"The basis of STS design is that organisational systems have a technical function to perform in a complex and turbulent environment. This function is expressed in terms of the mission (or purpose) and unit operations of the work process" (Cummings, 1977). In order to analyse the technical elements of work organisation, three main areas are considered by sociotechnical theory.

Firstly, the phases in which there is a *fundamental change in the state of the input* is noted, and thus the 'unit' operations are identified. For example the identification of all tasks involved in the manufacture of a garment, from receiving cut work to packing the finished garment would constitute the 'unit operations' in a clothing factory.

Secondly, a list of all aspects of the product for each operational unit is drawn up, from which 'key factors' relating to quantity, quality or cost of the system output are extracted. From this a table is formulated, which can be used to discuss ideas for improvements.

Finally, 'key variances' in control of production are examined, usually forming a bridge between social and technical analysis. It is often revealed that variances are not controlled at their place of origin. For example, poor cutting may not be identified until the garment is being sewn, and machinists may try to adjust their technique to compensate for the mistake of the cutting unit

and control the problem. Sociotechnical analysis makes it possible to determine whether this variance could be controlled much better by the cutters. This analysis could indicate that the machinists themselves are often the best people to control variances a they are closest to the problem.

5.3 SOCIAL ANALYSIS

"The social system comprises the work-related interactions among people" (Taylor,1985). These include both vertical and horizontal relationships, either internal to the work process or across its boundaries. Social interactions are also driven by the 'role expectations' with which people are faced:

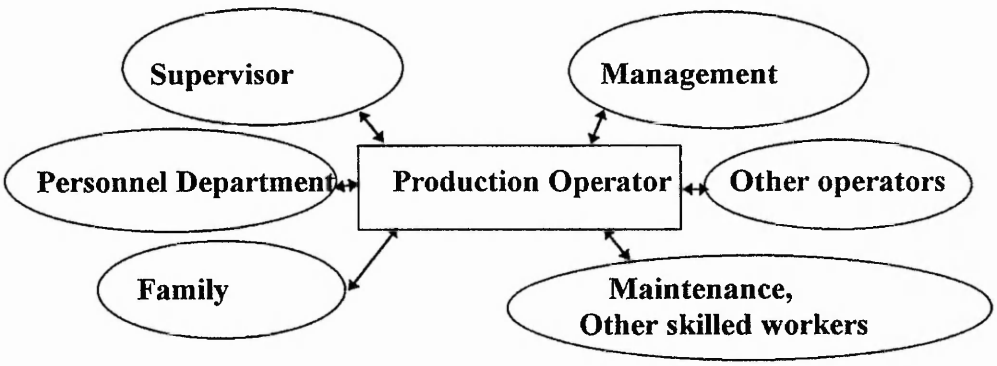


Figure 24. Role Expectations

"The social analysis essentially involves the examination of the roles and relationships within the whole work process". It is focused on the roles involved most in the control of the key variances - focal role analysis - and thus builds upon the technical analysis to identify ways that variances in production can be better controlled by improving the fit between the technical functions and the social functions. The first stage in social analysis would be to form a grid of the above social functions and the particular relationships (horizontal, vertical etc.). "From the behaviours noted in the social grid, the patterns of interaction with the focal role can be mapped in terms of frequency and direction of contact, and these contacts can be identified by social functions served" (ibid). This can be a useful tool in assessing the communication process within a firm.

The final phase of sociotechnical analysis involves and evaluation of the 'quality of working life'. This includes dignity, respect, social support, prospects for advancement and challenging work. Particularly important is the feeling that a task is central to the business, it is suggested that STS

management can result in a high quality of working life, due to competence in creating a meaningful product, especially when operators are able to control key variances themselves.

"The STS analysis has the advantage of defining technology in terms of its input and product, rather than by its tools, processes, or techniques. This focus ensures that the technical system will be analysed separately from the jobs and work of people on the one hand, and from the supervisory and control system of the other" (Taylor,1985).

Although sociotechnical theory takes a more holistic view of the organisation than previous explanations, it is argued in this theses that it still approaches new forms of work organisation in a very limited way.

Whilst it has been adopted and adapted in one form or another in Northern Europe, this has not been the case in its country of origin, and even in cases where the approach has been assumed, "Experimental activities involving 'autonomous groups both in Norway and Sweden only became parentheses, although the evaluation results were positive. They led to no lasting changes. The original ideas of sociotechnics have become increasingly superficial and nowadays people only talk about 'group organisation' or 'production groups'. In the manufacturing industry the individual tasks are being increasingly simplified at the same time as group-stressed production organisation is being brought into line with efforts at rationalisation" (Bjorkman and Lundqvist, 1981).

Despite its claims to be an open systems theory, it seemingly takes little account of the external environment. This environment of the work group, in the form of equipment and layout, is seen as a basic constraint on the shape of work organisation. However, it does not simply reflect the technology, as the organisation has independent social and psychological properties "like its human relations predecessors, the Tavistock Institute writers adopt a unitary and socially harmonious view of the enterprise, taking for granted that the primary task is shared by all. It is also consistent with that tradition in taking technical and formal structures for granted, the difference lying in the language of management choice rather than worker adjustment" (Rose, 1975). Rose also notes that the concept may further be seen as a device for helping production

engineers to discover better "best ways". Finally, worker's choices are seen as non-existent in the face of a determinate environment, where resistance to management plans runs up against 'uncontrollable forces in the external environment' (Rose, 1975).

6. TEAMWORKING IN THE CLOTHING AND TEXTILES INDUSTRY: AN EMERGING MODEL

When assessing the reasons for a change to a more flexible form of production, it is important to realise that in most cases the introduction of teamworking may well offer benefits to the workforce, but changes are rarely made for the sole purpose of improving the working environment. As Wood suggests, changes may be mutually beneficial, but "the fact that managements introduce work restructuring for their own more conventional economic objectives may not, of course, rule out gains for workers and increased job satisfaction and autonomy... there are however several reasons for doubting that a new mutuality of interests is emerging - not least that mutual dependency is not the same as common interests (Hyman, 1988).

Industries develop along distinctive pathways owing to their fundamentally differing materials base. Garments are difficult to machine produce because of the variety in human body shapes and the difficulty in handling the fabric itself. The textile industry was responsible for a large part of the industrial revolution in the nineteenth century, through the mechanisation of looms. The same thing happened a century later, where after incremental improvements in spinning and weaving machines, the textile industry was deeply transformed by the introduction of synthetics and knitted fabrics. However, the sewing operations in garment production have changed very little over the past decade, and only through the advent of work reorganisation has this industry seen any significant changes of late.

"Clothing manufacture is widely considered a 'sunset' industry with little future in countries like the United Kingdom. Simple products, static technology and low capital requirements, it is often argued, make labour costs the central focus of competition in the industry and give low-wage developing countries an insurmountable comparative advantage" (Totterdill & Zeitlin,

1989). However, with a change in emphasis from competition based on cost to competition based on quality, responsiveness and customer service, this need not be the case.

Since the beginning of the 1980s the "conditions of competition in the British clothing industry have shifted decisively away from those prevailing in previous decades. Changes in consumer tastes and the demographic structure of the population, the volatility of demand and the high capital costs of stocks and work in progress, and the industry's own efforts at product differentiation have together fragmented the mass market in advanced countries and eroded the advantages of long-run garment manufacture. While price remains important, particularly at the lower end of the market, the struggle for competitive advantage has come to centre increasingly on the retailers' and manufacturers' efforts to target specific groups of consumers defined in new ways; to seduce customers with attractive, fashionable garments; and to respond rapidly to short-term trends in the sales of individual product lines" (ibid). This has resulted in severe pressure being placed on conventional production lines with a forced need for change.

In the context of the clothing and textiles industry, reasons for a fundamental shift away from mass production techniques were analysed from the 35 clothing and textiles case studies (refer to diagram on p.86). These are as follows:

6.1 REASONS FOR CHANGE

6.1.1 Market Pressure for Versatility

An increase in pressure from consumers for a greater variety of products forced manufacturers into a position where they had to offer retailers more choice in terms of colour, style, product mix and size. The need, for example, to offer 'multi-packs' of products in different ratios of colour required greater manufacturing flexibility and careful planning. The need to produce more samples, coupled with smaller, yet more frequent, order sizes forced a need for production flexibility upon manufacturing firms.

In considering the responses in the case study information, over half (51%) of the firms interviewed explained their change to team based production was to satisfy a direct need for greater *production flexibility*, forced upon them by their customers.

An ability to react to market changes was a further pressure put upon manufacturing firms. An ability to *respond quickly to changes in demand* was a burden transferred from the retailer to the manufacturer. Instead of ordering large quantities, retailers were becoming more inclined to make small orders and then top them up according to the rate at which the products were selling. Some firms were connected to an electronic point of sale (EPoS) system so they could monitor the sales figures on a daily basis and thus alter production accordingly, others had to wait for retailers to inform them of the market position. By offering the flexibility needed to cope with top-up orders and ratio changes, firms adopted team based production. This gave them a competitive edge over those still using conventional production who were simply unable to cope with producing short runs, whilst maintaining high efficiency. One quarter of the respondents gave this as a reason for introducing teamworking.

In order to lower their costs and become more competitive, firms have changed their production methods in a way that has resulted in *reduced stock levels, inventory and work in progress*. The effect of these changes is that more pressure is put on the planning department of these firms, where they no longer have a surfeit of unfinished stock or cut work to act as a buffer to any planning faults. However, by having lower levels of stock, work in progress and inventory, more capital was freed for the purposes of investment, and the firms had a greater disposable income. Fourteen percent of the companies interviewed offered this as one of their reasons for restructuring.

In total, therefore, 91% of the companies included in the clothing and textiles case study databank explained the reason for their change to a more flexible method of production was due to pressure from the market for versatility. For most of them it was the primary reason.

6.1.2 Global Competitiveness

Competing with foreign production was an important factor in the decision to move to team based production. Rather than competing in terms of price, organisations decided to change tack and compete in terms of *quality, performance and service*. Improved quality from a reduced number of reworks and rejects offered a competitive edge to many firms (see Totterdill & Zeitlin, 1989). Some were persuaded of these by external consultants and machinery suppliers. Faced with increasing competition from foreign markets, clothing firms introduced team based production with the expectation that they could reduce costs in order to remain competitive or at least stay in the market. The implementation of teamworking had the potential to reduce work in progress, stock and inventory, whilst at the same time offering savings from improvements in quality - fewer returns, rejects and seconds. Improvements in quality had the resultant effect of gaining manufacturers new orders, or at least preventing them from losing orders, as they competed with foreign markets in terms of quality instead of cost. Staff costs were also reduced from the removal of many indirect workers whose labour was no longer required due to the functional flexibility of the members of the workforce. An improvement in customer service and delivery performance also played a significant role in gaining new business. In total, 22.9% of firms offered the need to compete in terms of quality performance and service as reasons for changing.

Increased market penetration of a particular line of goods through improved quality and the ability to offer more styles was the reason one company introduced teamworking, while another aimed to increase production capacity through the implementation of teamworking.

Cost reduction also played an important part for many companies; a reduction in 'off standard' time was a benefit some of the organisations expected. For example, time spent waiting for mechanical support or waiting for cut work. One firm introduced teamworking in order to change the payment system to reduce costs, as traditional production could not cope with the frequency of style changes and the allowances given were not covering their costs. Another firm aimed to make a number of small changes with the hope of reducing overall costs in order to compete. These were reasons for change for 14% of the companies.

In total 43% of interviewees introduced teamworking with the aim of gaining a competitive edge in the global market.

6.1.3 Competition in the labour market

The introduction of teamworking for many companies was made with the intention of *improving the working environment* and seizing the opportunity to change the management style and structure, with a view to bettering labour relations and eliminating the traditional 'sweat-shop' image of the industry. Furthermore, the aim has been to try and eradicate or at least reduce the effects of repetitive strain injury (RSI) and to make use of the changes by offering a more attractive payment system. Out of all respondents, 28.6% introduced teamworking for one of these reasons.

In the following three case study examples, the companies stated that they introduced group working because of their difficulties with labour retention.

One in particular suffered from a 'sweat-shop' image and consequently from high absenteeism and labour turn-over. It had to prevent strike action relating to pay and working conditions by undertaking a radical option. The company chose teamworking as its means of improving the working environment and this resulted in the situation being turned around.

The second organisation conducted a survey on the demographic changes to their geographical location to the year 2000 and beyond and concluded that their employees' aspirations would be altering. Among the conclusions was that there was a growing need for them as employers to offer greater job satisfaction. The survey also indicated that the school leaving age would increase, thus providing an older workforce, with a more adult outlook. In this respect it felt that teamworking would benefit the company.

The third indicated a similar scenario, where teamworking was introduced as a means of changing the culture of the company. It had previously suffered an oppressive management style, with little devolution of responsibility and the maintenance of tight control. Once the key

manager left the organisation, his successor saw it as an opportunity to empower the workforce. Teamworking was an effective means of doing so.

This in turn was related to labour relations, where teamworking was introduced with the intention of reducing problems with *labour turn-over and absenteeism*, through improved motivation and job satisfaction. By offering a greater variety of work and more involvement in decisions about their work, it was believed that operators would become more interested in their daily activities and be more motivated to attend work. Working as part of a team frequently has the effect of reducing absenteeism as a result of peer pressure. Many operators expressed during discussions that they were less inclined to take sick leave because they knew they were letting their colleagues down (9% of responses fell under this category).

In a similar vein, firms could see that operators were getting higher aspirations and were no longer so willing to endure the poor conditions frequently offered to them. High tech-industries threatened to draw labour away with the proposition of a better working environment and higher pay. Offering *stability of earnings* and improved working conditions was perceived to help combat this (26% offered this as a reason for their changes).

In total, 63% of the firms interviewed expressed that an ability to compete in the labour market was a reason for introducing teamworking. These, however, were secondary reasons for most companies.

7. CONCLUSIONS

Explanations for the development of new forms of work organisation are ascribed to the economic and political environment of the country in which change is being undertaken as well as internal pressures to change. The rise and decline of mass production can be attributed to the market forces of the era in which it developed, thus an 'open systems' approach should be adopted for analysing changes in production and management techniques such as teamworking. Explanations for changing forms of work organisation, such as Flexible Specialisation or Post-Fordism are useful in identifying the key influencing factors but do not necessarily account for

the changes which have taken place in the UK textiles and clothing industry. As Wood explained, the formation of Industrial Districts may well have taken place in the 'Third Italy', but there is little evidence of this being replicated in the UK, due to the limitations of vocational education and training. A preferred explanation for the adoption of team-based practices in the UK is that management are *reacting* to the need to produce shorter runs and respond to demand much faster in order to compete with foreign production where labour is cheap. They are under pressure to cut costs, and if this can be done by reducing staff ratios and machine down-time then it will. The improvement of the working environment for the employees is an additional advantage, but not one which is of major influence to those who have changed.

This supports Lane's suggestion that in order to regain competitiveness, the creation of more flexible production structures has become *unavoidably* necessary. The opportunity to make both cross-sectoral and international comparisons between teamworking organisations gave some interesting findings. Piore and Sable's suggestion that organisational change is affecting production in general and is not sector specific is solidified by the case study findings; companies from different countries and different industrial sectors still faced the same problems and thus changed their methods of work organisation for similar reasons. Reactions were to competition in global and local markets in the first instance, with the improvements in working conditions being a secondary consideration.

The introduction of teamworking has the potential to offer benefits to the workforce, through improved working conditions, greater involvement in the whole production process and more stable employment, but it should be questioned as to whether changes are made for the sole purpose of achieving these goals.

The empirical evidence of the case studies highlights the fact that improvements in the conditions of the working environment plays only a secondary role. This compliments Piore and Sabel's statement that this new form of work organisation is not the result of direct or indirect pressure from labour, but is usually initiated by management in response to changed market requirements. However, the strength of labour pressure for an improved working environment should not be dismissed. Though it may only appear to be a secondary pressure, it has been

influential in the decisions made by companies to improve conditions of employment. There is now emerging a recognition that in order to make the industry more inviting to potential employees, the working environment needs to become more attractive.

Playing a pro-active role in the development of work organisation suggests that companies are indeed considering their long term competitiveness. However, it is not to such a wide extent as their shorter term reactive stance. There is a distinct need for the continuing development and improvement of work practices in the industry, and if companies are able to turn the short term advantages into long a term commitment to improvement then the industry has a much better chance of survival.

It is important that companies are able to react to their customers' demands in order to remain in business. If, however, they want to gain a long-term strategic advantage, they must become more pro-active in their techniques by selling their flexibility to other customers and widening their scope for long-term profit. It was suggested by one company that the retailer is using flexibility to reduce risks to themselves by ordering the same quantity, but in smaller lots and more frequently, thus shifting the burden onto the suppliers.

The following chapters examine the changes which have been made under the broad categories of the social system and the technical system, before bringing the two together for a deeper comparative analysis of the approaches adopted in different countries and by different industries.

CHAPTER 3

SYSTEM DESIGN AND STRATEGIC CHOICE

1. INTRODUCTION

This chapter seeks to analyse the decision making process managers go through when introducing teamworking, largely based on the empirical findings. The theory of strategic choice is of particular relevance, as it builds upon sociotechnical theory of the 1940s-50s (refer to section 3.1.1 in Chapter One). The Tavistock Institute developed the 'strategic choice' methodology in the 1960s-70s "for dealing with multiple, related decisions in developmental projects" (Tavistock Institute, 1995). In May 1963, the Institute for Operational Research (IOR) was established as an autonomous body within the matrix of the Tavistock Institute, following discussions between themselves and the Operational Research Society. The purpose of this was to develop operational research against a background of human sciences. In 1969 the first edition of a report entitled 'Local Government and Strategic Choice' was published by the Tavistock Institute, in which the authors, Friend and Jessop, develop the theory using Coventry City Council as an example. Strategic choice theory was further developed by John Child and more recent work is that of Friend and Hickling (1988) who identified three broad classes of uncertainty which are readily applicable to analysis in the situations faced by those responsible for planning organisational changes associated with teamworking. Sutton *et al* stated that 'strategic choice'

> *"seeks to make more explicit the process which those involved already go through in grappling with difficult choices in the belief that this will yield a deeper understanding of the structural relationships between the issues involved in the decision" (Sutton, Hickling and Friend, 1977).*

Friend and Jessop indicate that decisions are made in an uncertain environment, with an inadequate picture of the implications of the choices made. Therefore a process of strategic choice assists in the adoption of a more decisive implementation of change. However, as Gillingwater points out, Jessop and Friends' definition of the strategic choice process has some weaknesses:

> *"The word 'choice' is here used to embrace all areas of discretion...the word 'process' is used to suggest the property of continuity over time; and the word 'strategic' is inserted to give at least a hint that we are dealing with a level of choice where difficult challenges are likely to arise from the various classes of uncertainty ... and where corresponding stresses are likely to develop within the decision making system" (Friend and Jessop, 1977).*

In particular, Gillingwater (1982) rightly argues that the explanation of the word 'strategic' which plays such a key role in the whole report is extremely weak, what he describes as being "the most explicit statement to be found in the whole of the book's 310 pages".

Though the theory of strategic choice may be somewhat flawed, and indeed, the question of whether strategy actually plays a part in the decision making process of managers is an important one, it is a useful means of analysing the decision making process in this context. As the preceding chapter indicates, many of the choices made are reactive, and form no real long term strategy. So is it necessarily the case that choices on a micro level will be more strategic?

In discussing strategic choice, Child describes three influential arguments relating to variations in organisational structure which affect the decision making process. The first suggests that *the environment* has greatest influence on the structure of an organisation, imposing constraints upon those directing it. However, though he considers it to be one of the more persuasive arguments of open systems theory, he suggests that it "fails to allow sufficiently for several manifestations of strategic choice". He suggests that managers have certain opportunities to select the types of environment in which they operate, for example which markets they would like to enter and in the cases of larger organisations to manipulate or even create demand (See Galbraith's thesis, 1967).

The second argument is that of *technological determinism*, of which there are many variations reflecting the many definitions of technology. The two most developed approaches described by Child are those by Woodward and Perrow. Both argue that technological variables present important implications on the design of an organisational structure, implying that "a high

structuring of activities (task specialisation and high role definition by rules and paperwork) is likely to be most effective under conditions of standardised mass production". Child suggests that focusing on the work itself rather than the technology would be more useful when considering managerial control and influence. "The work of the Tavistock Institute suggests the scope for considerable structural choice to overall technological rationale of a particular production process (Trist et al. 1963; Miller and Rice, 1967)" (Child, 1972). Supporters of technological determinism assume that work has to be organised to meet the requirements of the machinery, and that technology is beyond human control, uninfluenced by social or cultural factors. This argument is weakened by the choices which can be made in the process of technical change. Firstly choices are made regarding the design of equipment, particularly in relation to the degree of human intervention in the control of the equipment. Secondly, there are choices in the goals for which new technology is introduced - achieving competitiveness, for example. Finally, and most importantly in this context, there are *strategic choices* available to management regarding the way in which work is organised around technology. The applications of job enrichment illustrates that "demands made on human skill and knowledge depend partly on the technology and partly on the design of jobs. Job design depends on management decisions as well as the type of machinery in use" (Buchanan and Huczynski, 1985).

The third perspective is that of *size* determining the structure of an organisation. Weber (1947) did not believe that bureaucratic characteristics would be present in small organisations and Blau (1970) found that increased size generates structural differentiation within an organisation, which enlarges the administration of an organisation. Again Child disagrees that size can determine organisational structure. He argues that a large firm can easily be broken down into a number of small enterprises, and secondly "the nature of the functional activities may be modified through the application of different techniques or technologies in order that a different administrative system can be adopted" (Child, 1972).

In the textiles and clothing industry, large firms certainly are broken down into smaller organisations, frequently with names which do not identify them with the parent companies in any way. In discussing one factory's practices with another within the same organisation, it soon becomes apparent that staff are completely unaware of activities in the group outside their

own plant. Examples of teamworking implemented in such organisations can take completely different shapes, as structures are determined by the management style of that particular factory. Other than influencing the overall business policy to change to teamworking in these cases, the fact that the factories are part of a large organisation has little bearing on the organisational approach adopted.

Child argues that these contextual factors alone do not influence organisational structure, but in fact the decision-makers within the organisation have greatest influence. *Strategic choice* depends upon management decisions behind the development and application of technology in its broad sense, based on 'psychosocial assumptions'. "The use of that discretion depends more on the assumptions that managers make about human capabilities and constraints than on the technical capabilities of specific pieces of apparatus" (Buchanan and Huczynski, 1985). Analysis is therefore of the beliefs and assumptions behind the strategic choices which are made during the implementation process. "In short, when incorporating strategic choice in a theory of organisation, one is recognising the operation of an essentially political process in which constraints and opportunities are functions of the power exercised by decision makers in the light of ideology and values" (Child, 1972). This argument strongly supports the findings of the empirical evidence for this study.

The three theoretical models reviewed above "draw attention to possible constraints upon the choice of effective structures, but fail to consider the *process* of choice itself in which economic and administrative exigencies are weighed by the actors concerned against opportunities to operate a structure of their own and/or other organisational members' preferences"(ibid).

"This argument regards technical change as a decision making process with five related components:

1. *What*:	The characteristics of the technology
2. *Why* :	The goals pursued by management
3. *How* :	The organization of work around the technology
4. *Consequences*:	Human, organisational and financial
5. *Feedback* :	The effects of past changes on future decisions" (Child, 1972)

Mintzberg (1988) argues that "strategies are better seen not as plans, but as a mix of intended and emergent elements which are influenced by events, circumstances, actors and issues over time. The outcome of this process will form the 'realised' strategy of the reorganisation" (Rosborough, 1995). This suggestion reflects the circumstances under which management in the textiles and clothing industry have approached change. For example, management may select which team members should form a team, based on their skills. Having put them together they then realise that their choice was bad and there are personality differences amongst members. They then change their method for the next team and ask for volunteers. Their 'strategy' of giving people choice about who they work with then becomes the 'norm'. See for example case study 'Company K'.

2. AWARENESS OF TEAMWORKING

In cases where consultants have been used, it is apparent that the organisations have been offered few alternatives. An 'off-the-shelf' package is used to implement teams regardless of their size, product or structure. The consequences are that the approach chosen may not be the most effective one for the company.

The limitation of initial knowledge can force companies down a single route. In order to avoid this it should be ensured that as many alternatives as possible are available to organisations thus improving their chances of success. Organisations such as the 'Teamwork Users' Group' form stimulus for new ideas. Company networking is becoming an increasingly popular means of sharing knowledge and organisational learning, as the contacts made are with managers in similar situations to one-another. With the 'comfort zone' of being amongst fellow clothing and textiles managers, introductions to new ideas and approaches seen in other industries becomes more feasible.

The problem of lack of information was particularly pertinent to the managers of Company O, which was one of the innovators for the industry in the introduction of teamworking in 1990 and was therefore struggling to find sources of information.

"We went and saw a couple of companies ourselves before starting groupworking, but it didn't suit what we were doing. Most companies tend to design their own system and try not to let others know what they're doing...there was simply no information around".

Having made the decision to introduce teamworking, mangers gained most of their information from two sources, as described in chapter one: i) exhibitions / seminars and ii) their own ideas / previous employment.

For many the *concepts* of teamworking followed the technical implementation and having introduced a shopfloor version of a team, it was realised that the philosophy really ought to be adopted throughout the business, so companies began to progress in this direction. Problems associated with approaching change in this way are that the support functions for the teams are not in place when they start, resulting in a struggle for success. It is only when the teams start production that loop-holes become glaringly apparent. If they are resolved first, the teams have a better chance of performing well from the start.

Some of the companies interviewed had no strategy in the implementation of their changes. They simply saw a system at the IMB exhibition in Cologne, and thought it could be something which would help them. Company K is a good example of this:

There was no particular prior planning involved in the introduction of teamworking; the management team saw the Toyota Sewing System in Cologne and thought it might assist with their problems of high labour turn-over, absenteeism and 'off-standard' time, even though it did not fit in with the environment of long runs [Company K].

The use of external consultants led to many companies developing teamworking in a very narrowly defined way. Often the consultants themselves have only ever experienced and witnessed one method of introducing teamworking, but companies need systems tailor made to suit their individual needs. Advice given by many of the interviewees is that firms considering the adoption of teamworking should ensure that it suits the needs of the company. By buying a 'package' this simply cannot be achieved. The following extract from a trade journal typifies the approaches used:

> *The teamworking method advised involves the use of five operators per team who work together on up to ten machines, and are able to produce the first completed garment in approximately two minutes.* (Anon)

Here the boundaries are very narrowly defined and could not possibly fit into the diverse range of product types manufactured in the industry. The problem with using consultancy packages is exemplified by the case of a German manufacturer who experienced this as a particular problem:

> The next step was to bring together all leading management functions (tool management, manufacturing management etc) to form a 'core' team with representatives from the shop floor. At this point they worked with a consultant. However, they had gained their own experience through literature and seeing the Volvo system in action. They found the consultant to have too strict a scheme for introducing teamworking and some conflict resulted between him and the 'core' team. They saw themselves as a unique company who did not fit the consultant's plans. [Company BI]

In a survey of 8 clothing companies in the USA, each of the implementations of teamworking were developed using an outside source of information. "The differences resided in how the information was ingested into each organisation" (Carrere and Little, 1989). Fifty percent of the organisations formed internal staffing to develop the culture for and establish the team, the remainder enlisted external consultants to redesign and implement the new approach. "Consultants were experts in Japanese manufacturing techniques (including stand-up sewing). JIT, quality circles, total quality control, leadership effectiveness, video presentation, pay systems, real time manufacturing environments and group technology" (ibid).

3. STRATEGIC CHOICES IN THE IMPLEMENTATION PROCESS

Having made the decision to move to a team based environment, and having researched the subject to a greater or lesser extent, the next stage of the process was to begin implementation. The choices companies made regarding the design of the teams effected the overall methods they would employ. In designing the new form of work organisation Totterdill (1994) suggests that "companies must develop systems through careful negotiation and bargaining with all employees likely to be affected by the change, allowing the optimum solution to emerge by the creation of consent rather then by the imposition of a predetermined blueprint". Though this is

an ideal situation, case study evidence suggests that in practice there appears to be little negotiation during the change process and management make their own decisions based on outcomes of previous choices.

Cummings (1977) suggests that "because STS management focuses on the work process as a whole rather than on its parts, it is a systems approach. It starts with the particular mission or purpose of the organisation and develops a design and system of management tailored to that purpose. This purpose orientation is much more powerful than the more common problem-oriented approaches". He further indicates that in designing a work structure, the primary aim is that it is responsive to the task requirements of the technology and the social and psychological needs of the employees: "a structure that is both productive and humanly satisfying".

In order to achieve this, Herbst (1974) suggested that the critical conditions for the operation of self-maintaining sociotechnical units are as follows:

1. The task should be clearly defined, with measurable outcomes, e.g. quantity or quality. This allows for evaluation, maintenance and adjustment of the process.

2. A single social unit is responsible for total production of the unit, with all skills and equipment required for process control and technical maintenance

3. Individual team members should not establish primary commitment to any part of the function - that is they do not lay claim to any particular task or item of equipment, but are jointly committed to optimising the function of the unit

4. Relevant decision making functions are brought down to the lowest possible level and reintegrated into the operational work organisation

5. Tasks must require personal responsibility based on some degree of competence, judgement and skill. Unless the total task requires the development and use of personal

competence, then acceptance of joint responsibility for the organisation and functioning of the unit may not be achievable.

As can be seen from this model, a heavy reliance is indirectly placed in the development of the social system. Although at first sight it takes a somewhat technocratic approach, in order to achieve these goals, training in 'soft skills' is necessary. For example, team members, once they have the information need to be able to act upon it, they need motivation and understanding of the system to move between work stations. If decisions are passed down to the 'lowest possible level' they need the skills to make the decisions - competence, judgement and skill are all prerequisites to the successful functioning of a team.

3.1 PILOT TEAMS

Before deciding upon the boundaries of production, the preliminary decision must be made regarding the approach to commencing the change process. In a survey of 22 companies who adopted team based approaches (Teamwork Users' Group and Scottish Teamwork Users' Group), the following question was asked:

Is it advisable to set up a test group before committing the whole factory to team working?

It was unanimously agreed that the answer to this question was 'yes'. The reasons were given as follows:

- It is important to find out the problems and learn from mistakes. "You only learn the problems and opportunities from actually setting up your first team".
- It helps to gain ideas of exactly how the process evolves during the pilot and to assist in the integration into other areas. "Even if you may be confident of benefits, others may not be".
- It enables a review of the skills mix.
- It allows time to engineer the system.

In one instance no pilot was established and operators went "home on Friday to return to work on Monday with the factory in teams". This approach in no way involved the operators in the decision making process and resulted in the an uncooperative reaction from the operators.

The lack of strategy in the implementation of a pilot team is particularly evident in the following case study extract:

> The company installed the pilot team and then thought "now what do we do?". Nobody really knew what they were doing or what to expect. There were two machinists on the teams who were determined that teamworking would not work, so they were "quickly removed". The first team was very difficult for the company to cope with and they had many problems with them. They then installed a second team because they thought that a little competition might encourage the first team to make the project successful. This team turned out to be much better than the first [Company G].

In contrast, companies with designated project management who had particular objectives to be achieved through teamworking tended to have the time to ensure the effective functioning of teams:

> The company spent 6 months 'fine tuning' the pilot before they were satisfied with the results. They then put the second team on and found that further problems arose. It was not until the 4th team was installed that they were happy with the system. The current system is constantly reviewed. To start with a new team was installed every three months, but they had to stop because of the demands for immediate output from their production programme. They then set them up every 2 weeks [Company U].

As indicated above, the introduction of a pilot team helps identify potential problems on a small scale. Typical difficulties identified by managers included: people not getting along with each other; getting operators to think for themselves, rather than getting the supervisor to tell them what to do and encouraging team members to talk "they could not believe we were telling them to talk!" (Scottish Teamwork Users' Group). It is worthy of note that all these problems relate to interpersonal skills, rather than technical skills. It was equally a learning process for management which had to adjust to standing back and allowing operators to make their own decisions, even if they could see them struggling. Similarly, management found it difficult to speak to the teams as a group, rather than on an individual basis.

A further question was asked in relation to this phase of implementation:

Should team working be phased in ? If so, at what pace?

Response varied considerably in reply to this question, and can be best summarised by the following table:

Time for pilot	Time per team	Time for whole process
3-12 months	1-3 months	3 months - 2 years

Table 7: Implementation Time. Source: Teamwork Users' Group

The variation in time needed for the pilot team indicates the speed at which the company would like the entire project to be completed. Those willing to spend a year getting the pilot functioning well were not in pursuit of a 'quick fix' solution. Similarly, those who rushed into introducing subsequent teams at a rapid pace tripped over their own feet in the process and realised the need to ensure the satisfactory progression of each individual team as it was changed over. Company D provides a good example of this:

> A second team was introduced 4-6 weeks after the pilot team, then the 3rd was 4 weeks after that, and then 2 weeks later they introduced another one and then they changed 3 or 4 at once! This pace of implementation was found to be far too fast for everyone involved [Company D].

Some, flushed with success of the pilot project, install a number of teams at once. Or decide that it is necessary to do so because of the change in payment system:

Following the initial experiment starting in March 1995, they went from 2 teams to 12 teams because they were changing piece rate to flat rate and the whole factory was changed over as quickly as possible, as it would be too difficult to manage two teams on flat rate with the rest still on piecework. This was done in about a 4 month period which finished about the middle of January 1995, so every one or two weeks a new team was installed. The factory manager believes this was too fast "we did it too quickly, the curve of change was too steep". They were putting a team a week on and operators were not allowed time to settle down. "We were shooting ourselves in the foot for a 6 month period. We were running like hell and getting nowhere" [Company H].

It was generally agreed by members of the Teamwork Users' Group that the pace of implementation should:

- be manageable and controllable
- suit the needs of the company
- allow proper allocation of time to training
- ensure the workforce believe in and support the changes
- suit the resources available
- be appropriate to the needs of workers, unions and management
- make sure support staff, e.g. workstudy, supervisors ad management have sufficient time to ensure each group is happy with their progress before introducing new teams
- account for the anticipated disruption to production, finances and personnel
- depend on whether you have volunteers or coerce operators

3.2 TEAM DESIGN

3.2.1 Standing Versus Sitting

There is much debate into the health and safety implications of operatives standing for long periods of time. The occurrence of Repetitive Strain Injury (RSI) resulting from traditional sit down methods of line production is well documented, yet no substantial research has been undertaken into the effects of prolonged standing. Research undertaken by the GMB Union showed a decrease in the problems associated with upper limb disorders, perhaps resulting from regular movement between machines, therefore shortening the cycle and length of the injurious repetitive movement.

Operatives who are standing have stated tiredness, together with leg and foot pains during the first couple of weeks of standing, but may have expressed the relief of back and neck pain. The use of 'ergonomic matting' is considered to be helpful to those who have invested in it. No assumptions can be made in this field due to lack of evidence and the many variants of modules, cycle time and frequency of movement by operatives. In the UK and the rest of Europe, case studies indicate that half were standing and half were seated. Similarly, in the American survey conducted by Carrere and Little, three out of the eight companies had stand up systems. The following results from a Monitoring and Evaluation report (Company S) summarises the areas typically affected by the change to a stand-up system:

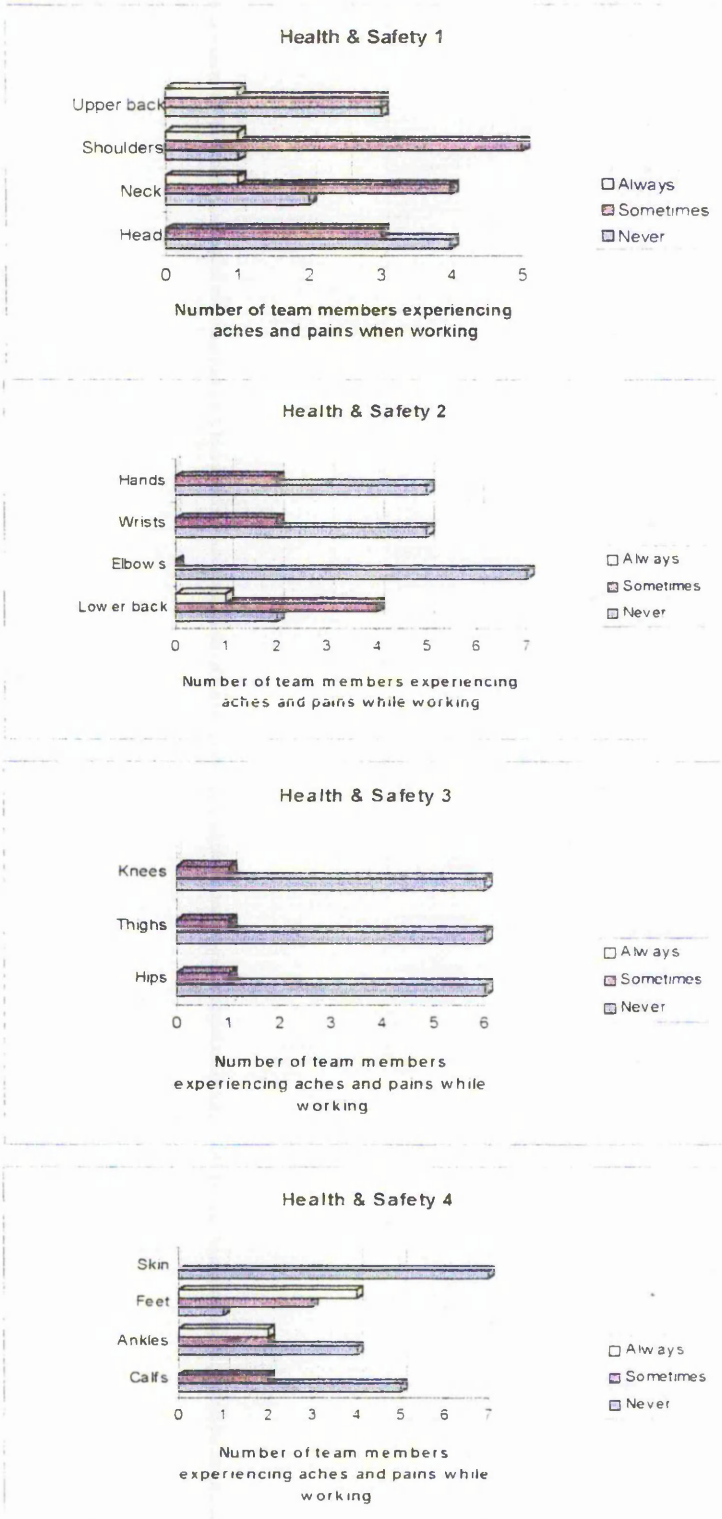


Figure 25. Health and Safety Implications (Company S)

As can be seen from the above graphs and the diagram below, many of the aches and pains from working occur in the upper part of the body, particularly the upper back, shoulders and neck, as well as in the feet and ankles. The majority of these discomforts occur occasionally, with one team member suffering from them always.

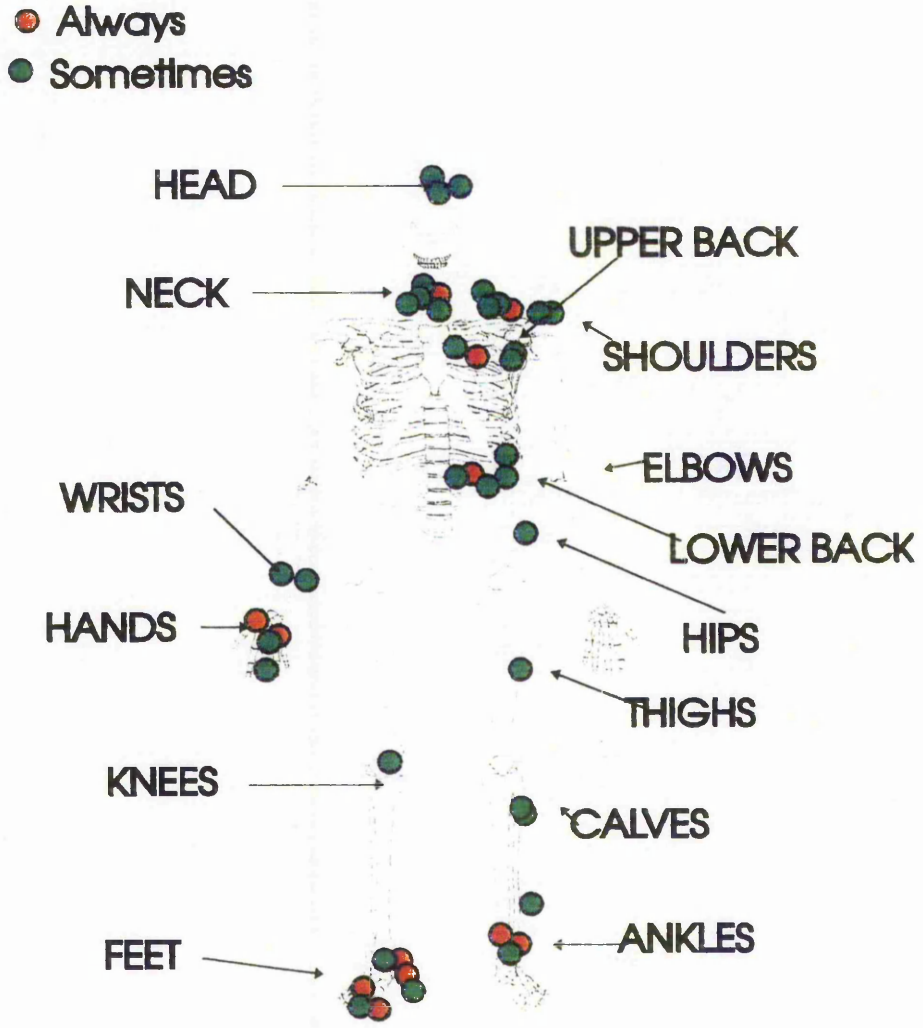


Figure 26: Health and Safety - Areas of Discomfort (Company S Teams)

More research is needed into the health and safety implications of standing to work. For some the decision was made to stand in order to physically mark the introduction of teamworking. For others, the move to a stand up system was considered to be too big a change for operators

to cope with, so they remained seated. Monitoring data (see appendix 4) and case study evidence indicates that although operators who are standing did not like the idea in the first instance, and suffered initial leg and foot pain, they now would not revert to sitting down as other more prominent back pain has been alleviated.

One company in particular found it such a difficult decision to make that they had one pilot team standing and the other seated to make a comparison between the effectiveness of the two. Ultimately the decision was made to convert the seated team to a standing one, on the basis of the ease of movement between work stations and the low work in progress levels.

The issue of whether operators should be standing or seated has been somewhat blown out of proportion. It is because it is such an obvious physical change that it appears to be of great importance in the process of choice. However, when the whole picture of organisational change is considered, this issue plays only a very minor role. Despite this fact, managers want to see evidence of the effects of standing or sitting and have found that there is a real limit to the information available to them. The following case study example indicates this, making the decision a difficult one for organisations to make:

> They used a sit down, kanban system because this was the only method the project manager had encountered before (the idea stemmed from the book *World Class Manufacturing* by Professor Richard Schonberger) but this system did not work effectively as they had problems with line balancing because of operatives' differing performance levels. They found that no matter how finely the lines were balanced, there would always be someone without work. The TSS was, on the other hand considered to be self-balancing [Company U].

3.2.2 Products

To decide which product to put on the pilot team is usually not so difficult. Some chose a 'typical' garment, some the easiest product and others the most difficult product. For others there is no real decision, they use the product which is in production at the time.

They did not want to choose too easy a product, which would have given them false results, or too difficult a product because they were learning at the same time, and it would have put a tremendous strain on them. So they went for a 'middle-of-the-road' product which they produced on a fairly regular basis. They wanted flexibility - to be able to change styles with a minimum loss of efficiency. The main thing was how people within the team reacted to it: "it was interesting to see them starting to take new ownership" [Company K]

3.2.3 Teamworking Boundaries

To recap from chapter 2, according to sociotechnical theory, this is the identification of a phase of a technical process in which there is a *fundamental change in the state of the input.* Once the boundaries of input and output are defined, then *unit operations* can be identified. For example the identification of all tasks involved in the manufacture of a garment, from receiving cut work to packing the finished garment. It is firstly necessary to consider the *type* of system implemented by the organisation in order to identify the boundaries of production. The method of team working will be dictated to some extent by whether the operatives are to stand or to sit. The decision is not always a clear cut choice between a system based on the single garment or kanban principles, and between standing or sitting. Indeed, the design of the teamworking system is entirely company dependant and often the method of team working adopted incorporates various teamworking concepts. With regard to the boundaries of the production system, in the American case studies cited by Carrere and Little, an entire product was assembled within the team in three instances, while in all other cases preparatory work occurred prior to entering the team.

Decisions, to some extent, are determined by the size of product being manufactured, for example, a manufacturer of curtains found it preferable for operators to stand up because the products were bulky and required large movements of the upper body.

The entire production process is not always included within a team. For example, in a Finnish suit manufacturer, the work content is considered to be too high for one team to manufacture a complete garment. As a result the work is sub-divided and the difference between this method of working and conventional production is not so visibly obvious. For other companies, the teams see the finished garment, but it must go through a sub-assembly process, either before or during production. This is usually due to the utilisation of specialised equipment which is too

expensive to include in every team, for example, button-hole, button sew or pin tucking machinery. Where possible, companies try to ensure that expensive machinery is shared between teams so they take responsibility for the whole process.

According to sociotechnical analysis, the first stage is to identify the boundaries of input and output. In this context, it means identifying the tasks which will be included in the teams to constitute the 'unit operations'. This will therefore influence the size of the team.

Team size

In Carrere and Little's (1989) American study of 8 companies, team sizes ranged from 8 to 26, and the number of workstations per module ranged from 15 to 26. The average number of machines per operator ranged from 1.05 to 2. indicating low machine utilisation, but high operator utilisation. Maximum, minimum and average team sizes were suggested by members of the two Teamwork Users' Groups. Opinions on average sizes ranged from 4-10 operators per team, while minimum and maximum figures given were 2 to 15 operators per team respectively. In the case study data, actual team sizes ranged from 3 to 20 operators per team, with the average number being 7. Teams which are too large are unable to function as a cohesive unit and as a result sub-divide into smaller groups for purposes of communication and discussion of work methods. Large teams are not conducive to effective team meetings as members who are not as forthcoming as others will simply not speak up in such a situation, making discussions undemocratic.

Operators per team (average)	15	11	14	7	10	9	3	6	14	5	6	7	8	8	6	5	5
Machines per team (average)	20	13	14	14	16	14	4	12	35	7	9	14	11	13	11	10	6
Ratio of operators: machines	1: 1.3	1: 1.2	1: 1	1: 2	1: 1.6	1: 1.5	1: 1.3	1: 2	1: 2.5	1: 1.4	1: 1.5	1: 2	1: 1.4	1: 1.6	1: 1.8	1: 2	1: 1.2

Table 8: Team Size and the Ratio of Operators to Machines

Often communication problems are encountered with large teams, where members are unable to see all the processes within the team. For example, a company manufacturing control underwear had a team of 16 people which was not functioning effectively because members felt uneasy in communicating with such a large number of people and the team did not 'gel'. As a consequence the team were divided into 2 teams of 8 people, in a 'W' shape, with a buffer of work between the two. This proved to be a successful solution to their problem, and production improved significantly. The size of the teams in Company D does not seem to be a problem, though the effectiveness of team dynamics during meetings is questionable for teams of up to 25 members.

From the 17 case studies in which the information was given, the average ratio of operators : machines was 1:1.6 (see table 8 above), indicating that machinists do have an additional variety of tasks in their daily work, but on average, not significantly more.

In deciding upon the number of operators who would be in a team, much of the choice depended on the standard minute value (SMV) of the garments and communication between members. Comments from members of the Scottish Teamwork Users' group were that the number of operators in a team should be based on ability to change products, not be too large for effective communication, based on work content (SMVs) and customer demands. The following is a typical example of an organisation which based its number of operators on the cycle time.

> They try to keep cycle times at 6-8 mins, because less than this is boring, 10-12 is too long for them. 6-8 mins can be between 2 machines. If a garment has a high SMV (120) then it will be put onto a large team. They also consider the psychology - if a cycle is 1 minute long, and they are working 570 minutes at 100% efficiency, they will think that they have to process 570 garments in a day, (which is high for their products) and psychologically they will feel it is an impossible target. Similarly if a garment had large work content, on a small team, would only be expected to produce 25 garments, which is low so the team might slow down because it looks easy. [Company D]

In Company R, in order to identify the teams from the traditional production, yellow tape was stuck to the floor around each team. This was an indicator that the teams were simply groups of

machinists working with one product, as it was impossible to identify them as a team in any other way.

Kanban size

As explained in chapter one, a kanban is the buffer of work between operations which is set at a predetermined level which should be adhered to by the operators. When the kanban is full, the operator will either carry out the next process, or leave it to be completed by a fellow team member, and return to their previous work station. The kanban size in the American case studies (Carrere and Little), and in the European case studies ranged from one unit to twenty five. The following table gives a break-down of the product types and systems associated with the kanban sizes in the UK case studies:

System	Product	Average bundle size
Sit down, self balancing	Ladieswear	12
Sit down, rail system	Waterproof jackets	2-6
Stand up, rail system	Boiler assembly	6
Stand up, TSS	Skirts	1
Sit down, self balancing	Bras	24
Sit down, using table-tops	Jumpers	12
Stand up, TSS	Trousers	12
Stand up, rail system	Curtains	10
Stand up, rail system	Tailored jackets	1-2
Sit down, self balancing	Bridal wear	7
Sit down, self balancing	Ladies coat	7-10
Stand up, non-sequential	Underwear	Lay height 9 dozen - no kanban rules
Rail and sit-down, using cycling	Children's trousers	10-20
Sit-down with conveyor	Children's trousers	20-25
Stand up, TSS	Knitted tops	1
Stand up, TSS	Body suit	3
Sit down, rail system	Tailored jackets	1
Sit-down, set pitch times	Babywear	1

Table 9: Kanban sizes

Conclusions from the table above are that there is no apparent correlation between the type of garment manufactured and the bundle sizes between workstations. They range from single garment production for tailored jackets and knitted tops to bundles of 24 for bras and children's trousers. One point worthy of note is that particularly large products are not manufactured with high kanban sizes.

To some extent, the number of garments allowed between work stations is dependent on the Standard Minute Value (SMV) of the garment being produced. But it is also dependant on the confidence of the operators and support staff. For many, the buffer of work enjoyed through high levels of work in progress (WIP) offers security. They can visibly see the quantity of work which must be done in an entire week. However, the cost of holding unfinished goods is vast. By creating a much 'leaner' process, capital becomes available for investment.

The following provides an example of how the decision about kanban sizes can be determined:

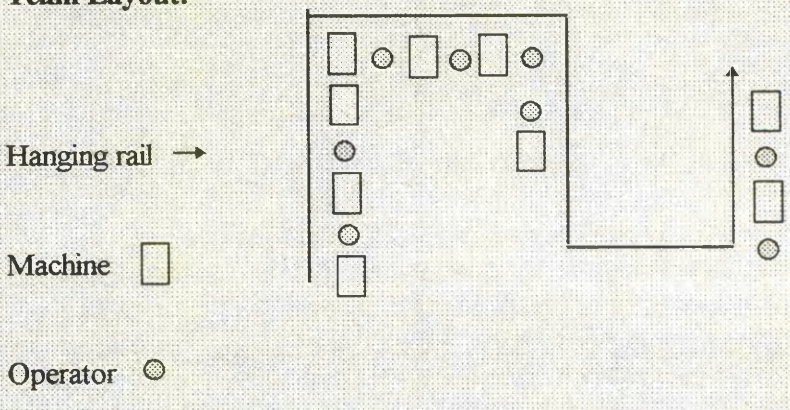
> They experimented with the bundle size and found 3 to be most efficient for a body suit, but 6 for panties, as with a bundle of 3 they were moving too often. They also tried single garments but found this to be inefficient. People from traditional production have more of a tendency to allow a build up of work, but as they recognise that they are only paid for finished goods, they become used to sticking to the 3/6 bundles. The work study engineer also analysed the extra time it took to walk from work station to work station but found that the overall production time reduced. [Company U]

Handling

The handling system chosen for the teams depends upon the overall method decided upon and the existing system for handling work. Even though conveyor belts are no longer appropriate for teams, in some cases teams were build around them (see Company FC). For some organisations with mechanical handling methods, the decision to change is a difficult one. In some of the case studies, hanging rail systems were adapted as the capital investment in the system was considered to be too great a loss to ignore (see Companies D, GC and JC). In this sense, *technology* determined the method of work organisation. In the case of mechanical handling systems, as opposed to manual, control lies very much in the 'hands' of the technology. Pace is thus set by the speed of the machine. The result is the persistence of Fordist modes of production.

All the teams have a hanging rail system on which work is transported on a carousel. This system has been re-designed to fit into the team environment. It has however imposed restrictions on the design of some of the teams. For example, the 'S' shaped configuration of one team inhibits communication. [Company D]

Team Layout:



A similar example of a company introducing a team around a rail system can be found in the extract below, where their own experiments indicate that a manual system is more flexible:

The company's first experiment with teamworking was with an overhead rail unit, which worked well, but equal success was later experienced with the manual system.

> *"Some products work very well on the rail system, but we have had to take some off to be handled manually ... it is a constant challenge".*

It has been monitored over 3 years and found to be as effective as the manual system. However, having paid $200,000 for it they do not think it was 'value for money'. It works well, but conventional materials handling is just as effective. It is considered to be more flexible to *not* have the system [Company GC].

In this Finnish example, tailored jacket with a very high Standard Minute Value are manufactured around a rail system in which the product has been subdivided:

There are two teams per jacket, one of 33 operators and another of 52. Each team has a smaller team within it, designed in a 'loop'. The first team carry out preliminary operations for the jackets - they sew pockets and side seams, darts, fusing and intermediary pressing. This is passed around a hanging rail system to the next small team. The hanging rail system has been rearranged to suit the teams and is considered to be better now because the machinists can see each other. Previously the rails were organised for mass production and operators were unable to see one-another as the garments obscured their view. The factory manager prefers automatic conveyors, "but they need supervisors because machinists cannot always solve problems on them." [Company JC]

The photograph below shows a typical example of how rail systems are incorporated into teams, this one carrying the garments around the outside of the team. This system also has a target board at the far end of the team which indicates current performance levels.

Figure 27: Building Teams Around Rail Systems

The manual systems are less sophisticated, but are far more flexible, allowing machinists to move work when they are ready, and offering the scope for re-organisation of teams when necessary. Apart from the obvious benefits of flexibility offered by the manual system of handling, they are also more conducive to an open-plan working environment which aids communication. The following example (Company G) is a typical manual handling system. Machinists are seated in a 'U' shaped configuration, with swivel chairs to turn to the next machine when a bundle is completed, 2-3 consecutive tasks are usually carried out by each operator. Work is put into small plastic trays when completed and passed along a low level table within the team to the next operation. An examination and packing table is positioned in the middle of the team to allow easy communication between operators and examiners when faults are found.

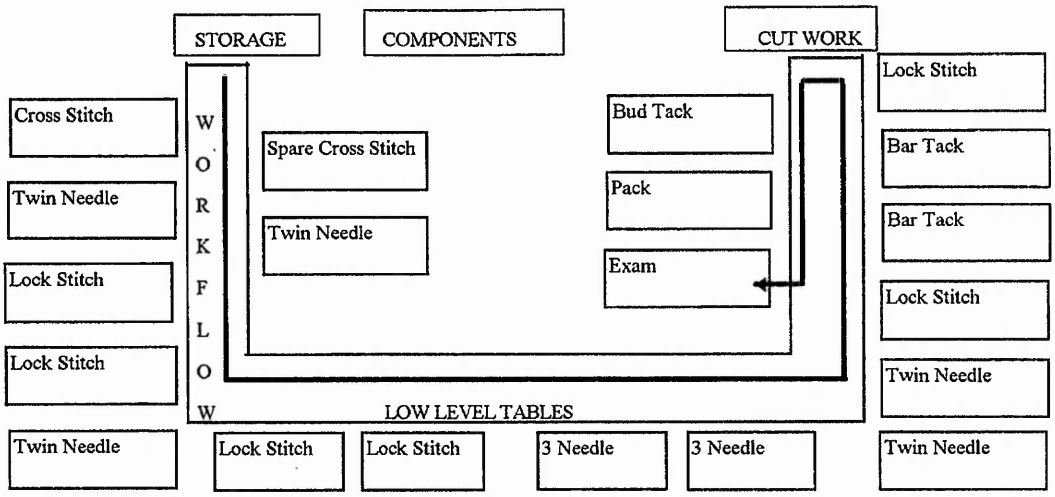


Figure 28. Manual Handling System

However, there are some advantages to the use of the rail system, as demonstrated by the following case study. This is particularly so when products are large and unwieldy; the presentation of the products to the operators simplified and at the same time ergonomics are improved as the rail bears the weight of the product and thus eases movement for operators:

This curtain manufacturer has 17 teams, 14 of which are on the overhead rail system and 3 of which are specialist teams, on a table-top system.

Curtains are loaded onto the centre of the rail system by the 'loaders' who are paid as part of the team. There is one rail system between two teams so one set of work goes down the right of the rail and the other set down the left. The hanging rail system has taken a lot of the physical side of the work away for the machinists, has saved on floor space and has cut down on handling time by 12%. The remaining three teams do still need to make some physical effort. A great deal of engineering work has been carried out on the rails to make it easier for the machinists to pick up and place the curtains at the machines. They have a clamping system which presents the end the machinist must work with, to avoid making mistakes. After the completion of each operation, the machinist will clamp the curtain so that the correct end is passed onto the next person. [Company L]

The limitation of this system is that operators are standing in a line with their backs to one-another, and, as with Company D, communication is inhibited.

Tyler argues that Unit Production Systems (UPS) of handling "do not constrain the division of labour or the level of automation. They do not organise the work flow or specify the action necessary to resolve problems of imbalance. All these decisions are made by management and

supervisors in relation to the available workforce. Company personnel determine the sewing system to be implemented in conjunction with a specific materials handling system." (Tyler, 1989). This may be so, but they do limit communication and operators' input into team design.

In taking operator involvement in team design a stage further, Binder and Banke (1994) also support operator involvement in the design of technology and have been involved in a project in which a flexible sewing machine has successfully been developed for teams, with direct input from operators.

3.2.4 Task Allocation

Sociotechnical analysis then enters the next stage of analysis which is classified as *variance control.* This includes responsibility for quality and decisions in the allocation of tasks and machinery. For example, in looking at the allocation of tasks for team members, analysing whether components are loaded by a supplier, who is shared with other teams or supervisors and team members who shared the duties of loading the unit with work themselves.

"The sociotechnical systems principle of controlling key variances close to their source (Chern 1976, Trist *et al*, 1963) suggests the need for jobs emphasising operator control rather than specialist control (Cummings and Blumberg 1987)". (Jackson and Wall, 1991). In the context of clothing production, this suggests that if operators are able to adjust machinery themselves, then overall performance will improve.

A study by Wall *et al* (1990) indicated that if operators have more control over the maintenance of their machines, then down time would reduce. Jackson *et al* further developed this to produce two explanations for improved performance as a result of reduced machine down time. The first was referred to as a *logistical explanation*, which explains improvements are as a result of the operators proximity to the problems, and thus their rapid response. Waiting time is therefore eliminated and the only time needed is that to rectify the fault. This compares with the need to involve a specialist, where waiting time is added to the equation. The second was referred to as a *skills-based explanation.* This is related to the acquisition and development of knowledge over time, which lead to the *prevention* of faults. "The enhanced access to the technology allows individuals to gain a better understanding of how it operates, and to use that

understanding to increase performance effectiveness. Consequently they are able to move beyond simple rectification to the prevention of faults, and thus take a more proactive role in managing system performance" (Jackson and Wall, 1991).

In the cases where firms had trained their operators in basic machine mechanics, this certainly was the case. Less 'down-time' resulted as machinists did not have to wait for the mechanic's help for them to proceed.

In mass production, "functions such as planning and line balancing become the preserve of a technical élite (industrial engineers, production managers), and will exclude operatives from active participation. These functions are crucial for the profitable operation of the line, and seek to ensure that the machinist works at her highest level of output throughout the day with a minimum if waiting time" (Totterdill, 1994). The implementation of teamworking should bring with it a higher degree of autonomy for the workforce, in which discretion and control over job related decisions are encouraged. In the Teamwork Users' Group survey, minimum areas of responsibility for team members were identified as follows:

- Balancing production
- Workplace design
- Meeting and setting production targets
- Assuring quality
- Routine and preventative maintenance
- Resolving product faults
- Keeping work areas and machines clean
- Scheduling lunch and relief periods
- Scheduling leave
- Obtaining over-time approval
- Determining training needs
- Attending and acting on team meetings
- Resolving conflicts
- Compliance with Health and Safety regulations

In some companies teams may also be involved in 'meta level' activities such as product design and development, or direct customer liaison. In practice however, few companies have attained such levels of autonomy or go beyond allowing machinists to decide upon their own workplace design and allocation of tasks. Operator discretion over daily functioning if work is discussed further in Chapter 4.

3.2.5 Team Selection

"Choice of workmates posed a crucial question. These choices were made by the men themselves, sociometrically, under full pressure of the reality situation and with long standing knowledge of each other. Stable relationships tended to result, which frequently endured over many years" (Trist and Bamforth, 1951).

"Groups of this kind were free to set their own targets, so that the aspirations levels with respect to production could be adjusted to the age and stamina of the individuals concerned" (ibid).

In the discussion for the Teamwork Users' Group about how to select team members, no real consensus of opinion was reached. The suggestion was made that volunteers should be called for first and that management should choose from a short-list of people, taking into account both skills and personalities. The argument for volunteers was that it gave ownership to the teams. The argument for management selection was that it ensured the necessary skills were covered by team members. A summary of arguments given by companies for and against volunteers is as follows:

Arguments for management selection	Arguments for volunteers
People tend to want to be with their friends without taking into account skill level	"One volunteer is worth ten pressed men". They have a more positive attitude and therefore work better
Output needs to be matched with customer requirements	Operators have ownership of the implementation process, therefore have belief in it and a willingness to co-operate
'High flyers' are reluctant to leave piecework, but are needed in the teams	Motivated to join on a constructive rather than coercive basis
Management should know who is best suited to teamworking and should make the final decision	Encourages commitment between team members

Table 10: Team Selection

Teamwork Users' Group member sought the following qualities of team members when selecting them:

Interpersonal Skills

- An ability to form partnerships and work constructively with others as a team - compatibility.
- A suitable temperament to cope with multiple style changes, thus flexibility and versatility.
- An ability to communicate.
- Capability and competence, problem solving skills, an ability to actively listen.
- Hard working
- Good attendance records.

Only 2 of the 23 firms tried personality profiling techniques to assist them with team selection. One found it useful to predict individual behaviour and to balance the team, and considered it to be a reliable measure. The other firm used it to identify training needs and teams' strengths and weaknesses. Additionally, three firms considered using this selection technique, but had taken the idea no further.

Machining skills

- Operators possessing more than one skill or having an ability to absorb training easily.
- Hard workers, though not necessarily 'high flyers'.
- Operators with the physical capacity.

Nineteen of the 23 respondents selected a mix of abilities regarding performance levels, while 3 matched *performances* and one matched *effort*. In rank order of importance, the following were considered to be the most effective selection criteria:

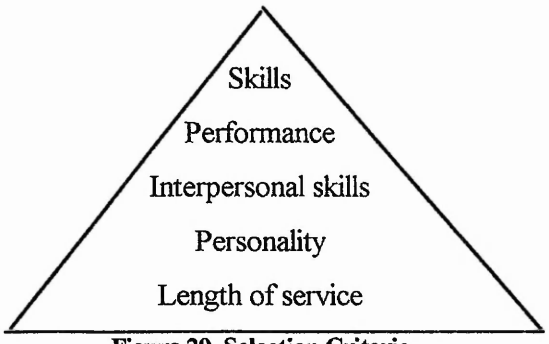


Figure 29. Selection Criteria

Other important skills were attitude, quality, potential and ability to work without supervision.

Typical problems encountered in the team selection process were the incompatibility of team members - conflict, balancing high versus low performers, insufficient skills training, balancing production with training needs, overcoming fear of the unknown, the wrong skills mix, individuals not contributing, 'high flyers' not being good team players, younger members having trouble coping, team leadership (ill feeling through the selection of a leader) and a natural fear of change. Many of these difficulties could have been avoided through effective training before implementation. This is detailed in the following chapter. Three typical examples of team selection are given below:

> For the pilot team they chose the group of people who made the product they had selected. By co-incidence that particular team also had a union representative working in it. This was seen to be a help because people thought 'if she can do it, I can do it'.
>
> In general, two people who are known not to get on well might be put on a team together as it is felt that it "should not effect their work". They do have conflicts but management believe they always will. Arguments which are work-related are considered to be quite different. Teams can go into a meeting room to sort out their differences if necessary. They have had 2 instances when teams have wanted one of the operators who was 'getting on in years' to leave, as she needed help *all* the time. They tried changing her job around first, which did not work, so ultimately she was transferred elsewhere.
>
> When teams need new members, the Production Managers usually select them and introduce them to the team leader and take them around the cell; the operators have to accept their decision. [Company D]

In this case, the movement of the person unable to keep up indicated to the operators that it was OK to eliminate members who did not fit in. 'Performance boosting' training and greater support from management might have avoided this (easy) option.

Moving team members between teams invariably has a detrimental effect as much of the motivation for teams comes from the act of 'pulling together' towards a common goal and learning to solve problems by working through them together. The bond formed by this is broken every time members are interchanged.

The next example indicates how one company tried selecting members themselves, but found that asking *teams* to decide on membership produced far more effective results:

> In selecting the pilot team members they took into consideration the balance of the existing flowline, and chose the operators by their existing skills. It was seen purely a line balancing exercise, to ensure they could cover all operations without initial training because they thought it would be the quickest way to get it started.
>
> However, after seeing it in action for the first few weeks they thought that teamworking may not be what they were looking for and felt that they may have made a mistake. So the whole management team had a meeting to discuss the future of teamworking. During this meeting someone suggested that people should be able to choose who they work with. They felt that this was a valid suggestion because "you can train skills, you can't train personalities". So it was decided that it may still be worth pursuing.
>
> As a result they talked to the existing teams and allowed them to re-select, because within those teams there were people who wanted to work together. So the teams were disbanded and restarted. Almost immediately they started seeing a good response, and the teams worked a great deal more efficiently.
>
> In the subsequent selection process, people gave the production manager a list of who they would like to be with. They were allowed to change their minds as much as they liked up until the team actually started, but once they were functioning as a team, they were committed to staying with the same people.
>
> If there is a serious problem with co-operation of team members management will speak to individuals within the team to find out the cause. They then speak to the individual causing the conflict and bring the whole team in to try and resolve the problem. They will only change team members when it is vital, for example, if someone is particularly aggressive, or there is a personal reason which is insoluble. [Company K].

> Team Leader: "They just chucked us together and expected us to work together"
> Operator: "You can't change personalities. We don't agree all the time, there are times when we would probably tear each other's hair out, but we'd do that anyway. The best thing to do is just talk it out, don't bottle things up because you've got to say what you feel"
> Team Leader: "I think we've been together long enough now to know how people feel. We used to get [the factory manager] involved, but we don't need to any more." [Company H]

3.3 'KEY FACTORS' IN SYSTEM DESIGN

According to sociotechnical theory, 'key factors' are critical aspects of the design and operation of production systems which affect quality, quantity and cost. This includes factors such as skills training, selection techniques and payment systems. For example, piecework payment

tends to have a detrimental effect on quality because of a focus on quantity. Additionally, team meetings and team leaderships have an effect on these issues, particularly in relation to controlling quality, quantity and costs. These two issues are discussed in the next chapter however, as they are considered to be more relevant to the 'social' aspects of work. It demonstrates the difficulty in separating the 'social' from the 'technical' as the two are so closely interlinked. Selection techniques have already been discussed, so under this category of sociotechnical analysis, payment systems and skills training remain.

3.3.1 Payment Systems

An American 'compensation consultant' Sam Johnson, suggests that there are 4 categories of payment system which organisations embarking on team based production should consider : profit sharing; gain sharing, skill based pay and small group incentives. Of the four, he discusses in some detail the advantages of 'small group incentives' which he describe as being "designed to deliver a uniform award based on the achievement of a single or multiple predetermined goal(s), to all members of a work group who share responsibility for work process and output." (Johnson,1993). For this payment system to be effective, several conditions are highlighted as being necessary:

1. The employees' tasks must be inter-dependantly connected, so they rely on one-another's output
2. The group must collaborate with each other for effective accomplishment of the task
3. The focus must be on team problem solving and action
4. Group results are measurable and prove that a group is more effective than individuals

Johnson sees the advantages of this method of payment as requiring less cultural change, as the focus is on the work team rather than the entire business; having fewer process changes for new products or technologies and a quicker start up time; offering an understandable payment system; providing increased employee support and being easy to pilot test. The difficulty with the retention of an incentive scheme is that it deliberately avoids the issue of motivating teams through good management and retaining a financial incentive.

The focus of discussion in the Teamwork Users' Group meetings was that trust and motivation were the key issues, in which new payment systems should be used as an opportunity to create an environment which fosters commitments and considers the operators' working environment. Problems encountered when moving away from an incentive scheme were highlighted in cases where management were not sufficiently confident to have a payment system without a bonus. Managers needed to ask themselves whether they trusted operatives to work just as hard if there was no incentive scheme.

The overall sense was that motivation should be management led, and that the ultimate aim should be for a higher guaranteed wage, with no incentive payment necessary. However, as this is a big step to take due to the ingrained nature of the piecework system at all levels of organisations, a flat rate with a bonus can be seen as the first step towards salaried pay.

Whether managers decide to introduce a flat rate of payment or maintain an incentive based scheme is an important step in the decision making process. Data from case studies and Teamwork Users' Group questionnaires helps to identify the types of payment systems adopted by such companies. From a sample totalling 64 companies, analysis identified four main categories of payment system:

i) Fixed rate, with bonus

Here teams are paid a flat rate of pay, either in the form of a monthly salary, or a weekly, daily or hourly rate. A bonus is given for exceeding a given productivity target. In many cases the flat rate is higher than average, out of 17 replies to the question of the change in level of pay, 11 companies stated that payment of teams had increased in comparison with the rest of the factory and 6 indicated that it had stayed the same.

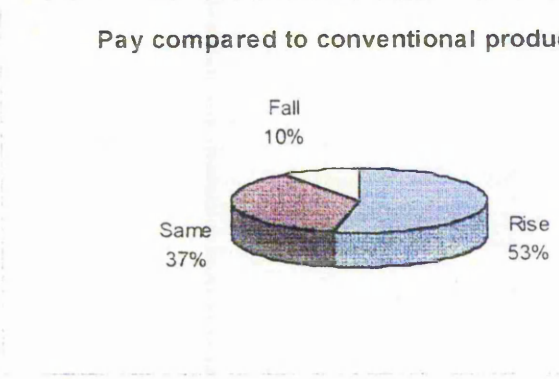


Figure 30. Source: Teamwork Users' Groups I and II and Scottish Teamwork Users' Group. Total = 30.

In some cases operators who have particularly high performance levels, and thus a significantly higher average, may well in fact be at a financial disadvantage as a result of the change in payment system. Experience has however shown that some operatives are willing to take a small decrease in earnings if it is to be compensated for by financial stability.

From 64 company responses, which includes case study data, 9 managers chose a fixed rate with bonus as their payment system.

To calculate the rate at which the flat rate should be set, one company used the following formula, so the wage bill remained unaltered:

Piecework basic + bonus (old system) = fixed basic (new system)

Though this is not typical, the following case study illustrates well an unusual means of evaluating the bonus element of such a payment scheme.

Teams are paid a group bonus, based on the standard minutes of the garments, a flat rate and 'personal element'. The personal element is broken down as follows:

- Efficiency / effectiveness
- Versatility of Skills
- Ability to maintain team spirit and motivation.

This is measured by the supervisor who gives her general impression - individuals' development is inspected every 3 months. This is based on personal interviews. The unions used to be monitors, but decided they would just trust the supervisors' opinions. Operators can complain if they are not happy with the analysis. Most complaints were related to efficiency levels - if they were efficient in all skills then they were good, but when looking at social skills as well, their opinions changed. [Company JC]

Typical bonuses offered as part of a payment scheme are:

Performance / productivity/ efficiency bonus

For achieving a daily or weekly target. The disadvantage found with this system is that operators can become demotivated if they know they are not going to reach their target, so they slow down. This is particularly the case with weekly targets.

Skills bonus

Due to the nature of teamworking, team members have to become far more multi-skilled than was necessary on conventional production. A question which is frequently raised is whether operators should be rewarded for their additional skills. In most cases, a higher basic rate accounts for this, but in some the decision has been made for operators to be paid individual bonuses according to their skill levels. However, in those companies difficulties have been encountered in distinguishing between skills, making it hard to grade them and it is argued that team members should be encouraged to learn new skills *as a part of the whole concept*, without extracting the multi-skilling process as being of prime importance.

Quality and attendance bonus

Both these bonuses are intended to motivate operators to perform tasks which should be expected from the job. In cases where operators are only paid for first quality goods, a quality bonus is not an issue. Similarly, operators should be *expected* to attend work, thus an attendance bonus indicates a deeper problem of poor attendance which is not necessarily related

pay. Only one company surveyed utilised an attendance bonus, and found it to be the cause of many problems. As with quality, they realised that operators should be expected to attend work in the same way they should be expected to produce first quality garments.

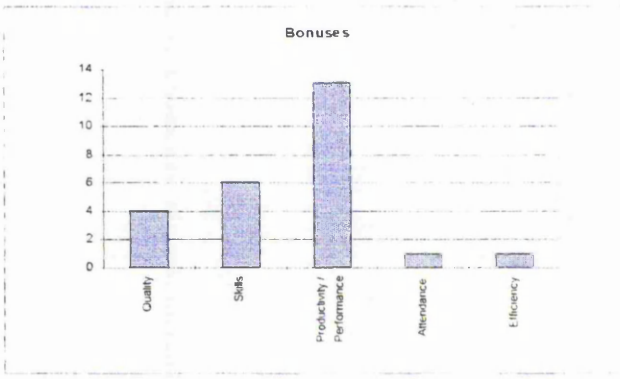


Figure 31. Source: Teamwork Users' Groups I and II and Scottish Teamwork Users' Group. Sample size = 25.

ii) Productivity based payment, with bonus

This is a form of 'group piecework'. Operators are paid for their output, in terms of price per garment produced. This is divided equally between the team members:

$$\frac{\text{Garments produced x standard minute value x conversion rate}}{\text{Number in team}}$$

In addition to this, a bonus is paid to the team for exceeding a given production or performance target. In some cases, however, operators are still paid according to their *individual* performance levels, with a group bonus for achieving a target. In both cases, and particularly where operators are still paid individually, managers are finding it difficult to move away from an incentive based payment scheme. The difficulty in making the transition to a non-incentive based payment scheme is reflected in the fact that 24 out of 64 companies have adopted this method of payment.

The teams are paid a 'group piecework'. Each operation within the garment is measured by GSD (PMTS - predetermined motion time system). All are added together to give an SMV for the entire job. This is multiplied by the number of garments finished, divided by the number of people on the team and then multiplied by their conversion rate (pence per minute). Target setting is done by mutual agreement with the team and the technicians every morning. The general manager feels that sometimes the targets need to be increased a little, but it gives them the opportunity for negotiation.

All savings made from off-standard and non-productive time are put into the operators' wages. The piecework yield increased by 15-18% in the first year of teamworking. Average earnings went from £102 to £138 in a 12 month period. Nobody experienced a reduction in wages. None of the benefits were put back onto the bottom line profit, so it took some considerable time for the long term effect to show in the form of profit [Company K].

iii) Skills based payment

This is an individual payment scheme, paid to operators according to the number of skills they posses. These include sewing skills and/or 'soft skills', such as a 'willingness to learn.' In some cases this is linked to vocational qualifications (NVQs/SVQs). Seven out of 64 companies used this payment method.

When the teams were first set up they did not have a payment scheme worked out, so the operatives were paid an average. They now have a grading system which incorporates the NVQ:

Grade 1	New Recruits	£111.10
Grade 2	2 units of NVQ	£120.20
Grade 3	All units of NVQ	£130.30
Grade 4	All 4 main machine types at +80%	£139.20
Grade 5	Floater / Mobile	£168.00 (Hourly rate)

There is a bonus of £26.26 for reaching target at required 75% performance. Additional bonus is awarded for performance over 90% for every dozen over target.

Most machinists have received a pay rise. For those who have had a pay reduction, this was done over a period of time, starting with their average and then being reduced by £10 per week. When operatives first go onto a team, they are paid their average until they are graded. A problem with the payment system is that once they have reached their target, they want to know what they can gain by producing more [Company U].

Problems encountered with this system have been that operators tend to learn more skills than are actually required in order to move up the payment bracket. In addition, the administration of such a system has been found to be time consuming and complicated.

iv) Fixed rate, with no bonus

In cases where a fixed rate has been established, once a team is functioning well, all are paid the same hourly rate. In some cases operators are paid a fixed salary.

> The operatives are paid a flat hourly rate, with no incentive/bonus. When they first go on a team their average rate is frozen and they are paid according to that average rate. When they achieve a standard deemed as acceptable they will all then go onto the same hourly rate. In some cases this has meant a reduction in pay, but this has apparently caused no problems. A production target is set for them, if they under-produce the reasons will be discussed. There is no bonus if they exceed the target. The senior supervisor gives them certificates if they do particularly well, saying for example that they are "geniuses", or chocolate if a rush order is fulfilled, to say a personal "thank you" to them. Motivation is included in the supervisors programme, and the small rewards are simply a personal gesture. The rest of the factory operating under conventional production are paid piece work, and they too receive this personal gesture as encouragement [Company Q].

Out of 64 companies, 24 paid a flat rate, with no bonus scheme. These figures include examples from other industries, which account for 30% of the companies using a flat rate.

The advantages and disadvantages of these systems were described by members of the two Teamwork Users' Groups. These have been tabulated as follows:

Payment Method	Advantages	Disadvantages
Productivity based (plus Bonus) [Group piecework]	• More ideas generated • Greater innovative spirit • Structure for quality improvement • Labour cost savings • More predictable earnings • Easy to understand • Simple • Not too different from piecework • More trusted • Higher efficiency • Awareness of 'timework' • More skilled workforce • Easy to calculate • Less time spent on individual queries • Happier workforce • Greater earning potential • Incentive for good quality • Unites the team • Easy to calculate • Emphasis is still on production - motivation	• Initially guard against reduction in performance • Forget earnings no longer fluctuate so much, but want to earn more • New • Depends on people working together • High efficiency must be reached faster • Demotivated when know will not reach bonus level • Still need for quality examination • Unit cost has increased, though overall cost has reduced • Overtime and part-time cause complications • Costs more per standard minute • Lazy operatives can hide • Incompatibility with current wage report system • Operators need to be of similar performances • Harder to cater for problems out of the teams' control
Fixed rate (plus bonus)	• Extra earnings for operators • Stability of earnings • Encourages teamwork • Gets throughput • Recognises garment complexity • Gives a target to encourage fast turn-around • Less emphasis on bonus, therefore greater predictability	• Potential conflict between high and low performers • Flexibility when conflict arises • Some operators have lost money • Potential for increasing earnings too much!
Fixed rate (no bonus)	• Guaranteed earnings • Based on self motivation • Acceptance of standards • Easy to calculate	• None • None, but perhaps no potential for increasing earnings
Skills based	• Higher basic • Fairer • Easy to administer	• Weekly target can demotivate • Minority are worse off • Skill training is time consuming

Table 11: Advantages and disadvantages of payment systems currently in use as perceived by company management.

Union views

The clothing and textiles industry is receiving a growing degree of attention from the unions as teamworking becomes more prevalent. Both the GMB and KFAT have spent a great deal of time and effort looking into the implications of teamworking, particularly on the payment system for operators. The view of the GMB union is that the payment system adopted should achieve the following:

1. Certainly to keep the company competitive and to maintain at least its market share and provide long term employment.

2. To ensure quality levels are improved an maintained to a very high level.

3. Ensure the customers' needs are paramount in determining working practices.

4. Offer an alternative to the individual element of incentive schemes and, with it, remove the constant industrial relations problems.

5. Improve flexibility amongst the workforce, by increasing training / allowances.

6. Devise a system that retains an element of motivation, based on a sound basic wage.

7. Improve morale of the workforce and restore job satisfaction.

8. Reward good quality work and move away from the quantity-at-all-costs mentality.

(Ref: Quality Pay, Clothing and Textiles Conference, 1993). The views of KFAT follow a similar format, in which a high basic rate of pay is recommended to achieve these goals.

3.3.2 Training

Operator Training

"Training for flexible operators requires long term management commitment. In addition to cross training for machine skills, there are also greater needs for preventative maintenance skills, reorganising and responding to changes in work flow, wider appreciation of quality issues, and a number of other possibilities depending on the working environment. If human skills are to be developed and retained, changes are also necessary in contemporary management philosophies and in procedures for financial remuneration" (Tyler, 1989).

Decisions regarding the use of training is fundamental to the long term success of teamworking. Initially managers must decide how operators are to be trained and what exactly the necessary components are to the training programme. This is dependent on the system chosen and upon the flexibility required. One of the major benefits of teamworking as far as the operators are concerned is the variety of work and acquisition of new skills. It is therefore an important stage of the decision making process and is fundamental to the smooth running of the teams.

There is no agreement as to the 'ideal' type of training for operatives within a team environment as the choices are limited by the traditionally low status of training within the industry. The majority of training for line production has been 'sitting next to Nelly' or cross-training to transfer the necessary sewing skills.

If large enough, companies may run an internal training school, training machinists on their specific garments and providing a set training wage for doing so. This can ensure a thorough method of training with a set pattern of sewing techniques being adhered to.

Secondly, training may take place within a team environment. This involves machinists utilising their skills in order to cross train each other. NEDO (1991) forwarded the idea that each team member should train their fellow team mates in their main skill (usually only 1 or 2 if transferring from a production line), this, they argue, gives the benefit of raising self esteem of individuals and develops communication and cohesiveness within the team.

In-house formal training is regarded as a more effective method, promoting a set style of machining techniques. This can be contrasted with cross training which may result in several different methods being taught and the transfer of 'bad habits'. In addiction effective planning is required to ensure that the envisaged 'skills matrix' of operatives is achieved.

> No team building or multi-skill machine training was given prior to installing teamworking. Instead machinists were trained on other operations only when it became necessary, usually by a fellow machinist. For example, an examiner was put onto lock-stitching, during production, with no previous experience. She did not pick up the skill very easily and the process resulted in feelings of bitterness between the team members. New comers to the business are now trained to operate more than one machine, however, when teamworking was in operation the machinists started off with a single skill only. They were expected to perform operations that they had not been trained on because they were considered to be capable of learning quickly, however, they did not have the necessary support to help them achieve this. [Company A]

During Teamwork Users' group discussions, the relative merits of cross-training were compared with the use of a training school for multi-skilling operatives. Outcomes of the questionnaire indicated that the majority of respondents (14 out of 18) use cross-training to multi-skill their workforce, with a combination of on-the job training and training in a separate location. The criteria for considering trainees ready to go on a team included their performance level, the time period and the number of skills they possessed. It was felt that it would be *ideal* for operators to have all the skills needed for all products, but that this was impractical.

Opinions on training games from managers who had used them as part of their training programme were that they were "excellent" and "invaluable". An evaluation of the games used by the Group was therefore made during the seminar.

Team working should involve a move away from machine utilisation to operative utilisation, thereby promoting the development of polyvalency, whereby workers carry out more tasks of a discretionary nature, enjoying greater autonomy and responsibility. This issue must be addressed with caution, as commentators have argued that job enlargement (whereby workers carry out more of the same task) may instead prevail (Wood, 1989).

The stage at which skills training commences is also relevant as the operators need to posses the necessary number of skills prior to commencing as a team. If they do not have these skills the

focus of the new team will be on obtaining the skills instead of learning to function as a team. The disadvantages of training on-the-job when the team is in place is the additional pressure on the fellow team members to training and get production out.

Tayloristic production lines brought with them an increased amount of deskilled and repetitive work. This, together with the increased specialisation produced by piecerate payment methods, resulted in an unskilled and inflexible workforce. Coupled with this, the tendency of the British manufacturing industry to adopt a short term approach to training and staff development led to the textile industry becoming its' own worst enemy when the search for flexibility began.

These views are highlighted by Weintraub (1987) who argues that modular manufacturing produces a number of increased risks and costs through training. He argues that turnover becomes a 'death knell' for the company and that management suffers an increased fear of losing workers. He does recognise that modular manufacturing "will enhance the job enriching and self fulfilment of work" but concludes that such technological advances and appreciation of human resources are best suited in the "implementation and utilisation of high-capital intensive equipment". Gore (1991) sympathises with the above points, emphasising the high training costs incurred with team working, his answer lies in the computerisation of the idea.

In the case of Company A, no team building training was given, and skills training was offered only when it became absolutely necessary. Operators who were slow to pick up the skills were treated with bitterness and contempt. Operators were "considered to be capable of learning quickly, however, they did not have the necessary support to help them achieve this"

Training support in 'social skills' was provided by an external consultant, in which operators had 'team talks' to discuss work organisation, this took place over a 2 month period. Additional courses were offered to people who were struggling with the concepts of teamworking. This offered teams psychological support, which succeeded in all but one cases [Company H].

The company spent a lot of time in non-manual training, such as team co-ordination, problems solving, team determination and stock control. However they later recognised the need for manual skills training and introduced a training programme for this. The company paid much attention to group dynamics, particularly as conflicts (sometimes physical!) needed to be resolved [Company AC].

In cases where teambuilding training has not been given, operators later struggle to solve problems and remain autonomous. In Company D for example:

> During the year before the company was sold, all overhead costs were removed. "£1.5 million of costs were stripped out of the company almost over-night". This had a very damaging effect on the company, particularly culturally. It took out a lot of the good things which they had tried to put in and "the inevitable happened, the person in charge of projects such as TQM was taken out of the business". These pressures resulted in a lack of necessary support when developing the teamwork concept. The need for having the right people in place, trained to a high standard has been recognised as necessary if they want to achieve their business plans. They not only have this understanding, but they also have the will to do this. Through various initiatives they are starting to work towards this, and intend to pick up some of the cultural philosophies which were put in the company earlier [Company D]

> Training plays an important role within the company and takes place on a continuous basis. Each team has a display board indicating the level of training of each individual, and there is an additional board which displays the skills matrix of the whole factory. If an operative wishes to acquire new skills then they are encouraged to do so, as it is seen to benefit both the employee and the company. Each operator is allocated 5 training days a year, which includes a refresher team building day. The Investors in People initiative has been adopted.
>
> Examples of training courses, displayed in press room:
>
> *Fork-lift truck driving*
> *Problem solving*
> **Why JIT*
> *Steel Plant, Kanban & JIT*
> *Leading change*
> *Personal Development*
> *Press tool safety*
> *Quality Awareness*
> *Team Building*
>
> (*most popular)
>
> Information is always given to operatives stating why they are going on a particular course. It has been found that those who are less willing to go on courses because they feel they will be made to make presentations actually become very enthusiastic in discussing something they really know about. Allowances are made for those who are not used to a classroom culture - some people become physically ill. To try and combat this sort of fear the company runs a 'buddies' system where those who feel uncomfortable can be accompanied by a friend. Videos are used in the training sessions, but no books or games. They have developed a package to portray specifically what they want to within the training programme, and course material is always related to each individual's job.
>
> Teams receive training in positive thinking, motivation and team building. Everyone within the factory takes part in these days which are held in the internal training school. Displayed within the school are messages such as 'don't let perfection be the enemy of good'.
>
> One training method discussed was 'Force-field' analysis. This method helps in situations where

two people of opposing views are dominating the meeting. This is achieved by listing on the left hand side of a flip chart the driving forces for change, i.e. why you would want to change, and on the right hand side, a list is made of the restraining forces for change, i.e. what would prevent it. These restraining forces are subsequently eliminated through group discussion. [Company CI]

At Company J, operators felt guilty about the time taken out for training:

"With the amount of time it takes to train us we'd never sew anything, it takes so long".

ii) Supervisory Training

Typically supervisors in clothing and textiles firms supply machinists with cut work, trims etc, ensure targets are met, provide training as and when needed and undertake the general day-to-day 'firefighting' resultant from a lack of time for planning. In textiles the 'charge-hand' is more likely to be a male role, in which the overall function is to oversee the smooth running of the production area and offer technical expertise where necessary. A short-term approach to training and staff development is typical of the industry, in which ad-hoc cross-training is commonly the only means of training provision. Supervisors are frequently shopfloor operators who have been noted for their sewing or technical skills and promoted to their new position with no additional training in the necessary managerial skills.

The facilitator used to supply the teams with work, but now someone else does that. She is now responsible for supervising the teams (all 3), problem solving and supplying components (threads etc). The facilitator attended the same course as the teams. As far as planning is concerned, she is only involved in choosing suitable styles for the teams for the production manager, to whom she reports (she also reports to the factory manager). She usually knows at least a month's loading plan ahead. She still does a bit of 'progress chasing' and helps resolve conflicts when the teams are unable to do so on their own. The facilitator sees her role as "supplying the teams' needs". She feels able to do this, but is restrained by the fact that the teams are on different floors in the building. She considers teamworking to have had little real effect on her daily work (Ref: Leonardo Project - Appendix 5).

All too often, ex-supervisors are expected to adapt to a completely new role with no support. Areas of responsibility between operators and facilitators begin to merge as operators are encouraged to become more autonomous. There are some quite clear areas of training required by facilitators, but additionally there are some 'grey' areas which can only be distinguished at company level.

The change for the team facilitator is not as easily identified as operators as their roles can take different directions depending on the company's own organisational structure. Suggested areas of responsibility include:

- Fostering good relations between management and shopfloor workers and serving as the two-way communication link
- Taking responsibility for selecting new operators from short-lists
- Ensuring the standards for operator performances are attained by the use of available training resources
- Resolving labour problems that are within set procedures and taking responsibility for absenteeism
- Agreeing targets with superiors
- Taking responsibility for preventing the decay of time production standards, e.g. through method change
- Recommending method, layout or equipment changes which would improve operator effectiveness
- Ensuring safe working practices, good house keeping and punctual time keeping
- Maintaining quality standards within company specifications

iii) Management Training

The need for management to 'let go' of some responsibilities and involve employees further down the hierarchy in more traditional 'management' functions will be discussed in chapter four, though it is of key importance to the training implications for management. This exemplifies the difficulties in separating the 'social' from the 'technical'.

Management frequently find themselves in a position where they are having to take on new roles without receiving the necessary training. One response to a Teamwork Users' Group questionnaire clearly indicates the quality of management needed for successful teamworking:

> *"[Teamworking] completely redefines the old parameters of working...because managers must respond more quickly to problems when the old comfort zones of high work in progress have disappeared. Fast answers to problems test the ability*

of mangers more than ever before. Basically in teamworking, the quality of a manager needs to be higher"

It was agreed that management training should include the following key areas:

- What is teamworking? What are the options?
- Organisational skills, systems training and technical skills
- Understanding payment systems
- Personnel skills and recruitment techniques
- Motivation techniques
- Communication skills
- Managing change
- Quality, specifications and standards
- Problem solving
- Time management
- Financial control
- Presentation skills
- Leadership and coaching skills
- Learning to look strategically at the business and knowing when to intervene
- Interpersonal skills - developing mutual trust, listening skills, delegation skills

4. CONCLUSIONS

The suggestion that technology determines work organisation (Woodward and Perrow) has found to be persuasive in the context of the clothing industry. Although it is still very much a labour intensive industry, cases are cited in which the existing technology (an overhead rail system for example) has determined the workplace design for operators.

Arguments that size and the environment are determining factors of organisational structure are not so strong, and as Child suggests, the more influential factor is that of the view of the decision-makers themselves - the dominant coalition. Minzberg's suggestion that strategies

emerge and build upon events and circumstances which change over time is convincing in the light of the empirical data.

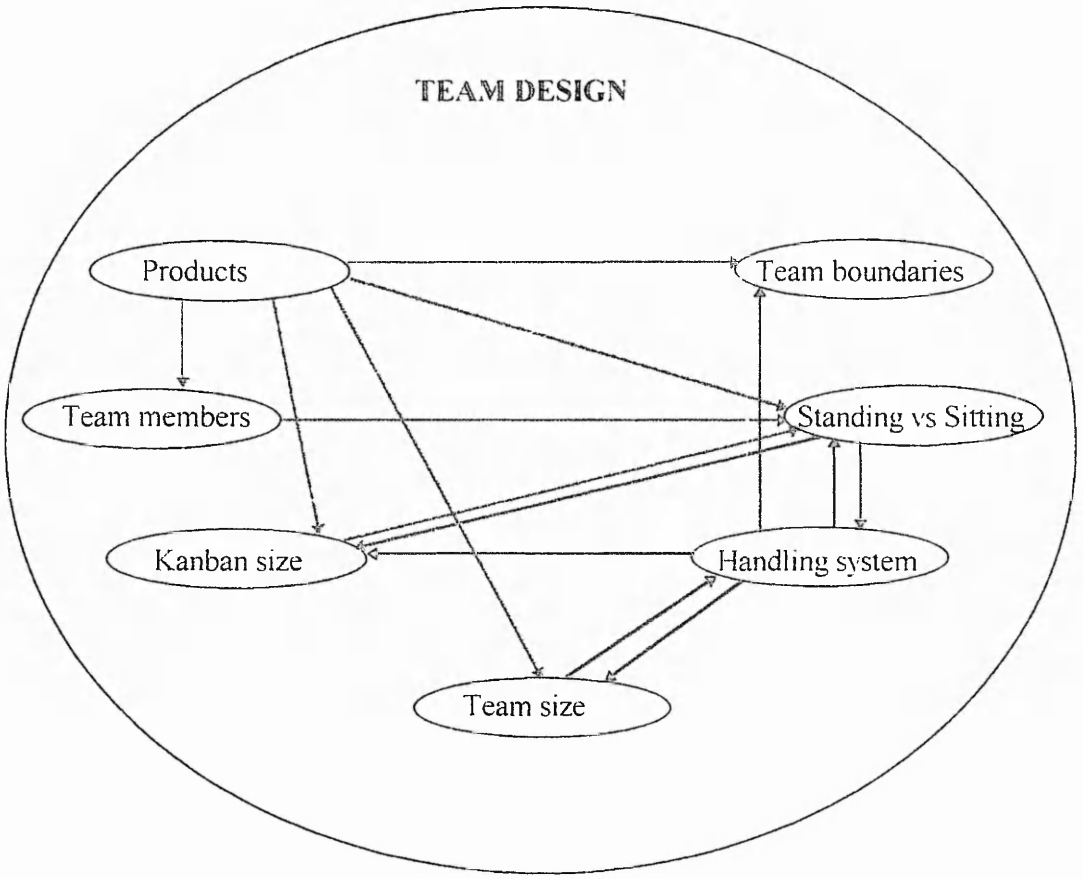


Figure 32.

In summary, it can be concluded from the above discussion that the choices made in the implementation process are not necessarily strategic. One decision is almost always directly affected by another, and the interdependency of the decisions which must be made make it difficult for a formalised strategy to be created. The diagram above indicates some of the areas which affect each other. Thus managers can only make *emergent* decisions, depending upon the outcomes of other choices. This questions the use of sociotechnical theory as an approach to change, as it takes a holistic view to change, discounting the interdependency of the decisions. If managers are making incremental decisions, "changing everything at once" will not work.

Also highlighted in this chapter is the difficulty faced when trying to analyse the 'technical' as distinct to the 'social', as the two are so closely interlinked.

CHAPTER FOUR

THE QUALITY OF WORKING LIFE: NEW STRUCTURES AND NEW CULTURES

1. INTRODUCTION

> *"Man [sic] has to realise his goals in co-operation with others. The problem of social integration of the worker into a specific organisational structure is a main issue: the process of socialisation. Social interactions at work contribute to the development of the social self or self appreciation. The level of participation in the social co-operation of work can more or less contribute to the fulfilment of this need" (Ryan, 1995).*

This statement indicates the underlying importance of the 'social' aspects of work organisation, in which work related interactions among people play a key role in the development of new working practices. This chapter aims to explore teamworking from this perspective, which includes the evaluation of working relationships, either internal to the work process or across its boundaries.

This chapter seeks to analyse the 'social' aspects of work organisation, as identified by sociotechnical theory. However, as will become apparent in the discussion, sociotechnical analysis cannot be used to form the structure of the discussion as there are too many gaps in the evaluation process. Thus, the chapter develops in a way which encompasses all areas considered to be relevant to this thesis, namely suggesting that in order to remain competitive, organisations must seek motivation and commitment from their workforce through the new structures and new cultures associated with teamworking.

In considering the new organisational structures, issues of particular relevance include communication systems and new roles for employees. In assessing the necessary cultural changes, quality of working life issues are discussed - at which point sociotechnical analysis regains its relevance. In particular, achieving autonomy through greater shopfloor empowerment, issues of motivation through task significance, identity and variety, as well as job enrichment are discussed.

The chapter concludes with comments on the use of sociotechnical theory in analysing change.

1.1 THE ROLE OF 'SOCIAL' ANALYSIS

All too often practitioners of change opt for 'technical' models, as attempts to design work organisation around human factors is a bewildering experience due to the vast array of theoretical propositions available. Mechanistic models are frequently adopted by following a precise 'blue-print', in which no account is taken of the organisational and cultural practices of the company. What makes one organisation so different from another is the people who work within it. Such technical solutions are thus not always effective, as what may be good for one company can be disastrous for another because the starting points are so different. In their book detailing organisational change in one particular company, Buckingham *et al.* (1975) describe the importance of 'social factors' in work organisation. They suggest that the adoption of a mechanistic model simplistically assumes that "objectives of the organisation are accepted by all its employees who subordinate their own aspirations to these overriding aims" (Buckingham *et al*, 1975). Through involvement of the workforce in the decision making process, effective solutions can be found which ensure both an efficient work organisational change and commitment to the change process.

The whole concept of there being a social side to work is difficult to define, as it encompasses a whole set of values and beliefs. What is important in a work situation for one employee, may be totally irrelevant to the daily functioning of another. In Maslow's theory of motivation, he suggests there are however some fundamental aspects to work which must be fulfilled in order for the employee to continue work. As each stage is achieved, the person grows closer to a situation where they are able to develop themselves as an individual and achieve 'self actualisation' (see section 3.1.4 below). The degree to which employees achieve their own personal goals is somewhat dependant on the opportunities they have within their working environment but also on their personal commitment to achieve their own success. What organisations can do to assist individuals in reaching their full potential is to give them the *opportunity* to do so. This can be achieved through support given to employees to encourage them to work together and begin to make joint decisions for the effective running of the organisation.

Referring back to Chapter 2 and the use of sociotechnical analysis as a means of evaluating work organisation, in this context, the first stage would involve the creation of a 'social systems

grid' which would indicate the relationships between different levels of the organisation. Though this 4x4 grid may provide a broad picture of 'who talks to who' in an organisation, it does not identify the real issues in relation to the organisational structure and its effects on communication, motivation and the quality of working life. This model is considered to be far too inflexible to analyse working relationships between employees and thus an alternative means of analysis is adopted.

"The social analysis essentially involves the examination of the roles and relationships within the whole work process, particularly in relation to those in the control of the key variances" (Taylor, 1985) which sociotechnical theory aims to achieve through "focal role analysis". From the behaviours noted in the above 4x4 grid, the patterns of interaction with the 'focal role network' are mapped, in terms of frequency and direction of contact. Social interactions are driven by the "role expectations" with which people are faced, such as the role of supervisors and middle managers in relation to team members.

Although the production of figures relating to the number of times an operator discusses machine problems with the mechanic, for example, may be deemed to be 'useful' data, it is suggested that a broader assessment of the levels of involvement between different departments and the resultant effects on their working practices to be far more relevant. This can successfully be achieved through the discussion of work with operators in a way which allows them to provide such information in a manner which they can relate directly to their work requirements. Similarly, discussions with other departmental representatives can be helpful in assessing communication methods. It is, however, useful to formulate a picture indicating the departments effected by teamworking in order to evaluate the degree to which this need for cross- departmental co-operation is necessary. This can be found on page 162.

The final stage of sociotechnical analysis of the 'social' aspects of work organisation involves the evaluation of the quality of working life, which is considered to be extremely relevant to discussion as it provides a means of assessing the issue of autonomy and empowerment. According to sociotechnical theory, this includes dignity, respect, social support, prospects for advancement, challenging work, task significance and control over work. The analysis of the quality of working life for this thesis includes a broader range of subjects and encompasses these

areas within the headings of trust and loyalty; responsible autonomy; participation; task significance, identity and variety and the physical environment

Instead of creating a grid in which to measure the frequency of contact of personnel, the subject of communication as a whole is discussed, particularly in relation to the effects on other departments. Following on from this, the resultant changing roles and relationships are highlighted, particularly those of middle managers, but also those of support staff, who least expect the changes to effect them. The third section reverts to the sociotechnical model in the evaluation of the quality of working life, but following a structure which is considered to encompass a more comprehensive framework for analysis.

2. NEW STRUCTURES

2.1 COMMUNICATION

The processes of communication forms a fundamental role in the evaluation of the social system of an organisation. The nature of and reasons for communication, the type of information conveyed and the feedback mechanisms are all indicators of the attitude and culture of the organisation. Case study evidence indicates that organisations typically do not communicate well, and one department will have little idea of the goals and systems in another department. The management structure can play a key role in the communication network within an organisation, and the more hierarchical the structure, the more information is *filtered down* to the shopfloor so that only information which is considered to be directly relevant is communicated. Even within departments people do not always communicate with one another, yet is essential that workers are given the opportunity for interaction on a regular basis. The establishment of team meetings assists in this process, but it is just a single means of communication.

Gustavsen (1995) developed Habermas' concept of 'democratic dialogue' as a means of effective communication in the Swedish LOM programme, in which ideas were exchanged between organisations. The following criteria were used:

1. Ideas are exchanged between participants
2. It should be possible for all concerned to participate
3. All should contribute and encourage contribution from others

4. All participants are equal
5. Work experience is the basis for participation
6. Experiences discussed should be legitimate to the discussion
7. All arguments which pertain to the issue for discussion are legitimate
8. Points must be made verbally
9. Roles may be discussed
10. Participants should be able to tolerate an increasing degree of difference of opinion
11. Agreements should continuously be formed, with which practical solutions can be provided

Criteria such as these are used in team meetings, for managers, supervisors or operators, in which they set their own ground rules. For example, the following ground rules were set by management of Company E, which are adhered to every time they have a meeting:

1. Punctuality (team time belongs to the team)
2. All meetings must have an agenda
3. Focus on the issue
4. Meetings to be recorded and minutes to be circulated
5. No put-downs - ask questions
6. Consensus on all issues
7. Shared (team) responsibility for problems

Though at first glance the two sets of criteria seem dissimilar, both serve the same purpose, that in discussions, people are given the opportunity to voice their own opinions in an environment which encourages open discussion in a 'safe' environment - "no put-downs" or "all participants are equal". Also the need to reach a consensus and continuously agree solutions are key to the success of such discussions, and are evident in both the above. Where Gustavsen's criteria differs from that of Company E is in the emphasis on democracy in the debate. The Company E example indicates the pressures of time in a manufacturing environment, people must arrive on time and the meeting must be focused. Gustavsen on the other hand emphasises the view that everyone must have an opinion and be free to talk, as all arguments are legitimate and worthy of discussion. Ultimately both criteria have the same outcome - if people are given the opportunity to discuss work, they will, and as long as all opinions are encouraged, innovative ideas will emerge through the

exchange of experiences and information. The key to this is the *management* of the discourse to ensure the 'force of the better argument' prevails.

However, Gustavsen suggests that in the pursuit of democratic dialogue, "Habermas (1984/7) develops his criteria for free communication on the basis of necessary - but generally implicit - stipulations which can be seen as linked to certain types of arguments or claims made in discussions. If someone in a debate argues that "my view is the true one" this can be seen as the undertaking of certain guarantees: To be able to argue the truth one must be familiar with the issues under debate, one must know the arguments which can be put forth in support of the different contesting views and the evidence which can be mustered for or against these arguments". In particular someone who does not intend to manipulate the discourse. (Gustavsen, 1992).

In his paper entitled 'Sociotechnical Design Revisited", Cherns proposes that information in organisations has three uses; it is for control, for record or for action, and therefore there is a need for "information systems to be designed in co-operation with their primary users so long as the designer recognises that the primary users are those who need to act on the information as well as those who are required to provide such information"(Cherns, 1987). The problem which arises from this suggestion is that it results in tension between control and the force of the better argument. If decisions are made at the top of the hierarchy regarding who will receive certain information, then the opportunity for an equal chance to put forward ideas diminishes.

The rest of this section discusses the information systems available for the communication process and evaluates the systems typically used. This is followed by an evaluation of the frequency and direction of communication within organisations and finally a summary of the content of information which is typically communicated.

2.1.1 Team Meetings

Meetings play a key role in the communication system within an organisation, particularly in an 'upwards' direction from shopfloor to management. The frequency, duration and contents of such meetings are therefore extremely important. When meetings are held, they are either on a regular basis, such as weekly, or on an ad-hoc basis, according to the current situation. In many

cases organisations start off with good intentions and ensure teams have regular meetings. However, this discipline invariably waivers and meetings become postponed and then cancelled until they stop all together or occur on an ad-hoc basis. To some extent it can be argued that so long as a forum exists for teams to hold meetings when they feel necessary, then there is no problem. Problems arise when this no longer exists and communication returns to a unilinear direction. The three categories are discussed below:

Companies which started off with good intentions, but the discipline wavered

When teamworking is introduced into an organisation, many managers recognise the need for team meetings and have seen or read that they play a necessary role in the effective functioning of a team. In the midst of all the attention the teams receive when they are first established, this is easily carried out. However, as time elapses and the focus moves off the teams and onto another 'project', the need for the continuation of these meetings no longer seems so important - pressures of production once again take over and the meetings lapse. The is illustrated by the example below which is so typical of many of the organisations studied:

> They started off having team discussions once a week, for ½ hour every Friday, where teams would talk about what they were doing and what was coming next, in the presence of the supervisor. They were asked whether they were happy and whether they were having any problems. "When you first start up a team you need them [meetings] about once a month, for the first few weeks". They no longer have team meetings, except if they have difficulties. When the factory manager can see a particular problem, she will talk to the whole team [Company G].

The difficulty with adopting this means of communication is that meetings only occur when teams have *problems*, and there is no scope for creative thinking and encouraging 'continuous improvement', the focus is instead negative.

The following evidence from a group discussion typifies the reason for the lapse of team meetings:

> *We used to have monthly meetings but they all stopped, didn't they...I don't think they've got the time.* [Company D]

Another team had a similar problem, and in answer to the question "Do you ever have meetings?", the team responded:

No, we're not allowed ... we did at first but...

They promised us the earth at first, but nothing's turned out that way, we was going to have meetings, if the quality was bad that it was our decision, all the cutting was wrong and we just got told to do it, even though it was wrong, and at the end of the day it just comes back on us. [Company S]

The teams were told initially that they would have meetings once a week. This slipped to once every three weeks, and not at all now. The teams are noticing the absence of these meetings as they were an opportunity to air their differences and discuss production issues. The renewal of these meetings would benefit the teams greatly, through increased morale and an opportunity to put forward their ideas for continuous improvement. The opportunity to air any differences is equally as important to team members, as they are being asked to work together for the first time and are going through a process of familiarising themselves with this new concept of offering support and constructive criticism. Without the forum to discuss personal differences the atmosphere can become tense and the operators find it difficult to work effectively. For Company D, meetings were described as a 'blood letting session', this particular company still has the meetings, but not as regularly as when they first started:

> Team meetings used to take place on a regular basis and were considered to be a 'blood letting' session. The meetings were complimented by the fact that operators were on a flat rate of pay, and therefore did not loose income through attendance at such meetings. Now they take place fairly infrequently, when the teams or management call them. As this is a common forum for communication, it means that discussions of problems, ideas and so on are now channelled through the team leader, perhaps restricting the voice of the individual team members. Some have 2-3 per week and then will go 3-4 weeks without, it depends whether they need them. The Production Managers will also call meetings if they are needed. They can be used to identify training needs. [Company D]

Meetings on an ad-hoc basis

Some companies interviewed never had regular meetings, instead they were called when managers considered them to be necessary or when teams themselves considered them to be necessary.

> The teams had meetings with the project manager whenever they felt they were necessary. In these meetings targets would be discussed and any problems or criticisms would be aired. The project manager would also call a meeting if he felt it was applicable to give the operatives praise and encouragement for reaching the target or exceeding it [Company A].

The problem with this means of communication is that it is only in a downward direction and team members themselves do not have the opportunity to call them themselves is they have any new ideas or need to solve problems. Whether or not teams are paid during their time for meetings affects whether they will take them or not. Management thinking behind not paying teams whilst they have meetings is that they will be quick and to the point. However, they are unlikely to try and come up with cost saving ideas or improvements if this is the case.

> The company has the facilities to have meetings; some teams have a lot of meetings whilst others do not. "The teams are 12 individuals with different personalities ... some sort problems out in the canteen, others say "right, stop, we're having a meeting" and go and have a meeting. Others appear to work seamlessly. They might have a huge argument in the canteen and then be OK. Others want a real public display. Different teams have different methods." The teams are not paid for their meetings; time is deducted from attended minutes, but not contracted minutes. They do not positively encourage meetings because a lot of the teams are not capable of holding them and it is not considered a priority for training. If they have a meeting they usually ask if management can be involved as they want guidance. They sometimes discuss personalities, or quality issues, thought it is normally workflow problems. They do not have meetings for *every* style change, though the factory manager wishes they did because it is "time well spent", most of the time they have a "fire extinguisher strapped to their backs". It does not always work out as it should. They are developing 'on the run' a lot of the time. [Company H]

One problem in the instigation of meetings can be mistrust displayed by management - there is an assumption that operators will take advantage:

> Teams have meetings when they change styles - they are quick and to the point because "Operators would like to sit in a meeting all day". Meetings are only paid for if management call them. Any time lost in meetings is made up for afterwards by machinists. Latterly they have introduced team briefings and line managers regularly have appraisals. In the team briefings, machinists say what the problems are, for example if cut work is not right, the line manager summarises it and brings it to a meeting in the morning and it is up to the line manager to sort it out. Management are quite prescriptive about the amount of work given to the operators. "It doesn't work to let them sort out their own problems" [Company F].

Regular Team Meetings

Meetings on a regular basis are more likely to result in ideas for improvement, as the time is not just spent discussing problems. An example in which the organisation has taken meetings very seriously is as follows:

Team meetings take place once a fortnight, lasting for a minimum time of 1½ hours. These meetings centre around the subject of continuation and improvement of major projects and involve staff at all levels.

Teams also have meetings once a week, with the focus being on more practical issues, such as targets, work plans and so on. In these meetings they are encouraged to put forward any new ideas they have for discussion.

Once a month there is also a full-scale meeting of the teams. Each team, apart from the assembly teams, has their own room for team meetings, some of which are purpose built.

It is common for shopfloor workers to attend managers' meetings. They are also able to set agendas if they so wish. Team leaders can alter team meeting dates if it is for an important reason, for example, if production is particularly busy. However, meetings are never *cancelled.*

Setting the ground rules for team meetings is considered to be very important. Each team compiles their own ground rules and must adhere to them at all times. For example, one team's ground rule was that they could say whatever they want, with no threat of recrimination. Another team had the following two ground rules: 1. Pay attention to *what* not *who*, and 2. Nothing is to be repeated outside of the meeting.

It is accepted that people will have differing levels of ability and will not necessarily want to contribute to team meetings, especially those who have been doing the same job for 25 years and are now being asked to offer ideas. It is also felt that many of the employees are used to being reprimanded and tightly controlled through their experience in National Service. It thus is recognised that it is difficult for some people to change so radically, so pressure is not placed on these operatives to participate in discussions, but the opportunity is there if they wish to. [Company CI]

This same company also keeps an 'ideas database', where suggestions are classified under headings, such as health and safety. The company always tries to quantify savings made through the suggestion scheme and measures how much teams have developed. An example of a brain-storming session was that it was found that the trolleys to hold the castings were too low, and that workers were suffering from back ache. The trolleys were subsequently made higher and grids and trays were installed underneath the trolleys to catch the waste as it dropped. The trays served two purposes - the waste could be re-cycled and the work area was kept clean. The higher trolleys eliminated the operatives' problems with back-ache and saved money through the recycling of the scrap metal.

The forum for these kinds of meetings has an extremely positive effect as workers feel they are trusted to spend their meeting time effectively, whilst the company can benefit from the cost savings suggested as a result of the meetings. Whether or not employees are rewarded for

successful suggestions is a matter of debate. In a large automotive company for example, a story was related in which an employee suggested that there was no need for the inclusion of one small component of the car bodywork, resulting in a cost saving to the company of approximately £4 million. This person was rewarded with a fridge for his team's rest area. He felt extremely aggrieved that a cost saving of this magnitude was not rewarded in a better way and now no-one is inclined to make any more suggestions, as the employees see that the only people to really benefit are the shareholders.

Contents of meetings

Meetings offer a forum for discussing new ideas. Organisations with 'continuous improvement' policies are more likely to encourage operators and shopfloor workers to come up with new suggestions. Typically team meetings are an opportunity to discuss the following:

- The business as a whole
- Performance
- Wages
- Targets
- New orders
- Product styles
- Praise
- Problems and solutions
- Personality differences

Operators see the benefits of having the opportunity to discuss problems and find solutions:

> *"Well...I think you can discuss more in this way of working, and you are closer, and you can discuss a problem, you know, between each other and things like that"*

When asked whether they miss having meetings, they said:

> "Yes, *because it helps you get all your feelings out...like you bottle them all up don't you".*

Decisions made in team meetings should always be followed up to ensure the continuous motivation of team members. In one case (Company AC) meetings were followed up with 'action forms', which indicated the personnel responsible for following the discussion up.

Yet in another case a group of disenchanted operators stated that when decisions are made:

> *"It might work for a while, and then it might go back to the way it was in the first place".*

which to them was worse than not acting upon decisions in the first place.

It is essential to let employees know how they are performing as work plays a large part of their lives. Feedback can be directly from the job itself (task feedback) or verbally by management and other employees, it must be frequent as performances vary and adjustments can only be made when workers know their current performance.

Changes often result in a reorganisation of the hierarchical structure, as in the case of Company D for example, with the loss of some senior management and the removal of the entire supervisory level of staff and quality inspectors. Frequency of contact with the production managers has thus increased considerably, and they are encouraged to "guide rather than direct" the teams, as the change in the organisational structure is seen as an opportunity for management to change their methods of leadership. Similarly, in the case of Company S the change process highlighted the inefficiencies of the production manager, who was made redundant. Frequency of contact directly with managing director therefore increased for both the teams and the supervisors.

2.1.2 Written and visual communications

Notice boards and memos can be effective means of conveying information to a large number of people without taking up the time of a meeting. However, to be effective the information must be produced in a way which is meaningful to the intended recipients and relevant to their work, also, if the message being conveyed should really be a matter for discussion, then memos and notice boards are inappropriate. The use of 'white boards' is becoming more commonplace on factory floors, as a means of communicating information on a daily basis. In one company, performances were recorded on a board, with comments from the project manager, relating to quality and performance:

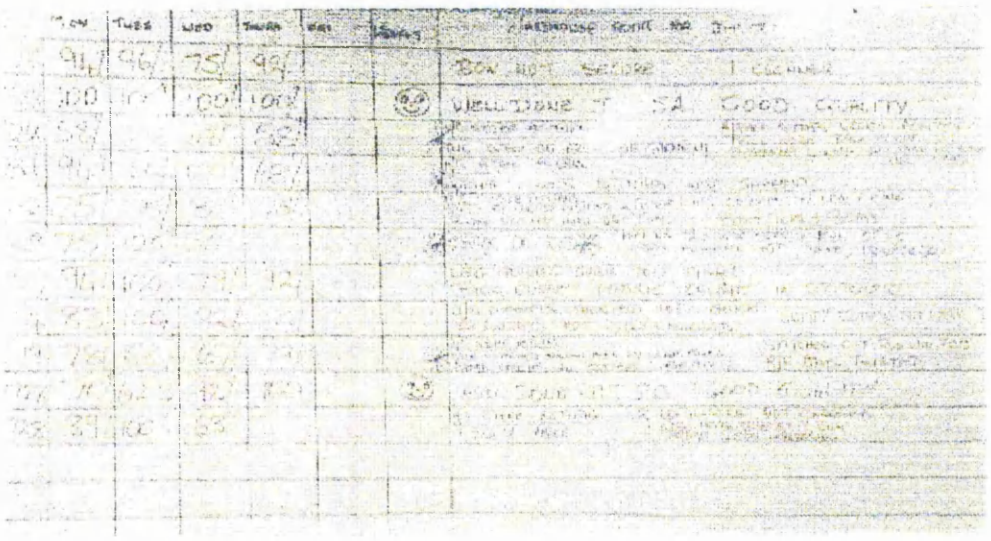


Figure 33. Comments on quality and performance

In one case study, in an attempt to become more open and communicative, information which was previously only available to management was displayed on notice boards. This included data on: *direct labour cost, standard hours achieved for a month, standard minutes in pence per minute, attended hours, percentage efficiency, DHU's - defect per hundred units and seconds*. However operators did not understand the information as it has not been properly explained to them. Similarly, they created the skills matrix shown in the photograph below, but this was extremely out-of date and therefore bore no relevance to the training requirements:

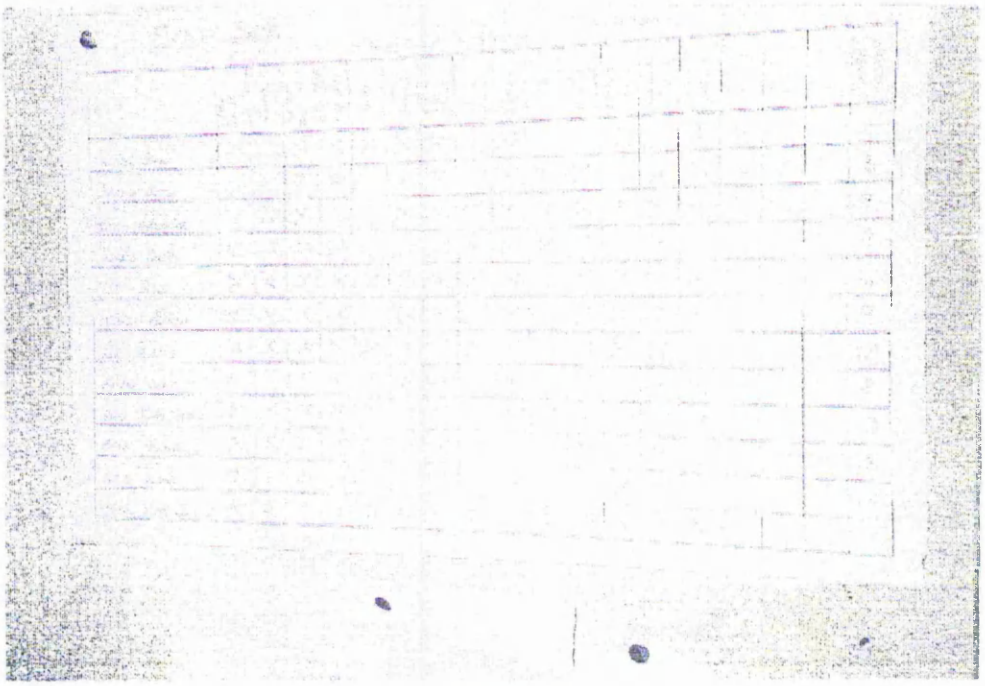


Figure 34: Skills Matrix

Another use for notice boards was evident at Company CI where skills matrices were displayed and details of training programmes available. Also if workers had any ideas, they were written immediately onto the white-board at the end of the team and all these ideas were then discussed within team meetings.

Communication is taken very seriously in this company and at the entrance of the factory is a display board, clearly illustrating the structure of the company. It shows how each department and each team within that department help to fulfil the aims and objectives of the management team. The philosophy of teamworking is instilled throughout the whole of the workforce. A further display board contains photographs of the foundry team (see photograph below), and a record of the number of days between and since injuries - including very minor ones. Actual and target performances are displayed on a white-board.

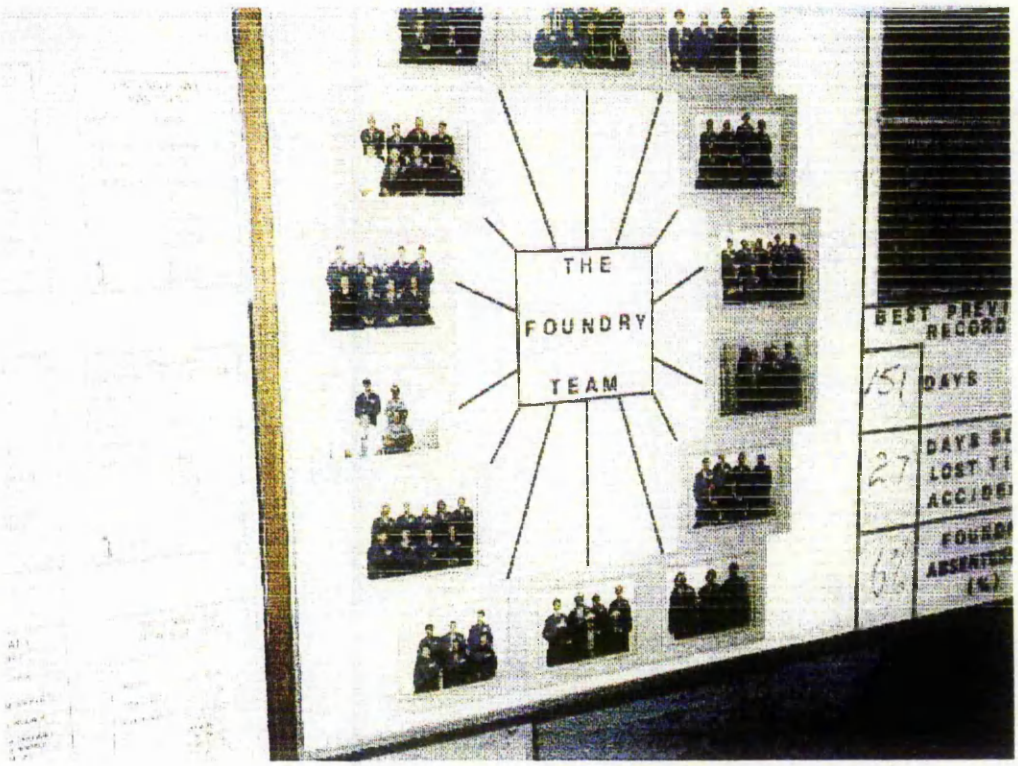


Figure 35. General communications in a castings plant

In a more recent example, the workforce at Company E were told that they would be paid into their bank accounts instead of in cash via a message on the notice board. The team members strongly felt that managers should have informed them "face-to-face" to give them the opportunity to discuss the problems they would encounter through this change immediately.

"Everything is just done and they don't give you a say, they don't explain things to you tidy, they are just chucked at you and its just put on the line that this is happening and that's it, and its not the way to approach things here.... all they've got to do is have a general meeting in the canteen to explain to everybody why things are happening, why they're doing this and the girls will understand it" [Company E].

In some cases, the principal means of communication from management to the shopfloor is through unions. This is the case in Company D, where diminishing membership puts more pressure on the existing forms of communication, thus the company is realising the need to establish its own effective means of communication.

2.1.3 Frequency and contents of communication

In considering the relationship of teams with other departments in the organisation, the frequency of contact with some departments needed to increase considerably, as pressures were put on departments other than just production. The planning departments in particular faced pressure to ensure all components were available on time for teams to commence their work. Unlike traditional production, if components were missing from a team, the entire team would be out of action, rather than just one individual. More communication regarding designs and methods became necessary as the teams developed and wanted to work autonomously. As one team stated:

> *"we'd like that before we start a style someone could come in from design and show us how they did it".*

Similarly the cutting room came under scrutiny, as the teams took responsibility for quality themselves. Cases where the need for these additional contacts are not observed result in frustration from the team members. The training department (if there is one) also faces new pressure as team members need to become multi-skilled and require team building training. The new network of communication arising from teamworking and the functions they must perform in relation to the new organisation is represented in the diagram below:

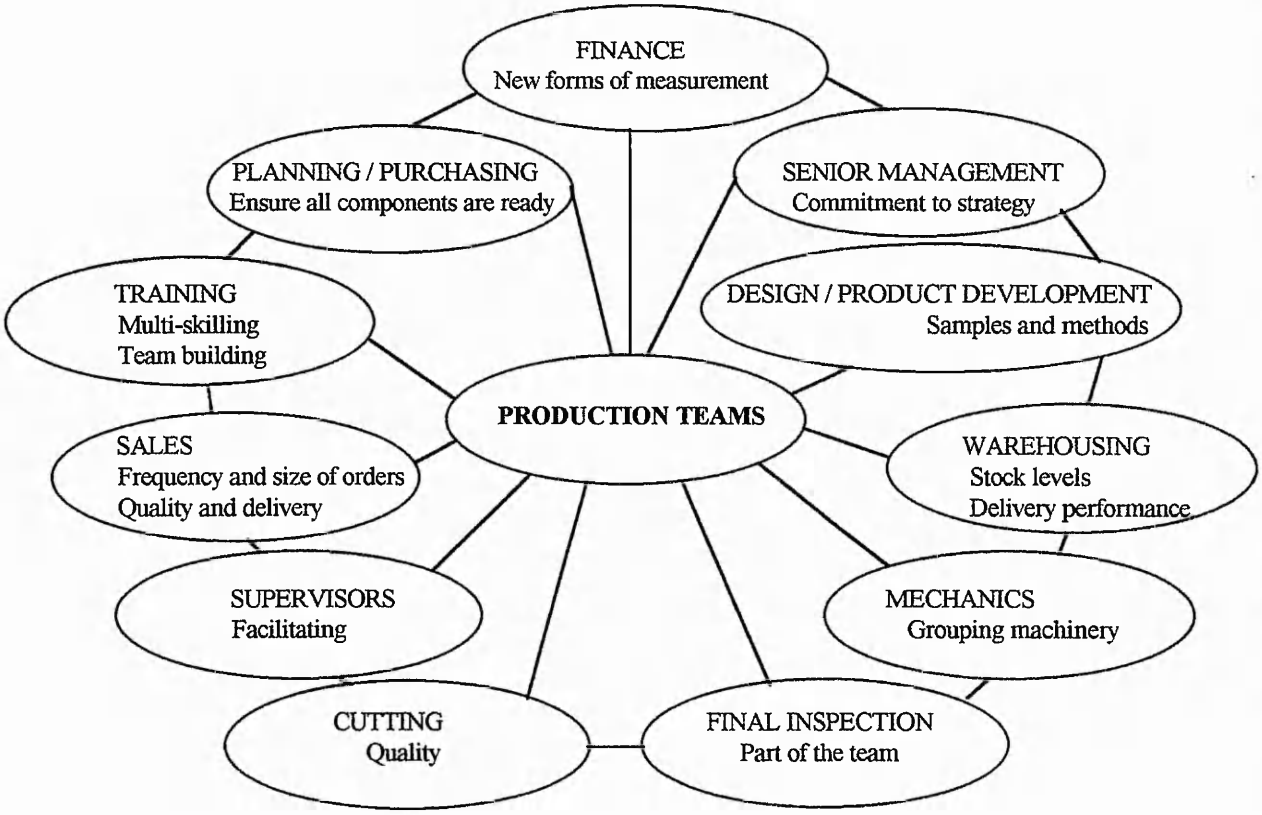


Figure 36: Communications network

Communication of the company's intended change programme

In many cases the evidence of a lack of communication stems from the very beginning of the change process. At Company N there was a lack of communication from the management as to whether teamwork would continue after the pilot. The team's understanding was that it was a 3 month *trial* and then it would be decided whether to continue or not. As they had not been told either way, the team decided to discontinue it. They believe that it was made very clear to management that they did not want to continue, but management chose not listen to them, resulting in a very discontented team.

> *"They told us a lot of wonderful things that were going to happen, but all that came out of it were bad things the majority of the time".*

Mainly this was the promise of meetings where they would be able to give their opinions which would be dealt with.

The team in this company would have liked to be more involved in discussions in the first instance, however they would have felt intimidated by management if only one or two of them could have represented the team, thus effective communication was inhibited.

They did not like being told what to do and claimed to happily do the extra work if they felt it was under their control and they had some choice in the matter.

Similarly, there was little evidence of involvement from shopfloor workers at Company D in the design of their workplace as "the girls went away one weekend and came back to find their lines in funny shapes".

A lack of communication and understanding seems to be most prevalent in the early stages of implementation. At Company M when teamworking was first introduced the company were "quite brutal", and if the required staff did not accept the philosophy then they were "left behind". They had some trouble in convincing people that it would be a success, as some could not see the benefits that quick response would offer the company. There is still some resistance after 5 years, particularly from the operators. In the group discussion the operators stated "They've never ever explained to us how it works, about how you move about. You see on the notice board about how to calculate it and how at one point the [teams] could make the targets and now they cannot. They say you could make the targets, they tell you you can get it by the end of the day, yet everyone knows you can't. It was a target which they knew was too high which was just decided upon when [teamworking] first started and their answer was just to set the same targets, when we know from experience that it was too high".

Survey results from the Teamwork Users' Group indicated that of 17 respondents, 2 companies' teams had some involvement in discussions about the vision and strategy of the business and the remainder had no involvement at all. Though open and democratic debate about the company's strategy may be the ideal situation in an organisation, in practise such communication and debate simply does not exist, particularly in larger organisations where 'strategy is the job of the planners'.

Achieving a situation where middle managers, such as team facilitators, are involved in strategic discussions is something some of the more forward thinking organisations are moving towards.

However, involving shopfloor workers in discussions about strategy is beyond the comprehension of many managers. In many cases middle managers claim not to be interested in the overall strategy of the organisation, and feel they have nothing to contribute, which is even more the case with shopfloor workers. See Company S for example.

Totterdill *et al* go on to say that "every employee should feel able to approach every other employee to raise issues of concern, to seek advice or to generate solutions to problems. In discussions concerning both strategic and day-to day decisions the outcomes should reflect the force of the better argument rather than the weight of formal power structures. Employees at all levels should have a clear understanding of how to access appropriate advice or information. This dissemination of information should be defined as a corporate target, and should be resourced by appropriate measures to ensure the widest possible access to data and expertise." (Totterdill *et al*, 1994). Discussions about *daily decisions* are more evident in many of the companies studies, particularly where team meetings are conducted. The effects of the input or lack of input into business strategy, daily decision making and 'information systems' are discussed in the conclusions of this chapter.

In a questionnaire for the Teamwork Users Group the following question was asked:

What information, regarding production planning, goal setting, etc. is communicated between management and teams ?

The responses regarding the *type* of information conveyed included:

- Agree dates for most orders
- Scheduling meetings (with supervisors)
- Production runs (between supervisors and leaders)
- Goal setting
- Targets

2.2 CHANGING ROLES

2.2.1 Management

In some cases the decision has been to 'make or break' for managers. For example, in the case of Company BI they had to decide whether to close the site or make a radical change. Having

decided to make a radical change to team based production, the manager displayed full commitment to the change process. In order to achieve an effective result in the implementation of teamworking, it would seem that a project leader to carry the whole process through is essential. In the case in which the project manager left the company once the teams had been established, teamworking was soon abandoned due to the lack of necessary drive and support given by such a role.

In Company J, comments following a group discussion indicated that the team felt that management fell into three categories; those who saw it as a 'fast line', those who saw it as a multi-skilling process and others who thought it was a waste of time.

Problems of a lack of commitment can be seen from the following example:

> Since these developments, cross-functional teams have been created and product co-ordinators have been introduced to try and encourage communication between departments. As one manager advised, teamworking relies on "commitment from the top". In trying to make people understand advantages, they have hit some barriers. Many of their problems have arisen due to a lack of commitment from the Board of Directors who are against the idea of cross-functional teams: "in life things happen in 'tubes' of design, finance, marketing etc. and 'ne'er the twain shall meet', but one tube is better than the other". This structure has meant that nothing has ever worked as well as it might [Company D].

'Letting go' by management

In the example of Company CI, management have attempted, as far as possible, to break down any barriers between themselves and shopfloor workers. They all wear the same coloured overalls, for the simple reason that there are "no more suits". With the changes which were made initially, some of the senior managers left the company immediately, followed closely by some middle managers who did not believe in the concept. They feared the loss of control and did not want to give empowerment to shopfloor workers. Initially some members of senior and middle management left the firm because they could not relinquish their power. It was felt by the rest of the management team that the company "can't afford to have people like that at the top". In Company H the lack of communication regarding the effects of teamworking on all departments is particularly evident:

> The planning department have been greatly affected - they can't cope with it, not particularly because of reduced WIP, it's just because they can't understand teamworking. [Company H]

The following extract indicates the need for commitment throughout the business, reflecting the implications of managers letting go of their power:

> The manager must ensure that the advantages from the flexible production are used in the entire company, accommodate the policies of the company, ensure that the required resources are present and follow-up development [Company BC].

2.2.2 Supervisors

In a survey regarding the continued motivation of teams the following was asked:

When teamworking was introduced, what changes occurred relating to management structure and supervisory style?

In four cases, no changes occurred in the management structure or supervisory style. The consequence of this was that teams were not empowered and supervisors received no training to assist in the process. However, in the cases where changes were apparent, the following were indicated:

- A higher calibre was required
- There was more management skill needed, with fewer supervisors
- A leaner structure resulted
- A greater need to keep teams supplied with work
- More involvement with teams
- Initially 'laid back', but then more conventional style
- More planning and coaching
- Indirect staff numbers reduced by 35%
- Position of facilitator covering 6 teams of 8 operators was introduced - change from directive to supportive management style.
- Supervisor in charge far more in control than conventional line supervisor. She is the QRS manager, really, and treats the teams like her own factory - she reports directly to the factory manager unlike other supervisors who report to the production manager.

In their paper about team leadership in an automotive company, Parry *et al* detail the changes in supervisory roles as described by the new team leaders in their own words. They were summarised as follows:

Foreman	**Team Leader**
Hierarchical	Open
Suspicion	Trust
Certainty	Uncertainty
Simplicity	Complexity
Staying the same	Doing it better
Few tasks	Many tasks
Boredom	Interest
Hands off	Hands on
Robotic	Grasping
Management	Leadership

Table 12: Differences between 'old' and 'new' working practice

Ref: Parry *et al*, Leadership in the Front Line: The Changing Nature of Supervision in UK Manufacturing p.5.

"These words provide powerful insights into two differing approaches to the job, and indicate the level of awareness and appreciation of the differences between the 'old' and the 'new'. The 'old' meant getting on with the same old work day after day. The 'new' meant the possibility of sharing knowledge" (Parry *et al*, 1996).

It was difficult for the supervisors to portray to the teams that they must start making decisions. This was especially a problem on a team where a natural leader did not emerge. Supervisors did not receive any training to help adjust to their new roles. Life for the supervisors is considered to be easier now, though it was more difficult for them in the initial stages. Supervisors find they have more time to check work and monitor the teams. Initially they had more work to do because they had to help and support the teams. They found it difficult to stand back and let the teams get on with it. One supervisor feels insecure about having so little work in progress around her, and needs confidence that work will arrive from the cutting division. If starting again they would give the supervisors training to cope with their new roles. [Company G]

A major difficulty in changing the role of the supervisor is in defining their new tasks. Buckingham *et al* give a summary of the specific responsibilities of the supervisors in Galaher Ltd following the restructuring of the entire organisation in search of 'job enrichment'. These are summarised as follows:

- Fostering good relations between management and shopfloor workers and serving as the two-way communication link
- Taking responsibility for selecting new operators from short-lists
- Ensuring the standards for operator performances are attained by the use of available training resources
- Resolving labour problems that are within set procedures and taking responsibility for absenteeism
- Agreeing targets with superiors
- Taking responsibility for preventing the decay of time production standards, e.g. through method change
- Recommending method, layout or equipment changes which would improve operator effectiveness
- Ensuring safe working practices, good house keeping and punctual time keeping
- Maintaining quality standards within company specifications

In one of the Danish companies, the supervisor's role was summarised as being one with good knowledge of human relations to promote co-operation and personal development. They should also be a good supporter for the team and show confidence [Company BC].

2.2.3 Team Leaders

The role of a team leader is a controversial one, in which three main approaches are evident. One school of thought is that teams should not have leaders and should take joint responsibility for their own work. The second is that teams need a figure who can literally 'lead' them to success, feeling unable to do so unsupported. In this scenario the leaders are team members who take responsibility for voicing the teams opinion. A third approach to team leadership is to have a leader outside the team, principally as a replacement to the traditional role of supervisor. The means of selecting team leaders when they are evident, has implications on their effectiveness and role within the organisation. See for example, Company D.

In the study of a bicycle manufacturer using team based approaches to manufacturing, the role of team leaders has received detailed attention (See Rosborough and Watson, 1995). Here the team leaders' role has been clearly defined as having the responsibility of achieving targets through:

- Ownership of problems
- Teamworking and development
- Technical Problem Solving
- Effective long term planning
- Tackling people problems

"Within this aim of achieving production targets there is a strong link with employment issues and ones of teamworking, development and 'ownership'. The link with getting closer to the people and becoming more aware of 'people problems' and the outcome of production targets reflects how the team leader role was set up" (ibid). The team leaders consist of ex-supervisors and ex-engineers, quality staff and new recruits.

Problems arise when roles are not clearly defined, as was evident in Company D:

> *"You're a Team leader, but you're not a supervisor. You haven't got the right to say back to anybody on the line"*
>
> *"That's not my job. I don't get paid ... I'm not a supervisor, I don't get paid for that"*

and there are certain pressures on the team leaders from the rest of the team to discipline people and tell management when there are problems:

> *"They'll have a whinge and moan about it, but they'll not actually go and see the person that's causing the problem on the team"*
>
> *"You've got the role more or less [of a supervisor], but you don't even know what your job is"*

Having a team leader present takes the responsibility away from team members to resolve problems themselves. They see it as being a traditional supervisory role, with a new title.

When asked how the teams would cope without team leaders, however, one company's management felt that the teams depend on the team leaders as they need somebody to be 'in charge' and to act as a communication link between the teams and the managers. It was felt that the teams "haven't got the confidence" to go directly to management with problems, so they want guidelines.

"We're just intermediary between the girls and the management"

"We're just the spokesperson"

"They need... I don't think it could be run without somebody being in charge, well not in charge, but somebody you could go to. I think a lot of girls are a lot like that."

Communication is also conducted through the team leader, not only between teams and management, but between team members themselves. For example, an instance was given when a team member was asking a team leader to reprimand someone else within the team for her. If the role of the leader did not exist, the team members would have no option but to resolve conflicts themselves.

They will only gain confidence if they are given the opportunity to approach management themselves in the knowledge that their ideas will be listened to. In the company where team leaders are considered only to be *representatives* for the teams, their roles are much clearer. They do not tell the teams what to do and if the team needs support the leader will ask on their behalf:

> Facilitators attend team meetings and train operatives. They tend to distance themselves from team disputes and allow them to resolve their own problems. This encourages operatives to contribute to discussions more. [Company CI]

In a Teamwork Users' Group questionnaire, of the 24 responses to the question "Do you chose a leader / spokesperson, do they naturally emerge or do you have teams with no leader?", 14 respondents indicated that a leader naturally emerges, 5 selected leaders themselves and 4 had no leader. As 19 out of 24 have leaders, this suggests that they play a key role in the implementation of teamworking.

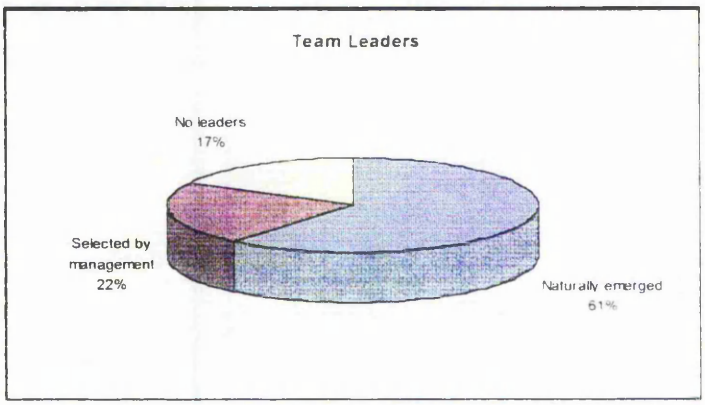


Figure 37

Team leaders who naturally emerge

As can be seen from the above chart, the majority of companies questioned about their team leaders stated that they naturally emerged, and as one company quoted, "one volunteer is worth ten pressed men". In a case study of a manufacturer of ladieswear:

> Team leaders tend to develop naturally, if at all. It is generally the person who "shouts the loudest". It can be a problem if there are too many leaders in the team. A team leader may tell someone where to go next to ensure production is reaching the required levels. This has caused some friction in the past. Some teams have not produced a leader yet. [Company K]

> A spokesperson was selected by the team members. "Sometimes they would ask the spokes woman what to do next, and to an extent relied on her to keep the work flowing between operations, resulting in her becoming, in effect, a machinist/supervisor, and that reliance grew". Her role was to organise the team and supply them with work. The teams were responsible for the quality of their work. [Company A]

Team leaders selected by management

> In teams which have leaders who are selected by management, they are usually people who are "not scared to speak", and form the communication link between teams and management. [Company D]

> The group leaders were volunteers, who were then selected by managers. Some of them completed an evaluation test which indicated their abilities to do the job. Meetings were organised with each potential team leaders and from a combination of an interview and the evaluation results, leaders were selected. Group leaders then decided which groups they wanted to lead.
>
> Despite being at a level between management and shopfloor workers, team leaders have no problem with their role and feel fully integrated with the groups. They tend to associate themselves with groups rather than management. They will accept criticism, but if they do not agree with what is being said they will try to defend the team. The main responsibilities of team leaders are: management of the group, motivation and the organisation of the work. Management of the group involves planning holidays, dealing with absenteeism and production programmes, monitoring quality and helping them take charge of quality control themselves, ensuring the team is happy in its work. They create the graphs for the board, the production programme, organise the orders and determine the urgent production. If they have enough free time they will go on the workstations to help the rest of the group. Group leaders believe the groups will become more polyvalent and autonomous, and will no longer need leaders: they will therefore return to being operators. [Company FI]

The following example, however, demonstrates some of the resistance resulting from the imposition of a leader on a team:

Some of the teams decided that they wanted a team leader, but not all of them. Management were very nervous about 'taking their hands off the wheel'. They did so and crashed, so they became overzealous and had a facilitator on each team which was an external person especially trained for the job, they spent 4-5 weeks with each team with mixed results, the facilitators then came off. At the moment management believe the teams need a leader to act as a co-ordinator and for communication. The plan is, after the summer holiday, to improve the quality of the team leader so they can be planners and problem solvers. If they are going to get special training and are expected to do a different job, they do not know whether to pay them differently. They are a working member of the team and SMs are included in the calculations at the moment. They then did a 2 day *team leader* training course. One of their first tasks was to ensure the right team leaders were in place. Through persuasion, coercion and diplomacy they convinced the relevant teams (ones with a weak, aggressive or selfish team leader) that they should elect a different team leader. The management suggested who they thought might be good team leaders, with no pressure and in the end, after 2 weeks, they had 12 team leaders, of which 3-5 were new ones. There were 12 teams and 10 facilitators. They now permanently use 2 facilitators, who are in effect production supervisors because the team leaders have not been developed enough yet to really be *leaders*. They are taking on responsibility now though, as the team leaders and will walk into the manager's office and say "we had this problem, we've done this, is this OK?". 3-6 months ago it would have been the supervisor going in and saying, "we've got this problem, shall we do this". "The emphasis is changing, the emphasis is going the right way, it is working." [Company H]

Strong leadership can have a detrimental effect on a team if the leader imposes their view and misunderstands their role:

The Charge Hand, who was selected as team leader by management, had a very strong personality and had somewhat of a strong hold over the other team members. If work was not being done, he would shout at his team mates. He felt that some people were not "pulling their weight", which caused arguments which were never resolved. He saw the cross training as relief from some of his jobs onto others, with no additional work from himself and further considered himself to be "stitched up" when he was later asked to do the job of the other team members. For him it was demoralising and he felt under considerable pressure from other charge hands in the company not to do this work. They tried having someone else as team leader, but he was considered to be selfish by the rest of the team and was "relegated" to another department. [Company N]

Teams which do not have a leader

Leaderless teams are empowered to make decisions themselves and communicate to the relevant personnel as a cohesive unit. The most suitable person to voice the opinions of the team naturally comes forward, depending on the issue in question. In one case for example, when asked if the team thought it needed a leader, the response was:

"I don't think so, if somebody's got something to say, they'll say it."

"That's the way we find it to be working all right ourselves" [Company J]

Alternatively, the role of team leader can be rotated. For example, a Danish company operates using team leaders on this basis, in order to share the responsibility. In some cases where leaders have been selected by management, conflict has arisen because teams feel resentment that one member should have more 'authority' than others.

Team leader training

In order to achieve a situation in which teams are comfortable with team leaders, training is required to ensure roles are clearly defined. Company H carried out a 2 day training course specifically for the new role of team leader:

Stage one concentrated on communication, co-ordination, assertiveness, dealing with aggression, dealing with conflict and so on. All of it was as participative as possible. The staff who were trained found it to be extremely useful. However, feelings on the shopfloor were somewhat different:

> *"Well we all thought the facilitator thing was a waste of money ...the money they could have saved on the facilitator and the [new] canteen could have been spent on air conditioning. We all feel it is more important ... [and] the people that's working, that really matter, don't get it. We have to fight".*

As far as the operatives were concerned, basic needs, such as a comfortable working environment were not being met. Thus they were unable to be supportive of investment in facilitator training until these had been considered (Refer to Maslow, p.183).

The team facilitator tells a different story:

> *"It was a fabulous course. Everybody enjoyed it , there was a lot to learn...as soon as we went on the line there were things that cropped up, it would be 'oh, we learnt this on the course' and could use it".*

When asked about the possibility of resentment from others the Team facilitator replied:

"I suppose some people thought it was a waste of time, why not just let the supervisors tell us what to do. But the idea was to get rid of the supervisors, so there was no 'them and us', we were all together".

All the supervisors and a few of the good operators and the production manager were taken out and trained to be team facilitators. They abolished the title and role of the old supervisors, who on completion of the 5 day course, came back as *team facilitators*, the idea being that there would be 3-4 permanent team facilitators and the others would be used when the operators had a steep learning curve.

The timing of this training was good, as when they came back from the course the machinists were facing a season change and needed a lot of support in changing to the new style, working in sequences they had not worked in before and using new skills. As a result, every team facilitator trained was used as a facilitator immediately they returned to the factory, so they lost their old roles.

The team's ability to resolve conflicts is greatly influenced by the role of the team leaders as there are certain pressures on the team leaders from the rest of the team to discipline people and tell management when there are problems.

3. NEW CULTURES: THE QUALITY OF WORKING LIFE, TRUST AND MOTIVATION

3.1 INTRODUCTION TO 'THE QUALITY OF WORKING LIFE'

The term Quality of Working Life gained prominence in the early 1970s, in particular at a New York conference in 1972 which "attempted to realise the opportunity to share knowledge, and begin to formulate a coherent theory and practice on how to create the conditions for a humane working life" (Davis and Cherns, 1975). Two distinct phases of QWL activities are:

- 1969-1974 in which interest focused on job satisfaction and the health and well being of employees, particularly in Germany and Sweden through 'humanisation' programmes.

- 1979-1983 in which interest re-emerged as a result of international competition, particularly from Japan. The focus this time was on management styles to improve organisational effectiveness.

It stemmed from the fact that job specialisation and simplification of Tayloristic practices were a long step away from any of these issues. Through Tayloristic practices, "workers became socially isolated from their co-workers because their highly specialised jobs weakened their community of interest in the whole product. Deskilled workers lost pride in their work and became bored with their jobs. Higher order (social growth) needs were left unsatisfied. The result was higher turn-over and absenteeism, declines in quality and alienated workers. Conflict often arose as workers sought to improve their conditions and organisations failed to respond appropriately." (ibid). Thus tighter controls and supervision were enforced. This coupled with the changing aspirations of employees gave employers good reason to begin to redesign jobs and organisations for a better quality of work life. One such response was to redesign jobs and the whole organisational environment to have the attributes desirable to people, thus giving workers a more challenging environment in which they have opportunity to express and use their ideas and become involved in a whole task.

"In its broadest sense the quality of working life means the sum total of 'values', material and non-material , attained by a worker though his life as a wage or salary earner. In this broad

sense, the quality if working life may encompass all those aspects of work related life which could possibly be relevant to worker satisfaction and motivation" (Delamotte and Takezawa, 1984).

"The problem of defining and measuring the quality of working life was recognised especially at the first conference in 1972 (Davis and Cherns, 1975). Some preliminary efforts were made to derive criteria from the need theories, e.g. Maslow's 'Hierarchy of Needs'. Waltom argues that it should be possible to identify those aspects of work, work context, and work careers which would enable an employee to 'climb' this hierarchy (security and economic needs, social needs, and 'self-actualisation'). Those aspects 'would provide one set of criteria for the quality of working life, having a theoretical rationale and a logical internal structure.' (Walton, 1975)" (Ryan, 1995). More widespread research concentrated on the concept of 'job satisfaction'.

"There are two ways of looking at what *quality of work life* (QWL) means. One equates QWL with a set of objective organisational conditions and practices (e.g. job enrichment, democratic supervision, employee involvement, an safe working conditions). The other way equates QWL with employee's perceptions that they are safe, relatively well-satisfied, and able to grow and develop as human beings...However, because of the differences between people and because the second view is quiet subjective - it allows, for example, that not everyone finds such things as democratic decision making and enriched jobs to be important components of good QWL - we will define QWL in terms of employees' perceptions of their physical and mental well being at work" (Cascio, 1992). He lists the components leading to successful QWL efforts:

- Management should lead and coach
- Openness and trust should be evident
- Information should be shared and suggestions taken seriously
- QWL should change continuously to form partnerships between management and shopfloor workers
- QWL cannot be mandated unilaterally by management.

Cascio thus suggests that *participation* forms the essence of QWL. "Japanese management has been described as highly participative and consensus based. Employees are treated with respect and concern, and in turn they are ideologically and culturally inclined to act in the best interests

of the company". One type of participative management described by Cascio is that of *Quality Circles*. This is a group of 4-10 employees from the same department who meet during company time to resolve work-related problems, focusing organisational efficiency issues such as waste, damage, equipment maintenance and communication. Suggestions which were not implemented resulted in demotivation of the workforce. A second means of participative management described by Cascio is that of *participative work design*, in which a team is put together to redesign a job through analysis of its technical and human requirements, a frequent outcome of which is the development of self-managed work teams. "Each team is given primary responsibility for planning, doing and controlling the quality of a major component of the work, and the team members are cross-trained to do more than one job" (Cascio, 1992). The other three means of participative management are through *union-management co-operative projects*, *gain sharing* and *participation in ownership of the company.*

The term quality of work life (QWL) refers to the conditions of the total job environment, including open communications, equitable reward systems, a concern for employee job security and satisfying careers, and participation in decision making. As well as focusing on job enrichment, "QWL programmes usually emphasise development of employee skills, the reduction of occupational stress, and the development of more co-operative labour-management relations" (Newstrom and Davis, 1993).

"The sociotechnical systems approach considers not only how inputs are transformed into outputs, but also how interpersonal and social relationships can be developed for mutual gain by employees and the organisation..two specific approaches to finding a better sociotechnical fit are the use of natural work teams and flexible work schedules" (ibid).

"Satisfaction for the workers became a key issue in the quality of working life movement. Instead of paying attention only to wages and hours of work, the focus has shifted to the compatibility between the content and organisation of work with human health and satisfaction" (Ryan, 1995).

Analysis of the Quality of Working life in teamworking companies is of key importance, particularly when considering the degree to which employees are able to make decisions for themselves and have greater control over their own working practices. This will have obvious

effects on their motivation, which is discussed in some depth in this section. Key Literature on this subject (Ryan, 1995, Newstrom and Davis, 1993 and Davis and Cherns, 1975) identifies the components in analysis to include responsible autonomy; trust and empowerment; motivation; task identity, significance and variety and job design. This section thus discusses each of these components in detail.

3.1.1 Responsible autonomy

Job characteristics give some employees discretion and control over job related decisions, which are fundamental in building a sense of responsibility. Small displays of trust in giving operators a budget to solve a problem can have great effects. A typical example of the autonomous decisions made by teams are illustrated by the following extract from a group discussion.

> *Most of us sort it out there and then, it's not really a big problem.*
>
> *Well, the other time that we had a trainee on the line, and she did the side seams and I don't know whether they were too narrow or too broad, but the rest of us were all waiting, so we unpicked them and she then redone them, and the work went back 'round. Do you know what I mean? The folk waiting in front of you for the work that you're unpicking and they'll come around and help you and then it will just get running as normal. (Company M Operators)*

This same team asked management whether they could cover for an absentee themselves, with a reduced target, but they were not allowed to. They have 'floaters' brought in to cover instead, resulting in very poor team cohesion.

"In the main the entire branch of activity dealing with job enrichment, job design, sociotechnics, etc. is an expression for the fact that workplaces and companies are structured in a way that the basic tendency for the impoverishment of job content for various employees must be meagrely counteracted with the aid of a special enterprise" (ibid).

Teamworking is considered to be the next step above job enrichment, and beyond that enriched sociotechnical work systems, according to Newstrom and Davis. A natural work team "performs an entire unit of work with considerable autonomy. In this way employees whose task requires them to work together are better able to learn one another needs and develop teamwork. Natural work teams even allow those who are performing routine work to develop

a greater feeling of task significance, because they are attached to a larger team that performs a major task. Enriched sociotechnical work systems involve the whole organisation or a major portion of it building a balanced human-technical system. This involves the re-engineering of the production process in order to integrate human needs and the changing of layouts to permit teamwork. "The fundamental objective is to design a whole work system that serves the needs of people as well as production requirements" (Newstrom and Davis, 1993).

3.1.2 Trust and Empowerment

To a large extent, the degree of empowerment given to operators is indicative of the level of trust displayed by management. The collection of tools and equipment is an example of new responsibilities given to operators. Allowing an operative to go to the local DIY shop to buy a piece of equipment was something completely new to the culture of this company, but resulted in an improvement saving the company a lot of money.

Totterdill *et al* (1994) suggest that coherent team identities should be formed, reinforced by working practices. "Operatives and managers should be part of, and feel themselves to be part of, coherent teams with whom tasks are negotiated and shared. Teams at all levels should be limited in size and should enjoy a high degree of autonomy in relation to the speed, organisation and implementation of work". Typical areas of responsibility were outlined in the previous chapter.

An issue of trust is well illustrated in a case study in which teamworking was unsuccessful. A daily production target was set for the teams, however, each time the team achieved the target it was re-set at a higher level, which had a de-motivating effect on the teams. As far as they were concerned this could carry on indefinitely.

In a contrasting example, a rest room has been installed within the castings department which was designed, costed and maintained by the workforce within this area. Their involvement in this has instilled a sense of pride which encourages them to look after the area. Much of the machinery within this area was old, so operatives were asked to paint their machinery to try and obtain a more pleasant working environment.

The General Manager considers the company's management style to be very *people orientated* "there is not much difference between the management and the workforce, they are very involved in the workforce and vice versa"...someone suggested that people should be able to choose who they work with. They felt that this was a valid suggestion because "you can train skills, you can't train personalities". So, it was decided that it may still be worth pursuing. As a result they talked to the existing teams and allowed them to re-select, because within those teams there were people who wanted to work together. So the teams were disbanded and restarted. Almost immediately they started seeing a good response, and the teams worked a great deal more efficiently [Company K].

The good things about teamworking are that "you know where you are with it" and "It has stopped lay-offs, we used to have a lot of lay-offs" [Company H].

Newstrom and Davis note that not all employees have the same attitudes to work and may prefer to remain working in the way they always have, particularly if they are unable to tolerate the increased responsibility, or dislike complex duties. Such employees would require 'hand-holding' to assist them through the change process. Company CI recognises this as an issue and ensures that all such staff receive the relevant support.

These dimensions in work form the basis for certain central psychological experiences and states. The first three affect purposefulness, independence influences the feeling of responsibility and the feedback determines the knowledge of the result achieved by the work. These psychological states subsequently influence the individual's results and the results of work (e.g. work satisfaction, absenteeism and internal motivation).

"Hackman does not seem to entertain any hopes that job enrichment should be able to revolutionise working life ... the problem is linked up to production-technical aspects. It is probably also difficult to change working conditions by exclusively keeping to a level which only includes the job content of the individual and does not relate to the design of the work and conversion to the more general aspects of the organisation" (Alvesson,1987).

In order to reduce possible variables involved in the achievement of a task, a choice must be made between two forms of system control - an elaboration of the external mechanisms (supervision, scheduling, production technology), or an increase in internal control of the members of the system. Sociotechnical designers chose the latter, where employees are

given empowerment and autonomy, as the former is usually unable to reduce any uncertainty facing the work system. For example, in the clothing industry, where styles are changing frequently, it becomes difficult for external supervision to monitor the rate of production when working on traditional mass production, but the empowerment of the team members to collect their own work and monitor their own targets reduces the need for supervision to programme the flow of inputs and outputs. The "regulatory functions are more effectively performed by those employees who are closer to the sources of uncertainty" (Cummings, 1977).

Critics point to the relationship between sociotechnical analysis and the overall influence on the company. Some authors believe that the sociotechnical division of working groups into small autonomous units, as in the case of Volvo at Kalmar, "splits up the unity of the workers and reduces their union strength (see e.g. Perby, 1978)" (ibid).

It can be argued however that the collective voice of a group is more powerful than that of an individual, and in this sense working in a group is advantageous. It should be noted however that sociotechnics and teamwork are not synonymous.

Similarly, "sociotechnics does not have to mean that the employer losses his possibilities of controlling and checking". This fact has been pointed out by several authors:

> *The Swedish Employers' Confederation's new factories may be regarded as embodying an effort, mainly in the manufacturing industry, to organise production so as to ensure strict control over the workers' 'self-management'* (Helgeson, 1978)

Such control over teams does not comply with the true ethos of teamworking, and as Walton suggests, "market success depends on a superior level of performance, a level that, in turn requires the deep commitment, not merely the obedience - if you could obtain it - of workers. And as painful experience shows, this commitment cannot flourish in a workplace dominated by the familiar model of control" (Walton, 1985).

The balance between the social and the technical is difficult to achieve and experiments which took place in Northern Europe put a great deal of emphasis on the 'social' system, perhaps at the expense of the technical, thus discouraging UK manufacturers from following the approach.

It is widely argued that early experiments failed because of productivity deficiencies, and it was suggested that such a production system was not suitable for mass-produced goods for this very reason. However, as markets are changing and the need to become more flexible becomes imperative for survival, such approaches to work organisation are re-emerging.

3.1.3 Motivation

"Close attention to QWL provides a more humanised work environment. It attempts to serve the higher-order needs of workers as well as their more basic needs. It seeks to employ the higher skills of workers and to provide an environment that encourages them to improve their skills" (Newstrom and Davis, 1993).

"The well-being and job satisfaction of personnel are not *in themselves* of major interest from the management perspective. Job satisfaction, however, is regarded as being closely related to motivation. Since the problem of motivation is of the greatest interest to executives, there must at least indirectly, take account of the well-being of their personnel...as far as an organisation, and particularly its management, is concerned, the problem of motivation is mainly of importance

- To recruit and retain suitable personnel
- To induce personnel to perform a reliable job in accordance with the requirements and aims of the organisation (management)
- To stimulate personnel to creativity and thereby to contribute to the development of the organisation" (Alvesson, 1987).

"There are a great many competing theories of motivation - no fewer than 140 definitions (Landy and Becker, 1987), which purport to explain the behaviour of people in organisations, but there seems to be relatively little clear research support for any of them." Schein points out that when *generalisations* are made then theories are not always applicable and inconsistencies can be found. "people sometimes work for money but then, to our surprise, fail to respond to a financial incentive scheme" (Schein, 1980).

"Motivation does not only affect work performance. It is also ... of great importance to personnel turnover / absence. Low motivation reduces the probability that one goes to work and stays there. High personnel turn-over and absence due to sickness are problems above all in the case of industry and other organisations with monotonous, unfree jobs" (Alvesson,1987). "Problems of recruiting, absenteeism and personnel turnover are in themselves problems which cannot be ignored and which in some situations can be of great importance... but it is not certain that the problems constitute the incitement for allocating priority to increase job satisfaction" (ibid). "Viewed in terms of Herzberg's motivational factors, job enrichment occurs when the work itself is more challenging, when achievement is encouraged, when there is opportunity for growth, and when responsibility, feedback and recognition are provided."(ibid) "A study of working life psychology literature indicates that there are above all two aspects which are of central importance to job satisfaction, mental health, etc. One of these is self-determination / influence on the personal working situation, while the other is the dimension of qualification or "self-actualisation", i.e. job content. The concept of self actualisation was introduced at the end of the 1950s. Herzberg et al (1959) and McGregor (1960) in particular were strongly influenced by Maslow's hierarchy of needs theory and all the motivational factors identified by Herzberg can be related to the self-actualisation dimension of Mazlow's theory. Hackman et al (1975) developed 5 core dimensions in work which are of central importance to job satisfaction and motivation: skill variety, task identity, task significance, autonomy and feedback. Diagramatically, it looks like this:

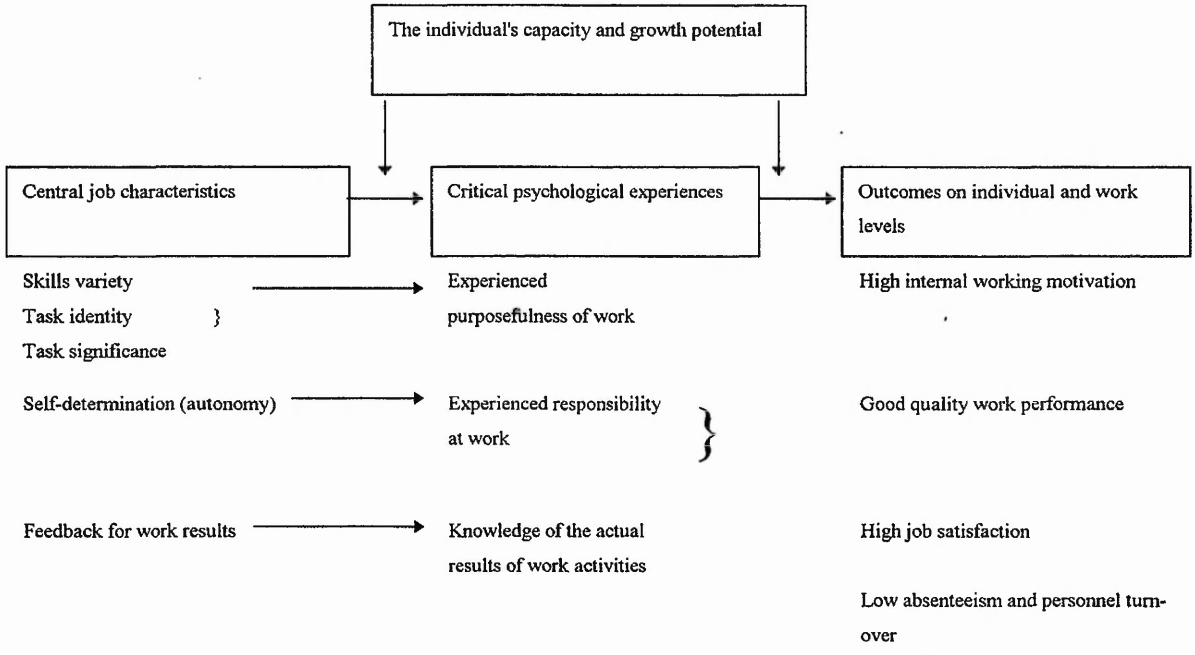


Figure 38: 'An integrated theory of motivation' (Alvesson, 1987).

The many influences on motivation are evident in the following case study:

> Some machinists prefer team working, others would like to return to conventional working, particularly those that have been on the teams for the longest period (4 years). Some feel that there is a lack of continuity for the team members because there are so many staff changes within the teams. Others felt that team working was good to begin with, but that it has since lost some direction - they feel unable to make suggestions any more and are told to just get on with their work. One team was very unhappy with their treatment from the management.
>
> Many newcomers complained of a lack of training and explanation of the system and the required qualities, for example, they are not always introduced to their fellow team members. They also feel a strain when they have to help trainees as their targets are not adjusted. Most had never had a team meeting. Many feel greater stress because they are responsible for each other [Company H].

and a lack of information had a severely demotivating effect on this team:

> "We can't understand why we have lost so much, you know, its been a lot". Another team in the same company had also experienced the same problem. "We don't know how much is going through". "I can't understand how they work out the costs at all. All they tell us is that we have lost them £500". The team were asked if it would benefit them to know how calculations were made. the response was "Aye, and then maybe we could see where we've gone wrong. They say 'this is what you've made and you've dropped £500, you're not doing enough work'". "We are working flat out and we are still losing £500." "We are doing just as much work as we'd be doing before. We can't understand how that is". If a team bonus system were in place, the team fear they would "never get it". [Company J]

> "We were reaching our target, but then he was saying it was still not good enough, and now we've not got a target." Their supervisor is "not interested" in them.

> "They expect you to get your speed up in a day, they expect me to do pockets on our team, and we hadn't done pockets for a while...and I couldn't do it. You feel you are letting them down. It is very stressful." Another member of that team claimed "I like to do my own performance and that's it...its nothing to do with anybody that I'm working with, its the stress of the job." [Company H]

Some teams are compared with one another to try and motivate them. When asked whether they feel in competition with one-another, the team from Company H replied: "we like to be the best!", however, they did not agree with having performance measures on display as they are effected by factors other than the operator's abilities and effort. "It is not right because there are lots of different reasons why production is down".

Trist and Bamforth's study also highlighted the cause of absenteeism under mass production conditions, in which there was little social interaction. Absenteeism of a "self-compensatory type, though carried out as an act of aggrieved defiance against a system .. is an attempt on the part of the individual to prolong his work life at the coal-face. For without the respite of the occasional absence, he feels that he would soon become unable to carry on" (1951).

In one particularly unusual case, Company A, payment should not have been effected by the absenteeism of a team member as the total pay was divided equally amongst the operators who were present. However, the operators found that when a team members was absent, they would work extra hard to compensate, thus their pay for that day would increase. When the colleague returned the next day productivity would drop, because they wouldn't have enough work left due to the previous day's increase. As a result their pay for that day would fall, making their pay rather erratic.

"A high degree of personnel turn-over, absenteeism and other (expressions of) psychosocial problems lead to problems of efficiency and can prove costly, especially in times of favourable economic cycles and low unemployment". Thus the importance of having satisfactory working conditions can be emphasised. Alvesson suggests however that replacing skilled workers as opposed to unskilled workers is very costly, and consequently the division of labour and deskilling of the workforce can make the replacement of unskilled workers much cheaper. This will of course lead to high labour turn-over, but for the employer this can be beneficial because they do not have to pay fringe benefits and high salaries. However, in most cases high turn-over has a demotivating effect on the rest of the workforce and encourages measures to keep the level of turn-over down. Investment in psycho-socially attractive job conditions are exemplified by the Kalmar factory of Volvo, frequently mentioned as "a striking example of far-reaching reform of the work organisation in a humanistic direction" (Alvesson). It is one of the best known examples of a factory constructed in accordance with sociotechnical principles. "The design of the factory has amongst other things enabled the workers to do their work in teams, vary their tasks and to some extent influence their own job situations" (Alvesson, 1987).

"Ahlmann (1978) sees sociotechnics as something of a synthesis of scientific management and human relations. He believes that while the scientific management school paid too little attention to the social side of the job, the human relations representatives for their part were

insufficiently concerned with technical conditions (and therefore only had a limited influence in practice). Sociotechnics, on the other hand, offers a reasonable compromise between the two sides of the work situation" (Alvesson,1987).

" 'Bad conditions' tend to instigate 'bad work'. When they occur, the smooth sequence of tasks in the production cycle is more likely to be disturbed by faulty performance. Bad work can, and does, arise when conditions are good, from personal shortcomings and social tensions, in themselves independent of bad conditions; but difficulties arising from human failings are more readily - and conveniently expressed when the additional difficulty and excuse, of bad working conditions is also present" (Trist and Bamforth, 1951).

3.1.4 Task identity, significance and variety

Task Identity

Work should be designed as an entire unit: When tasks are broadened so the operators are able to see a complete product or at least an identifiable part of it then task identity has been established. Tayloristic practices have led to the over-specialisation of routine jobs, in which their efforts into producing a whole product are unidentifiable.

Task Significance

This includes dignity, respect, social support, prospects for advancement and challenging work. Particularly important is the feeling that a task is central to the business, and it has been found that STS management has a high quality of working life due to its competence in creating a meaningful product, especially when operators are able to control key variances themselves.

Work should be socially purposeful "in the sense that it has a substantial and identifiable influence in the lives of other people" (Alvesson, 1987). This refers to the impact the work has on other people as perceived by the operator, either within the organisation or outside, thus giving meaning to work. It may be a key task in the production process, in which fellow operators rely upon the work of another, or feedback from customers about the quality of goods. By personalising finished products, quality problems can be reduced, as pride in work becomes more important.

Shift-working has problems of its own, as workers are not so concerned with leaving good work for the colleagues they never meet to pick up after themselves. This was highlighted in the coal mining studies of Trist and Bamforth: "the filler is in the situation of never knowing what he may find, so that anxiety .. arises, that tends to produce chronic uncertainty and irritation.

When the first night shift team was installed, they had some problems getting the teams to gel, so they sent the first team on an outward bound course. They returned extremely motivated, but still behaved as individuals, rather than as a team. They tried to get some feedback from the outward bound centre, but they were unable to help and the project was considered to be unsuccessful. The company felt unable to capitalise on the benefits as most of the people left the company soon after anyway.

Originally the company had 3 night shift teams, but they were difficult to control because of "poorly motivated supervision." One team in particular was 'under-performing' substantially, so they decided to make 2 good teams out of the 3 and have a new supervisor. The replacement is committed to the teams and is supported by an effective job trainer.

The night shift team did not have a natural team leader emerge, and the company felt they needed encouragement, so they identified a strong personality and nominated them as leader. The team instantly fragmented, so the management quickly retracted their decision and asked the team to nominate a leader themselves instead, 2 people were put forward. Again the management had to reverse their decision immediately. Now they simply use the supervisor as their 'voice'. [Company M]

In a separate study of three organisations, of which two were industrial examples and the third from the service sector, in the two industrial examples, the workforce defined their roles narrowly and displayed a certain lack of ambition. In the health sector, they were more analytical and had a broader perspective of the definition of their tasks. They had received training which they were unable to utilise fully and wanted to progress.

In Company BC, human qualifications such as ability to co-operate, self development etc. are considered to be equally as important as vocational skills.

In Company G, opportunities for promotions have not changed though the factory manager thinks it is a lot more likely that team members will become supervisors than line workers, because "in an indirect way they have gained a lot of experience."

Reactions from Company H operators - some think it is harder and more stressful, while others think it is more interesting. They feel they were thrown together with little preparation and do

not like being swapped between teams to suit production. Their targets remaining unchanged when an operative is absent is demotivating. They would like to become more involved in the production planning of new designs.

> *"We are all learning as hard as we can, and when anything happens we are all going to start us own little factory!"*

In terms of promotion prospects for machinists and other staff, it is the company's policy to promote from within. The General Manager feels that the machinists are now somewhat better equipped for promotion. For example, the Work Study Manager was initially a Machinist, then a Quality Auditor, then a Trainer and then a Technician before becoming Work Study Manager. This 'job rotation' helps the company by giving it a multi-skilled workforce, not just on the shop floor, but also in the management team. The General Manager feels that she can trust the management team to cover for one another without being asked. [Company K]

> *"Well personally, I have 2 daughters of my own, and I would never recommend them to going into the sewing trade... I just think its too much hard work, I mean you have got to slog for everything you get, I mean, both my daughters have got jobs, they get more money than what I do, you know, I'm not saying that they don't work in the job that they do, but I work a lot harder you know. I think it is a hard trade, this. It always has been, it always has been... But if it was just them depending on a job in a factory, you know, the way jobs are now, I think they would be thankful to come into a factory to work, whether they liked it or not. If it was by choice".*

This operator would recommend working in a teamworking factory rather than one which was not.

> *I think it is a much easier way of working to be honest.*

One of her fellow team members pointed out the limited scope for progression in the industry:

> *"Say you're starting work in a factory, there's only so far you can work within it..."*

> *"I like it better than the way we used to work. I like it this way."*

They would willingly go on training courses to help them progress within the company. Although not all would like to become a 'technician' (ex-supervisor who makes samples): "I am quite happy the way I am".

Skill Variety

Newstrom and Davis (1993) suggest that different kinds of skills should be utilised as "jobs that are high in variety are seen by employees as more challenging because of the range of skills involved. These jobs relieve monotony that develops from any repetitive activity. If the work is physical, different muscles are used, so that one muscular area is not so overworked and tired at the end of the day. Variety gives employees a greater sense of competence, because they can perform different kinds of work in different ways".

> *"When you're working down the lines you're just doing a specific piece of the garment, but when you're not on the lines, you see the garment going from the start, right through to the end." [Company M]*
>
> *"I think we're a team because we do different things". "If there is a shortage of work we can practise other jobs, which is the whole idea of it." "You can sit and watch and learn from just watching" another team from the same company enjoyed the variety offered from he multi-skill training. "I enjoy it, there are lots of jobs". [Company J]*
>
> *"We're not stuck on a job all day, but if you run out of work you are straight onto something else, so in theory I think we're working harder, but really you don't ... it's nice not to be stuck on one machine all day" [Company H]*

The problem these machinists face is that they spend the time cross training one another and then find that a team member is put on another team because of their new skills:

> *"We get skilled amongst ourselves and then they come and take one of us off, don't they"*

They find this particularly demoralising. The fact that team members are swapped around frequently causes friction, particularly when new-comers have to learn to fit in: "but then she has got to come in and learn how we work"

3.1.5 Job Design

Participative design.

In the 1970s, Emery launched the idea of participative design, in which both the 'researcher' and the employees who's job is being designed work together to produce a practical solution. Such sociotechnical design is therefore not a 'blueprint' which has been designed by a 'researcher'.

There are different versions of this with different implications. For example, 'researchers' may already have the 'right' theory, and workers are asked to participate in case they have something else to add, the argument being that in a joint process, all participants will have something to add. (See Emery, 1989).

"The modern interest in quality of work life was stimulated through efforts to change the scope of people's jobs in attempting to motivate them. *Job Enlargement* occurs when operators with very narrow job breadth are given a wide range of duties in order to reduce their monotony, resulting in less time being spent on each. *Job Rotation* on the other hand involves the periodic assignment of an employee to completely different sets of job activities, thus developing multiple skills for the employees, benefiting the organisation through greater flexibility and providing greater interest for the employee. *Job Enrichment* builds upon Herzberg's' motivational theory in which a focus on higher order needs assists in the motivation of employees. This is achieved through adding **depth** to a job by giving operators more control, more responsibility and discretion over how their job is performed. This involves the vertical integration of tasks such as planning and tries to overcome excessive specialisation. It also encompass a more holistic approach to work allowing operators to see their work from start to finish. *Semi-autonomous work gro*ups permit job enlargement or enrichment to work in accordance with the differing capabilities of and preference of the individual group worker as well as furthering their social and communication needs and skills. "Management reaps the benefits from this arrangement in terms of obtaining greater flexibility, superior collective 'problem solving' capacity, as well as being able to rely on mutual social control of group members" (Lane, 1989).

In the case of Company N, operators learnt some new skills, which they found enjoyable at first, but then saw it as an additional chore once they were back in production. In this case if *job enlargement* operators did not benefit from their additional skills, particularly as they still had little control over their work, thus feeling frustrated by the apparent exploitation they had suffered. Payment was also a contentious issue, particularly in relation to learning their new skills. The team believed that they were not adequately recompensed for learning additional skills.

A job can be built in such a way that intrinsic motivation is encouraged. "Because motivation is increased, performance should improve, thus providing a more human and more productive job.

Negative effects also tend to be reduced, such as turn-over, absence, grievances and idle time" (Newstrom and Davis, 1993).

Involvement in pre-production processes are of key importance to some shopfloor employees who are clear that their input into areas outside direct production can be of value. For example, in Company H, operators stated that:

> *"We'd like that before we start a style someone could come in from design and show us how they did it."*
>
> *"It was like that pocket there. If they had come down and shown us how they actually did it, it would have been OK."*
>
> *"they tell us what they want, and that's it".*

There is an obvious willingness to participate in the design and sampling phase of production here, but the task distinction between the two areas has remained unchanged, despite the implementation of teamworking. This is particularly well exemplified by their following comments where operators stated that:

> *"We have a meeting on the shopfloor after [the trainer] started and he spoke down to us"*
>
> *"Yes, he talked at us"*
>
> *"He spoke to us like we were down there (pointing to the floor)"*
>
> *"He did not show us any respect" [Company H]*

This is an extremely good example of how operators' willingness to become involved and offer ideas is completely overpowered by the management style of the company. It relates back to the need for effective management training to assist in the process of 'letting go' and developing a more participative style of management.

4. CONCLUSIONS

In order to achieve competitiveness in an environment which requires rapid response and innovation, it is vital that the structures and cultures formed encourage motivation and commitment to the company so that innovative ideas can flourish.

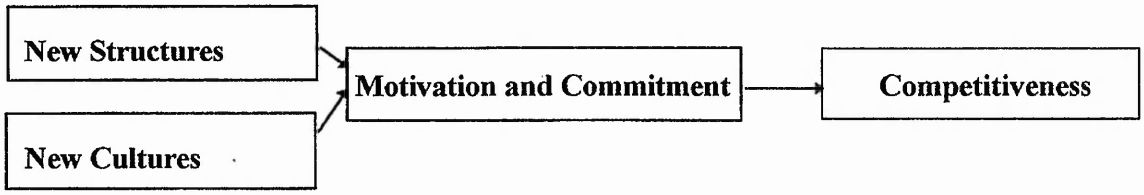


Figure 39: Achieving Competitiveness

Issues of team meetings are still very problem-oriented in clothing and textiles firms. Those which use meetings as a forum for continuous improvement tend to be in other industries in which innovation is considered to be a key to competitiveness.

Regarding the process of empowerment, the following diagram summarises the role of the leaders and facilitators in achieving group autonomy:

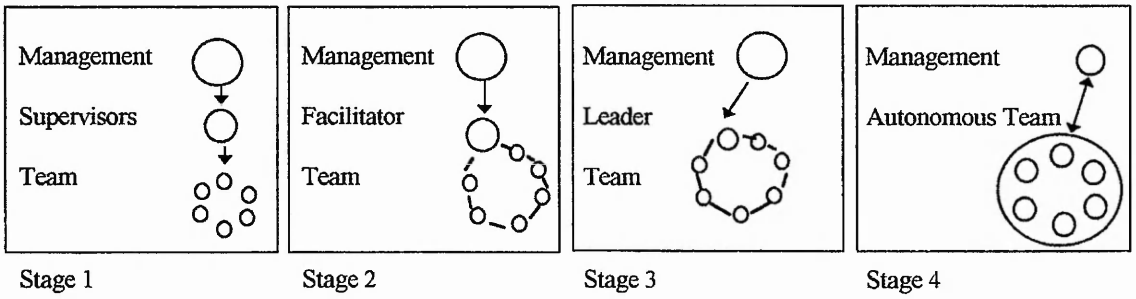


Figure 40: The Empowerment Process

Gaps in the sociotechnical analytical framework include the following. Firstly, *the level of influence* operators have over their daily work and the long term policies of the business is not suitably addressed. This is determined to an extent by the hierarchical structure of the organisation which is not included in the analytical framework.

Secondly, *the technical autonomy* workers have over their tasks, in particular the degree to which machinery dictates the time which it takes to execute a task, is not accounted for. If for some reason they fall behind target, what are the possibilities of them making up the time by speeding up the process? In production systems where operators decide when and where to move this is not a problem, but when sophisticated rails systems are used, they must keep up with the pace. This is particularly the case in the automotive industry where operators have no discretion over the speed of their work and Fordist practices persist.

Thirdly, it fails to address the degree to which operators have *administrative autonomy* over their daily tasks. This should be addressed in relation to their 'vertical' relationships i.e. between workers and superiors and their horizontal relationships i.e. of workers' tasks to other functions. Berggren, for example, found that in Sweden work groups created in the most divergent systems are still only partially autonomous.

Additionally *internal group relations* are not adequately addressed by sociotechnical analysis. Do the group members have the same qualifications, influences, cross training and social functioning? If they do not, will this cause an imbalance or result in conflict within the team?

The degree to which work is *meaningful* is not adequately addressed either. Analysis of whether operators are able to locate their tasks in the overall picture is not suitably covered, yet is extremely important in assessing motivational effects of new forms of work organisation.

Finally, s*eparating the social from the technical* is difficult and unnecessary as there is an important interface between skills, technology and work organisation. As was highlighted by the difficulty in separating the 'technical' need for management training from the 'social' need for adopting a new management style, sociotechnical theory is not an ideal means of assessing change.

CHAPTER 5

EVALUATION AND CONCLUSIONS

1. INTRODUCTION

This thesis set out to answer a number of fundamental questions relating to the introduction of new forms of work organisation into the clothing and textiles industry. Five questions were posed in the introductory chapter which provided the structure for the development of the discussion. This chapter aims to summarise these findings, whilst drawing conclusions on their implications for the industry. It will begin by reviewing the five research questions and drawing conclusions from the findings. The discussion regarding Japanese and Scandinavian approaches to change will thus be developed, ending with an overview of the implications for the UK clothing and textiles industry and overall conclusions of the research thesis.

2. ECONOMIC TRENDS AND WORK ORGANISATION

Q. How does the pattern of organisational restructuring fit into the pattern of the economic environment?

Patterns of economic change and work organisation have followed broadly similar paths over the last century, best described by the following table. Though the categorisation is somewhat crude and changes were more subtle than indicated in this summary, it provides an overall picture of the close relationship between markets and organisational structure.

	1800s	Turn of the century - mid 1900s	Mid- 1900s - present
Industrial structure	Small localised firms - cottage industry	Rise of the factory organisation followed by a merger boom through government intervention (1950s)	Co-existence of large and small firms, with a predominance of small firms.
Economy and Markets	Closed economy with localised markets	Intensifying competition from foreign markets	Global economy, market segmentation
Production systems	Craft based production	Mass production	Flexible production working alongside mass production
Technology	Hand tools	Power driven machinery	Computerisation
Management style	Autonomous	Autocratic	Egalitarian

Table 13. Patterns of change in the UK

The argument of whether changes are demand or supply led remains an issue of debate. Consumer tastes in clothing and textiles are changing, with a greater demand for quality and choice, making the changes which manufacturers are undergoing *demand* led. However, taking the introduction of the Ford Model T car as an example, it is said that Ford 'created' a mass market through the mass production of the car and in this case Wood (1989) suggests that organisational reformation is in fact *supply* driven. However, counter to this argument, Ford would not have moved into mass production of the car if the potential demand, resulting from wider macro-economic and technological factors, was not there. Indeed, it is not consumer demand or the 'creation' of markets alone which determine the way in which organisations structure themselves. As can be seen from the table above and Chapter 2 the economic climate and government intervention also play a part in industrial structure and should not be ignored in any analysis of organisational change.

Key to the literature on emerging forms of work organisation has been Piore and Sabel's Flexible Specialisation thesis, explaining the emergence of regional conglomerates, federate enterprises, 'solar' firms and workshop factories, none of which adequately describe the structure of the UK clothing and textiles industry. There is in fact a small number of large, multi-national firms and a high number of small firms making up the industry: "The apparel and textiles sector is dominated by small firms, in spite of the well-known major multi-nationals. In apparel, 95% of firms employ fewer than 100 people, while 81% have fewer than 24 employees. Only 16 firms are recorded which employ over 500 people" (Oxborrow, 1996[1]) Those which have adopted a team approach to work organisation are generally subsidiaries of the large firms (namely Coats Viyella and Courtaulds) which are adopting a policy of ensuring their manufacturing sites are teamworking. Flexibility is thus emerging *across* the industry as well as *within* individual firms.

As discussed in Chapter 2, in describing different forms of flexibility, Atkinson (1985) suggests a *core-periphery* model in which organisations enjoy *numerical* flexibility from a labour market of part-time workers and *functional* flexibility from a core of permanent workers, as indicated in the diagram below:

[1] Source: Trendata Q395 source office for national statistics: Overseas trade statistics, Div 84.

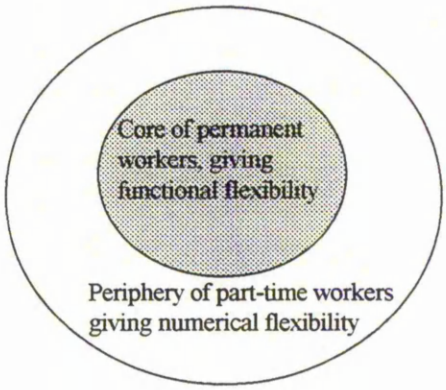


Figure 41. Summary of Atkinson's Core-Periphery model

In the case of the larger clothing and textiles firms, this model does not necessarily apply, as the whole organisation is both numerically flexible and functionally flexible because adaptability is encouraged throughout the business as roles change and hierarchies are flattened. As a labour-intensive industry, *functional* flexibility plays an extremely important role in the development of new forms of work organisation.

As far as the proposed move away from Fordist techniques is concerned, mass production techniques are still very much in evidence and Piore and Sable's hypothesis of industrial dualism can be applied *within* firms rather than across the industry, where mass production continues *alongside* flexible work teams. Empirical findings were that over half the companies studied are already operating with the entire shopfloor using team based production, thus flexibility was sought throughout the organisations. Of those who are partially teamworking on the shopfloor, with mass production continuing along side teamworking, 31% plan to extend it further, based on their success.

The teams offer the firms functional flexibility, where mass production is currently forming the core:

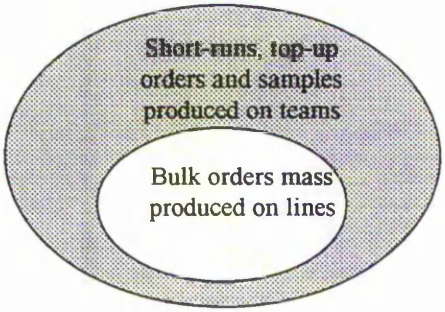


Figure 42. Core-Periphery model of UK clothing and textiles firms

The industry is still in a period of transition, and the above data suggests that the centre circle in this diagram will continue to shrink as the outer circle expands. In addition the use of outward processing for the mass production of standardised goods seems likely to continue.

3. STRATEGIC DECISION MAKING

Q. Do managers of UK clothing and textiles firms adopt a strategic approach to implementing change, and if not, why not?

The answer to this question is, on the whole, 'no'. Decisions which managers have made to change their production systems have not been strategic, rather it is forced change due to market pressure. Empirical data showed that in the UK management *reacted* to the need to produce shorter runs and respond to demand much faster in order to compete. They are under pressure to cut costs, and if this can be done by reducing staff ratios and machine down-time then they will. The improvement of the working environment for the employees is an additional advantage, but not one which is of major influence to those who have changed.

Incremental changes are made depending on the outcomes of the previous changes, as suggested by Mintzberg (1988). Strategies emerge and are built on previous decisions and outcomes, rather than being part of an overall plan. Recognition is growing of the strength of labour pressure for improved working conditions, and if managers are to start to think about the future developments of their businesses it should be in these terms. Through a process of learning by their short-term reactive approach, managers can begin to actively sell their flexibility and adopt a pro-active means of change.

As Child argues, choices do not depend on the environment, technology or the size of firm alone, but that the *decision makers* have the greatest influence. The decision maker's choices are in fact based on a series of assumptions and value judgements about human capabilities. As discussed in Chapter 2, the goals pursued by management through the changes are primarily to achieve flexibility to serve an ever-changing market. In addition, the desire to create an improved working environment and thus attract labour is a pursued goal.

This is achieved through incremental changes to the work process, frequently beginning with shopfloor changes which spread to the rest of the factory as the benefits of teamworking emerge. In cases where a team system is 'bought', for example, following a machinery exhibition, work is organised around the technology. Similarly, where expensive equipment, such as rail systems, are already in place and the company is reluctant to withdraw their use, team systems are designed around the equipment. The decision to stand or sit is often a 'gut feeling' in which managers either feel that the change to a stand up systems would be too great for operators to cope with or that it would be a good opportunity to mark the change process the company is undertaking. Neither decision is particularly theoretically informed and the choices are not opened up for discussion with the operators. The decision making process when implementing teamworking into a clothing factory can be summarised as follows:

'Bad' practice	'Good' practice
Decide to implement teams "because everyone else is"	Decide upon the strategic direction of the organisation and decide whether teamworking may help achieve this
Set up a pilot team, but do not decide on any measures of success	Set up a pilot team and agree measures to assess its success
Introduce more teams because "gut feeling" says they're doing OK	If benefits can be seen, introduce more teams
Don't offer training because "there is no time - production needs to get out of the door"	Take a long term approach and see training as an investment. Ensure skills and team building training is given in advance of teams going onto proper production
Continue to pay an incentive scheme because "money is what motivates the teams"	Pay a flat rate of pay and motivate teams through effective management

Table 14: 'Good' and 'Bad' Practice

The majority of cases studied tend towards the left hand side of this table, though it is unfair to say that all do.

The consequences of developing a production system first and then developing the teamworking philosophy throughout the business later is that the support functions are not there to assist in the team's development. Teamworking implementation is frequently approached at a speed where support functions such as training, planning or personnel are unable to cope. Development of shopfloor teamworking around existing rail systems maintains a Fordist means of production in which manufacturing speed is determined by the technology and not the human

resources. In these cases tasks remain divided and subdivided and operators have little influence on the manner in which their tasks are performed.

The changes managers instigate form part of a continuous learning process. Experience indicates that managers are willing to learn from one-another and value the experience of others, but have little opportunity to do so. Networking with other companies in similar situations assists in the learning process and allows more informed decisions to be made.

4. SOCIOTECHNICAL THEORY EVALUATION

Sociotechnical theory was utilised as a means of establishing the degree of 'fit' between the social and technical systems of changes in work organisation. This section seeks to bring together chapters three and four to evaluate this and criticise the effectiveness of sociotechnical theory as a tool for analysis. As suggested in chapter one, the emphasis on Japanese techniques has been on the technical development of workflow, in comparison with the focus on quality of working life in Scandinavian examples. More recent developments in Europe have identified the emergence of 'hybrids' which do not seek to find 'one best way' but are creative and self-sustaining in their own right.

Q. How can the social and technical elements of work organisation be balanced to achieve maximum benefit?

Sociotechnical theory states that the technology used in an industry determines the characteristics of the social system, through the allocation of individual tasks and the technological links between them. Performance is a function of the joint operation of the social and technical system (Taylor, 1985). It further states that the social analysis builds upon the technical analysis to identify ways that 'key variances' can be better controlled by improving the fit between the technical functions and the social functions.

In other words, the social system in a production environment is determined by the technical system. It is argued that this, however, is not the case. Referring back to the decision-making process in the implementation of teamworking, many of the decisions depend upon the character

of the decision maker - the management style. Thus the social system, particularly in terms of communication, empowerment and commitment are heavily mediated by the management style and the organisational culture, not by the technology.

In order to assess how the social and technical systems can be balanced, it is appropriate to summarise what constitutes each of the systems in the decision making process. This is indicated in the following table:

THE 'TECHNICAL' SYSTEM	THE 'SOCIAL' SYSTEM
Handling systems	Communication methods
Machinery requirements	Role definition
Task allocation	Trust, empowerment and autonomy
Workstation layout	Motivation
Team membership/manual skill requirements	Task significance
Work in progress levels	Task variety
Payment systems	Commitment
Product requirements	Career structure

Table 15. The 'Social' and the 'Technical'

Greater employee involvement has been discussed in depth in work organisation literature, but, as far as the empirical evidence indicates, has not yet been fully grasped by managers of textile and clothing firms. The development of improved systems of communication will assist in the process of giving people the knowledge needed to make informed decisions and become more involved in the technical decisions about their work. Bringing together the previously 'separated' minds and hands from Tayloristic work practices helps to pull together and re-form the 'social' and the 'technical' into a single, cohesive identity.

As Davis (1980) suggested, production engineers have concentrated on the technical system at the expense of the social system for far too long, and that economic gains can be enjoyed through greater emphasis being placed on the social aspects of work organisation. He points to external changes such as increased education, higher standards of living and changed gender role patterns which mean that more regard should be paid to social conditions within the organisation.

Decisions about the layout, product requirements and so on are almost 'givens', as they depend heavily on the existing floor space, equipment, products required etc. Some of the decisions made are at the discretion of management, but are restricted by other influencing factors, as

indicated above. The social system, on the other hand, is very different and lies entirely in the hands of management. An atmosphere of trust or mistrust will depend entirely on management style, thus effecting the commitment displayed, levels of empowerment, communication systems and so on.

It is therefore easier to focus on the technical system when implementing change as it is so much more tangible and many of the decisions are already made by existing technologies. Difficult choices lie in the social systems - the decision to display more trust and offer teams more autonomy. So where does the balance lie?

Evidence from the research suggests that new forms of work organisation in the clothing and textiles industry tend to exist in a way in which the 'social' system is not fully addressed. These may continue to exist in their present format, but will not reach their *full potential.*

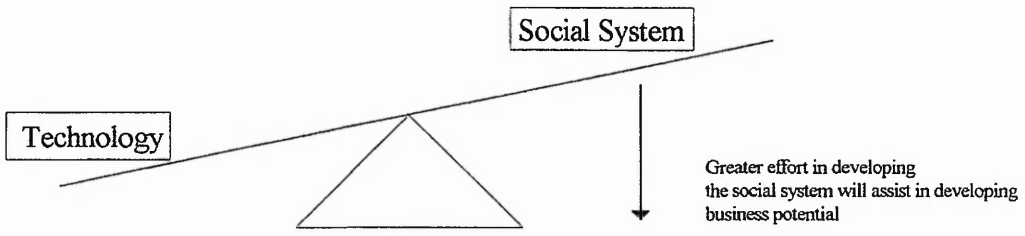


Figure 43. Balancing the social and the technical

In order to meet the full potential of teamworking, more focus must therefore be put on developing a culture of trust, in which operators are able to make their own decisions and have the opportunity to develop both themselves and the potential of the business.

Q. Is sociotechnical analysis and effective tool for evaluating team based production systems?

Sociotechnical theory provided a good starting point for discussion in this thesis, particularly in terms of determining a framework for evaluation. However, the theory has been much criticised for its approach to change and there are distinct gaps in the analytical framework.

Firstly, in criticising the approach as a whole, it is debatable whether sociotechnical theory can achieve any extensive qualitative improvements of the individual's job content and work situation as much of it takes the technical and formal structures for granted, and as Rose (1975) notes, that concept may further be seen as a device for helping production engineers to discover better 'best ways'. Additionally, worker's choices are seen as non-existent in the face of a determinate environment, where resistance to management plans runs up against 'uncontrollable forces in the external environment'.

Similarly, despite its claims to be an open systems theory, it seemingly takes little account of the external environment, when in fact, as discussions in Chapter 2 indicate, these are extremely important factors in influencing new forms of work organisation. Furthermore, sociotechnical theory attempts to provide a holistic systems view of organisations, with a focus on "changing everything at once", when empirical data points towards decisions being made incrementally. It is therefore not appropriate as a model for firms in the clothing and textiles industry in which each factor is so interdependent on others. A 'straight line' model cannot be adopted.

The primary difficulty in using sociotechnical analysis has been in separating the 'social' from the 'technical' as the two are so intrinsically linked. This problem was particularly pertinent in the discussion on changing roles and the resultant need for training at all levels. The technical division of labour and role definition were key factors in system design and the organisational structure, yet training implications were at a more 'social' level, with the need to be able to communicate effectively and facilitate meetings became of key importance for example.

In evaluating the literature on sociotechnical theory, the vast majority of papers offered critiques of the original coal mining studies of the 1950s. More recently, considerable development in the theory has taken place elsewhere in Europe and in particular the Netherlands, where basic principles have been revised and built upon to be more applicable in the modern day context.

5. INTERNATIONAL COMPARISONS

Q. What are the effects of adopting Japanese techniques in a UK context and how does this compare with Scandinavian techniques?

"Two distinct approaches have been taken in the evolution of sociotechnical change within the apparel industry: Japanese and Western. Japanese sewing systems have incorporated technological advances into a pre-existing social system of self regulation and high regard for quality ... Westerners such as Germans and Americans have been typically strong in technology and are now endeavouring to develop the social culture necessary for teamwork in the manufacturing environment. Companies in Sweden, Taiwan and America have installed Japanese sewing systems in an effort to effect the change necessary to survive their competition" (Carrere and Little, 1989). This thesis argues that a European model is emerging which does not try to imitate Japanese methods of working, but instead offers a framework for the development of 'hybrids' which suit the individual needs of the firm and its location.

Japanese transplants in Europe in general tend to adapt to the local conditions. However, in examples such as Case study Company EI, systems operate in a way much closer to their home system. "Here collective autonomy of work groups is limited to task design as opposed to task execution" (Fröhlich and Pekruhl, (1996).

In a review of a report commissioned by the Department of Employment[2], Summers (1993) suggests that the "pent-up resentment from British workers over the imposition of Japanese style working practices could have a 'devastating effect on industry". The report suggested that competitiveness in the UK cannot be gained through *replication* of Japanese working methods, raising the question of the effects of working as hard as humanly possible on the quality of working life. The study suggests that "British Manufacturers are using the threat of Japanese competition to push through reforms in working practices"(Summers, 1993). The report warns that the adoption of working methods such as 'Just-In-Time' manufacturing can make companies vulnerable to fluctuations in demand. The report also

[2] Sue Milesome's *The Impact of Japanese Firms on Working and Employment Practices in British Manufacturing Industry, July 1993.* Industrial Relations Services

suggests that incidents of Karoshi (death from over-work) are due to the large amounts of unpaid overtime performed by Japanese workers.

As far as the transferability of Japanese techniques to Japanese owned subsidiaries in the USA is concerned, Goldman believes there is no problem. A "host of total quality control concepts and techniques in force in the US electronic plants ... illustrate that our culture is no obstacle [Schonberger, 1982]" (in Goldman, 1993). The case of Britain, however, is somewhat different according to Goldman, who uses Jaguar and Rank Xerox as examples, in which managerial and governmental obstacles are the main causes of difficulty. "Morrison (1990) points out that unlike the more adventurous Japanese and US TQC experiments, the

> *British approach over the last sixty years has been hesitant, spasmodic and uninspired. It has not yet been helped by the fragmented nature of our professional system, by the hot and cold attitudes of successive governments, and by the unwillingness of management to become involved...Government has always been involved in the matter of quality standards for defence procurement but it is only within the last decade that attention has been paid to the economic importance of quality in industry generally. (Morrison, 1990, pp.27-28)"* Goldman, 1993)

The process of change is explained by Mitton (1996) to take place in seven stages; initiation, decision to adopt, system selection, politics of change, managerial choice and worker choice. As with the UK examples discussed in chapter 3 of this thesis, the majority of firms decided to change in order to reduce costs and/or improve quality. A minority suggested it was for survival and others stated it was to combat the recession. Unlike the clothing and textiles examples, some firms also changed as a result of the break up of a larger organisation and the move to a green field site. As with many of the clothing and textile firms, these firms adopted Japanese techniques because they were the only ones for which information was available. In some cases the decision to go ahead was through pressure from customers to increase throughput time and decrease lead times.

The 'hybrids' referred to throughout the thesis are best summarised by Belussi and Garibaldo:

> *We must avoid a discussion mainly focused on a theoretical comparison of different paradigmatic models - such as Fordist v Post-Fordist. On the contrary, it is necessary to accept, as a starting point, the possibility of hybridisation with the recent Japanese experience of managing firms and organisations. Our main thesis is that the diffusion of this Japanese experience will not lead to the dominance of one 'best way'. The key point is rather to shift from a 'catch-up' approach - which until now seems to have been not successful at all - to a strategy firmly oriented towards the creation of innovative and self-sustaining processes of development" (Belussi and Garibaldo, 1996)*

The commonality between the Japanese and Western approaches is that both involve people working in groups. This is where the similarities end. For some European authors, the differences between the Western and the Japanese concept of group work are so distinct and fundamental that they want to reserve the term 'group work' for the Scandinavian high-autonomy type of groups only, whereas the Japanese solution should be named 'team work'. However, the differences between the two terms are considered to be so indistinct that the term teamwork will continue to be used for both instances.

Empirical research has highlighted the difficulties for managers in designing teamwork with so apparently few options available to them. They do not always explore alternatives simply because they do not have the time, but also because their working environment is one which does not foster such investigative research. The result has been that firms have grasped one particular idea and then built upon it to suit their own needs. This approach has been limited in its success because the sources of inspiration have themselves been limited.

Solutions can be found through networking activities which give organisations the opportunity to exchange ideas and experiences, not only on a national basis, but internationally and cross-sectorally.

Experiences thus far in organising networks (such as the two Teamwork Users' Groups) has indicated that in establishing them it is important for participants to have a *common interest*, whether it is the sector they are in, working in teams, building supply chains or simply survival.

6. CONCLUSIONS : IMPLICATIONS FOR THE CLOTHING AND TEXTILES INDUSTRY

For the employees of clothing and textile firms, the changes in work organisation have had profound effects on their working lives. Empirical evidence indicates that the variety of tasks and greater involvement are areas of key importance to them. Faced with the new demands of becoming more involved in decision making and learning new technical skills, thorough training needs to be undertaken; a prospect which can be alien to operators who have never been exposed to such instruction. Support is therefore crucial at this stage of development.

Similarly, middle levels of management have indicated a very real fear of job loss. The approach to this problem has been taken in two ways. Either new roles must be defined or supervisors loose their jobs. In some cases this has been through what is called 'natural wastage' and in others, redundancy.

For managers themselves, to be effective in the new approach, they must learn to devolve responsibility and utilise the time to plan and think more strategically about the direction of the business. This is easily said, but if a more proactive approach is not taken, the industry may find itself to be a 'sun-set' one. In comparing clothing and textiles with other industries, it still has a lot of 'catching up' to do. The case studies from other industries, highlight this fact.

Williams *et al* (1989) suggested that "Britain has a massive management problem which persists in a manufacturing sector which is leaner but not fitter. Management does not feel confident about the existing balance of control. Instead of being part of an overall strategy, empowerment of the workforce is regarded as a contest of strength between management and labour, and the focus is removed from the overall goal". Lane suggests that British

management has limited confidence and thus hesitancy about technological innovation and lacks competence to handle change.

Having developed a new system in reaction to market pressures, manufacturers can now turn the tables on their customers and on the labour market by selling themselves to new markets by offering flexibility, quality and service to their customers as well as a much improved working environment and a fairer payment system to their potential employees. Although firms initially may have aimed for short term profit or survival, without realising it they may now find themselves in a position where they can enjoy long term competitiveness through their proximity to the market and an improved potential to remain profitable, allowing for future investment in the industry.

The first step towards achieving competitiveness is for management themselves to change. To enjoy the benefits of innovative ideas and a proactive attitude to work, an environment which fosters this must be formed, and only management can begin this process. By putting commitment and energy into developing the most valuable resources in the industry, the people, then it may stand a chance of seeing the sun rise again.

REFERENCES

Aaronovitch, S. *et al* (1981), *The Political Economy of British Capitalism; A Marxist Analysis*

Adler, P (1985) *Technology and Us'* Socialist Review, Vol.85 pp.67-98

Aglietta, M. (1976), *Theory of capitalist regulation* London: New Left Books

Ahlmann, H. (1978) Den fullåndade arbetsorganisationen, Lundaforskare föreläser, Lund: Gleerups (op. cit Alvesson)

Aldrich, H (1979) *Organisations and Environments*, Englewood Cliffs, NJ: Prentice Hall

Altmann, N (1995) *Japanese Work Policy: Opportunity, Challenge or Threat?* In Frölich and Pekruhl (ed.).

Alvesson, M. (1987) *Organisation Theory and Technocratic Consciousness: Rationality, Ideology and Quality of Work.* De Gruyter: Berlin. New York.

Anon (1993) *Japanese philosophies and management techniques.* Clothing World.

Anon (1993) TSS *Key questions on the revolutionary Toyota apparel management system* Apparel International. February.

Anon (1994) TSS *World class manufacturing for the sewn products industry.* (Publicity material)

Agurens et al (1984) *Volvo, Kalmar Revisited - Ten Years of Experience*. Development Council of Sweden. Trykert.

Atkinson (1985) *Flexibility, uncertainty and manpower management.* Report of a study conducted under the co-operative research programme of the Institute of Manpower Studies. IMP: Brighton.

Baker, P. (1993) *Pro-active restructuring in textiles and clothing: a staging post to nowhere.* New Technology, Work and Employment. 8:1.

Banke, P. (1994) *Work organisation and innovation, the need for EU measures.* Meeting for European Teamworking Network. Brussels.

Banke, P and Binder, T. (1992), *Design of human centred technology in the clothing industry: TA- Approach to the Sewing Machine Technology.* Paper presented at 'Technology, people and organisation: a new concept for work and producing', Copenhagen..

Beaumont, P.B. (1987), *The Decline of Trade Union Organisation.* London: Croom Helm.

Berger, P.L. and Luckmann, T. (1979) *The Social Construction of Reality*, Garden City, NY:Doubleday

Berggren, C. (1980). Changes in the Rationalization Pattern and Organisation of Work within mass production in the Swedish engineering industry. Acta Sociologica, Vol.23, No.4 pp.239-261

Berkstresser and Takeuchi, Bobbin Magazine, March 1985(Cited in Tyler *op cit*)

Binder, T. and Banke, P (1994). Mediating between users and designers user involvement in design of a flexible sewing machine. pp. 173-176. Advances in Agile Manufacturing: Integrating Technology, Organisation and People. (ed. P. Kidd and W. Karwowski)

Bjorkman, T. and Lundkvist, K. (1981) *Från MAX till Pia. Reformstrategier inom arbetsmiljöområdet,* Stockholm:Arkiv op cit. Alvesson.

Blackaby, F. (ed.) (1979) *De- industrialisation* London: Heinemann

Blau (1970) *The Formal Theory of Differentiation in Organisations.* America Sociological Review. 35 April pp. 201-218.

Braverman, H. (1974), *Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century,* New York & London: Monthly Review Press
Brusco, S. (1982) *The Emilian Model: Productive Disintegration and Social Integration'* Cambridge Journal of Economics 6 (2) pp. 167 - 184.

Brödner, P. (1985) *Fabrik 2000. Alternative Entwicklungspfade in die Zukunft der Fabrik, (Factory 2000. Alternative Paths of Development Into the Future of the Factory)* Berlin: Sigma-verlag. Op cit Wood, S.

Buchanan, D. and Huczynski, A. (1985) *Organisational Behaviour: An Introductory Text.* Prentice Hall.

Buckingham, G. L., Jeffrey, R.. G. and Thorne, B. A. (1975) *Job Enrichment and Organisational Change: A Study in Participation at Gallaher Ltd.* Gower Press.

Carrere, C. and Little, T. (1989) *A case study and definition of modular manufacturing.* International Journal of Clothing Science and Technology 1,1 pp.30-38.

Cascio, W.F. (1992) *Managing Human Resources, Productivity, Quality of Work Life, Profits*

Chandler, A. (1989) *Quick Response: The case for modular manufacturing.* Apparel International. January, pp.3-7.

Cherns, A. (1987) *Principles of Sociotechnical Design Revisited.* Human Relations, Volume 40, Number 3, pp. 153-162.

Child, J. 1972, *Organisational Structure, Environment and Performance: The Role of Strategic Choice.* Sociology. Vol.6, no. 1 pp.1-22.

Cummings, T.G. (1978) *Self-Regulating Work Groups: A Socio-technical Synthesis.* Academy of Management Review. July 1978 pp.625 - 633.

Cutler, T *et al* (1986) *Keynes, Beveridge and Beyond,* London: Routledge and Kegan Paul (in Williams)

Davis, L. (1979) Optimising Organization - Plant design, *Organisational Dynamics,* Autumn.

Davis, L. E. and Cherns , A. B. (eds.) (1975): *The Quality of Working Life.* Volumes 1 and 2, 1975. New York: The Free Press.

Delamotte, Y and Takezawa, S-I. (1984) *Quality of Working Life in International Perspective.* International Labour Office. Geneva.

Deasley, P. *Competitive strategies for garment manufacture*

Deldridge, R. and Lowe, J. (1996) *"It Hurt, But It Didn't Work" : Toward A New Agenda For Manufacturing Renewal?* Manufacturing Matters Conference: Cardiff.

Emery, F. (ed.) (1969) *Systems Thinking: Selected Readings.* Harmondsworth.

Empsak, F (1994). *Critical Factors needed to integrate Design Engineering and the Workforce*

Feigenbaum, A. (1983) *Total Quality Control* (3rd ed.). NY: McGraw-Hill Book Co.

Friedman, A. (1977) *Industry and Labour: Class Struggle at Work and Monopoly Capitalism.* London: Macmillan

Friend, J. and Hickling, A. (1987) *Planning Under Pressure: The Strategic Choice Approach.* Pergamon Press.

Friend, J. and Jessop, W. (1977) *Local Government and Strategic Choice*. Pergamon Press.

Frölich and Pekruhl (1996) *Direct Participation and Organisational Change: Fashionable but Misunderstood? An analysis of recent research in Europe, Japan and the USA.* European Foundation for the Improvement of Living and Working Conditions.

Gaetan, M. (1986) *An alternative to UPS.* Bobbin, 27 (6) pp. 76-78.

Galbraith J. K. (1967). *The New Industrial State*. London: Hamish Hamilton.

Galbraith J. K. (1994) *The World Economy Since the Wars: A Personal View.* Sinclair: Stevenson.

Gardiner (1981), *The Labour Process.*

Gillingwater, D (1982), Political Strategies of Planning Practices: A critique of the strategic choice approach. Conference on Procedural Planning Methodology, University of Sheffield, September 1982.

GMB Union (1993) *Quality Pay.* Scarborough 10th - 12th March.

Godfrey, G., Wilkinson A. and Marchington M. (1996) *Workplace Trade Union Response to TQM and Teamworking*. Paper presented at ERU conference, Cardiff.

Goldman, A (1993) *Implications of Japanese Total Quality Control for Western Organisations: Dimensions of and Intercultural Hybrid.* Journal of Business Communication (USA) Vol.30 Part 1 pp. 29-47.

Granger, G. (1988) *Pour la connaisance philosophique* [For philosophical knowledge]. Paris: Odile Jacob. (Op cit Hamel).

Gustavsen, B. (1992) *Dialogue and Development: Theory of Communication, Action Research and the Restructuring of Working Life.* Arbetslivscentrum.

Gustavsen, B. (1995) *Creating Broad Change in Working Life: The LOM Programme*

Habermass, J. (1984/1987) *The Theory of Communicative Action* (2 Vols.). London: Polity

Hackman, R., Oldham, R. and Purdy, K. (1975) *A New Strategy for Job Enrichment.* California Management Review. Summer pp.57-71.

Hamel, J. with Dufour, S. and Fortin, D. (1993) *Case Study Methods: Qualitative Research Methods.* Series 32, Sage.

Hartley (1994) Case Study Methodology

Herbst, P.G. (1974) *Socio-technical Design: Strategies in Multisisciplinary Research.* Tavistock: London.

Hersberg (1959) Theory of Motivation

Hyman, R. (1975) *Industrial Relations: A Marxist Introduction.* Unwin Brothers Ltd: Surrey

Hyman, R. (1988), *Flexible Specialisation: Miracle or Myth?* in R. Hyman and W. Streeck (eds.) *New Technology and Industrial Relations*, Oxford: Basil Blackwell.

Jackson & Wall (1991) *How does operator control enhance performance of advanced manufacturing technology ?* Ergonomics. Vol 34. No. 10 pp. 1301 - 1311.

Jessop, B. et al (1988) *Conservative Regimes and the Transition to Post Fordism: The Case of Britain and West Germany.* University of Essex: Colchester.

Johnson, S. (1993) *What's ahead in work design and rewards management.* Compensation and Benefits Review. March - April pp. 35-41.

Jones, B (1989), *Flexible Automation and Factory Policies: Britain in Contemporary Perspective*, in P. Hirst and J. Zeitlin et al (eds.) *Reversing Industrial Decline* , Leamington Spa : The Berg Press.

Katz, H. (1985) *Changing Gears*, Cambridge, Mass: MIT Press

Kern, H. and Schumann, M. (1987), *Limits of the Division of Labour.* Economic and Industrial Democracy, Vol.8 No.2 p.160

Kern, H and Schumann, M (1989) *New concepts of Production in German Plants.*

Kilburn, D (1993) *The Sun Sets on Japan's Lifers.* Management Today.

Kirosingh, M. (1989). *Changed Work Practices.* Employment Gazette, August. pp.422-9.

Kitson, M. and Mitchie, J. (1996) *Does Manufacturing Matter?* Paper presented at ERU conference, Cardiff.

Kochan, K. Katz, H and McKersies, W. (1986) *The Transformation of American Industrail Relations* New York: Basic Books

Knapp, K., Erwin, P., Park, R. and Ieronimo, N. (1996) *Teams in Australia's Automotive Industry: Characteristics and Future Challenges.* Paper presented at ERU conference, Cardiff.

KSA (1994) *An approach to a balanced sourcing strategy* , Bradford.

Landes, D.S. (1969), *The Unbound Prometheus.* Cambridge: Cambridge University Press

Levine, G. *Incentive Systems: Individual vs Group*

Lane, C. (1989), *Management and Labour in Europe: The Industrial Enterprise in Germany, Britain and France,* Hants: Edward Elgar

Malloch, H. (1996) *Kaizen : Continuous Improvement as Strategy.* Paper presented at ERU conference, Cardiff.

Marx (1930) *Capital.* Volume 2. New York: International Publishers

Maslow, A (1943) *A Theory of Human Motivation.* Readings in Managerial Psychology, Leavitt, H and Pondy, L (Eds.), Chicago: The University of Chicago Press, 1973.

McGregor, D. (1960), *The Human Side of Enterprise.* McGraw: Hill

Mead, G.H. (1956). *On Social Psychology,* A. Strauss, Ed. Chicago: University of Chicago Press.

Middleton, D. (1991) *Teamwork Development: Group Recall of Experience Narratives as a Methodology for Identifying Instruments to Support Team Production and Training.* (Loughborough University)

Miles and Huberman, (1984). *Analysis of Case Studies*

Minzberg, H. (1988) ' *Opening up the definition of strategy*' in Quinn, J.B (ed.).

Minzberg, H. and James, R.M., *The Strategic Process,* Hemel Hempstead: Prentice Hall

Mitton, R. (1996) *'Japanese Style' Manufacturing Methods and the Process of Organisational Change.* Paper presented at ERU conference, Cardiff.

Mueller, F. *Team between hierarchy and commitment*

Munday, M. and Peel, M. (1996) *The Japanese Manufacturing Sector in the UK: A performance Appraisal.* Paper presented at ERU conference, Cardiff.

NEDO (1991) *Teamworking: A Guide to Modular Manufacturing in the Garment Industries.*

Nelson, D. (1980) *Frederick W Taylor and the Rise of Scientific Management.* Madison: The University of Wisconsin Press

Neuman, J et al (1995) *Change Everything at once.* Tavistock Institute

Newstrom, J.W. and Davis, K, 1993, *Organisational Behaviour: Human Behaviour at Work.* McGraw Hill.

Oliver, N. and Wilkinson, B, (1992) *The Japanisation of British Industry: New Developments in the 1990s.* Oxford: Blackwell.

Ormerod, P. (1994) *The Death of Economics.* Faber and Faber.

Ostrowski, S., Millman, T, Carsten, C and Bicheno, J. (1996) *Dimensions of Leanness.* Paper presented at ERU conference, Cardiff.

Oxborrow, L. (1996) *Strengths and Weaknesses of the East London and Lee Valley clothing sector.* November 1996.

Palloix, C, (1976) *Le proces de travail. Du fordisme au neofordism', La Pensee, no.185, February 1976.* (Op cit Aglietta).

Parry, I., Tranfield, D. Smith, S. and Foster, M. (1996) *Leadership in the Front Line: The Changing Nature of Supervision in UK Manufacturing.* Paper presented at ERU conference, Cardiff.

Patton, M. (1987) *Qualitative Evaluation Methods.* London: Sage.

Peeters, M. and Pot, F. (1993) *Integral organisational innovation in the Dutch clothing industry.* International Journal of Human Factors in Manufacturing. Vol. 3 pp. 275-291

Peters and Waterman (1992) *In Search of Excellence.* Op cit Thompson and McHugh (1984)

Piore, M. J. and Sabel, C.F. (1984), *The Second Industrial Divide: Possibilities for Prosperity.*

Proctor, S. and Acroyd, S. (1996) *Are the British Bad at Flexible Manufacturing?* Paper presented at ERU conference, Cardiff.

Ragin, C.C. (1989) *The Comparative Method: Moving Beyond Qualitative and Quantitative Strategies.* University of California Press.

Reeves, T., Turner, B. and Woodward, J., (1970) *Technology and Organisational Behaviour*, in Joan Woodward (ed.), *Industrial organisation: Behaviour and Control*, Oxford University Press, London, pp.3-18.

Riley, S. (1993) *Take a Modular Test Drive*. Bobbin. August.

Riley, S. (1989) *Modular Sewing is not every company's perfect solution.* Apparel Manufacturer.

Roberts, C. Z. An *appraisal of UPS for Quick Response Manufacturing.* Bobbin, Vol. 27, No. 7 March 1986.

Rosborough, J. (1995) *Changing Gears: Emerging Labour Strategies in a Light Manufacturing Firm*. Labour Process Conference, University of Central Lancashire. April 5th-7th.

Rose (1975) *Industrial Behaviours: Theoretical Development Since Taylor.* Lane: London.

Roth, S. (1992), *Japanisierung oder eigener Weg? (Japanisation or Own Way?)* in Frölich and Pekruhl (eds.).

Rubery, J. (1987) *Flexibility, marketing and the organisation of production.* Labour and Society. Vol. 12 no. 1 pp 130 - 151.

Ryan, G. (1995) *Theoretical Basis for the QWL Concept: Contributions from Activity Theory.* University of Siena.

Sabel, C. (1982) *Work and Politics: the Division of Labour in Industry.* Cambridge: Cambridge University press.

Salaman, G. (1980). *Roles and Rules* in G. Salaman and K. Thompson, (eds.) *Control and Ideology in Organisations*, Cambridge: MIT Press.

Sayer, A. (1986) *New Developments in Manufacturing: The Just-In-Time System.* Capital and Class. Vol. 30. pp 43 - 71.

Schein (1986) *What You Need to Know Labour Organisational Culture.* Training and Development Journal. January. Vol. 40 Part 1 pp.30-33.

Schonberger, R.J. (1982) *Japanese Manufacturing Techniques. Nine hidden Lessons in Simplicity.* New York: Free Press/Macmillan

Shaiken, H. (1984) *Work Transformed: Automation & Labour in the Computer Age.* Holt, Rinehart & Winston: New York

Smith, A. (1976), *The Wealth of Nations*, Chicago: University of Chicago Press, pp. 7-16. and pp. 21-25

Smith, R, (1981), *The Historical Decline of the UK*, in Aaronovitch.

Streeck, W. (1987) *The Uncertainties of Management in the Management of Uncertainty. Employers, Labour Relations and Industrial Adjustment'*. Work, Employment and Society. Vol.1, No.3 pp.281-308.

Summers, D. (1993) *Doubts over effectiveness of Japan-Style work Practices*. Financial Times. Monday 19th July, p.1.

Sutton, A., Hickling, A. and Friend, J.(1977) *The Analysis of Policy in Structure Plan and Preparation.* IOR Coventry.

Tavistock Institute (1995) *Reinforcing and developing teamwork in manufacturing*

Taylor F.W. (1908) *The Principles of Scientific Management*

Taylor J.C. (1985) *The Implementation of Excellence.* Industrial Management.

Thompson, P and McHugh, D, (1990) *Work Organisation: A critical Introduction.* Macmillan

Tolliday, S. And Zeitlin, J. (1986) *Between Fordism and Flexibility.* Oxford: Basil Blackwell, pp.1-25.

Totterdill & Zeitlin (1989), *Markets, Technology and Local Intervention : The Case of Clothing.* In *Reversing industrial decline? Hirst, P and Zeitlin, J (ed.)*

Totterdill, P.(1994) *Markets, Technology and Skills: Teamworking and Competitive Advantage in the Apparel Industry.* Presented at the 75th World Conference of the Textile Institute. Atlanta.

Totterdill (1995) *Teamworking: Building Communities of Expertise.* Paper Presented at Restructuring Manufacturing Conference. Manchester, September.

Toyota Apparel Equipment (1993) Publicity Material.

Trist et al (1963) *The Emergence of System Theory in the Study of Organisation.* London: Tavistock Institute. Document T40.

Trist and Bamforth (1951) *Some Social and Psychological Consequences of the Longwall Method of Coal-getting.* Human Relations. Vol. IV No.1

Trist (1981) *The Evolution of sociotechnical systems. A conceptual framework and an action research programme.*

Trochim, W. (1989). *Outcome Pattern Matching and Program Theory.* Evaluation and Program Planning, Vol. 12, pp. 355-366.

Tucker, M. and Davis, D. (1993) *Key Ingredients for Successful Implementation of Just-in-Time.* Business Horizons. May-June Vol. 36 Part 3 pp. 59-65.

Tyler, D.(1993) *A review of application of simulation to clothing manufacture.* The Journal of Clothing Technology and Management. 10 (2) pp. 11-21.

Tyler, D. (1989) *Managing for production flexibility in the clothing industry* Textile Outlook International. September. pp. 63-83.

Van de Ven, A. and Joyce, W. (1981) *Perspectives in Organisation Design and Behaviour.* Wiley and Sons Publications.

Van de Ven and Astley (1982) *Perspectives in Organisational Design and Behaviour.* Wiley.

Varaiya, P. *Productivity in Manufacturing and the Division of Mental Labour*. Paper presented to Symposium on Research and Development Industrial Change and Economic Policy, University of Karlstad (1987).

Verespej, M. (1993) *What's the message of your pay system ?* Industry week. Jan 18th p.33.

Wall et al (1990) *Advanced manufacturing technology, work design & performance*

Wall, *Operator work design & robotics system performance*

Walton, R. (1979). Work Innovations in the United States, *Harvard Business Review*, July-August

Walton, R. (1979) *Work Innovations in the United States.* Harvard Business Review, July-Aug.

Walton, R, (1985) *From Control to Commitment in the Workplace*. Harvard Business Review, March - April.

Webb, S. (1990) *Modular manufacturing : the deign of group incentives.* Apparel International.

Weick, K (1979). *The Social Psychology of Organising*, 2nd ed. Reading, MA: Addison-Wesley

Weintraub (1987) *Modular Manufacturing: A Step Forward.* Bobbin 29 (3) pp.24-29.

Westbrook, R and Williamson, P. (1993) *Mass Customisation : Japan's New Frontier.* European Management Journal, Vol.11 No. 1 pp.38-45.

Whitehill, A.M. (1991) *Japanese Management: Tradition and Transition.* Routledge.

Whittington, R. (1989) *Corporate Strategies in Recession and Recovery : Social Structure and Strategic Choice*. Unwin: Hyman

Wickens, P. (1987) *The Road To Nissan: Flexibility, Quality, Teamwork.* Macmillan Press.

Williams, M. (1993) *East Meets West: Japanese Working Practices.* Personnel Today Jan/Feb p.34-35.

Williams K., Cutler, T., Williams, J. and Haslam, C.(1987) *The End of Mass Production?* Economy and Society. Vol.16 No. 3. August, pp 405 - 439.

Williams et al, (1989), *Facing up to manufacturing failure.* In *Reversing Industrial Decline?* Hirst, P and Zeitlin, J (ed.)

Wood, S. (Ed) (1989), *The Transformation of Work? : Skill, Flexibility and the Labour Process,* London: Unwin Hyman

Wright, M and Edwards, P (1996). *Does Teamworking Work, and if so, Why? A Case Study in the Aluminium Industry.* Paper presented at ERU conference, Cardiff.

Yin, R. K.(1994) *Case Study Research: Design and Methods.* Applied Social research Methods Series. Volume 5. 2nd edition. Sage Publications.

APPENDIX 1: THE CENTRE FOR WORK AND TECHNOLOGY

Work and Technology is a specialist research and resource centre with a commitment to three principle areas of activity:

- Working with public policy agencies in the economic development and labour market field. This involves research and policy development in partnership with organisations at local, national and international levels.

- Promoting the development and implementation of new approaches to work organisation, workplace culture and training. This takes place through hands-on involvement with companies, through research and development, and through the exchange of experience with other centres across Europe.

- Research relating to the regeneration of cities, rural districts and regions in Europe, including public policy, business strategy and partnership.

Background

The origins of the Work and Technology Centre lie in a policy study of the apparel industry, commissioned by Nottinghamshire County Council in November 1989. This study was suggested and undertaken by Chris Farrands and Professor Peter Totterdill. Its objective was to assess the implications of team-based production systems, both for the competitiveness of the industry and for its workforce. The findings pointed to significant benefits for companies in terms of versatility, responsiveness, quality and cost, while shopfloor operatives could potentially enjoy an improved quality of working life as well as enhanced access to skills and career opportunities. One of the principal recommendations of the study was to create a major policy initiative including a programme of research and monitoring relating to the textiles and clothing industry within Nottinghamshire. The initiative would also provide practical assistance to companies seeking to move from conventional mass production systems to more flexible, teamwork-based approaches.

After lengthy negotiations, funding was secured from a consortium comprising Nottinghamshire County Council, Nottingham City Council, Greater Nottingham Training and Enterprise Council and North Nottinghamshire Training and Enterprise Council. The Initiative, known as Work and Technology, was located within the Department of Fashion and Textiles at Nottingham Trent University and began work at the end of 1991.

Within a short space of time Work and Technology had become one of the most significant sources of European expertise on teamworking in the textiles and clothing industry; it is now working with companies throughout the UK as well as in several other countries. A Europe-wide network of partners has also been established, and collaborative research, development and dissemination projects have been undertaken with institutes in twelve other EU Member States.

APPENDIX 2: THE TEAMWORK USERS' GROUP

Background

The *Teamwork Users' Group* was established in September 1993. It was created in response to widespread demand for a forum in which UK textiles and clothing companies using team based systems could meet to exchange ideas and share experiences. Since the Group began, a total of 44 companies have attended meetings and factory visits organised for the Group.

The aim of the Group is to promote the competitiveness of textiles and clothing firms through:

- The exchange of information and experience relating to teamworking between member companies
- The development and dissemination of a range of initiatives to improve the performance of team based systems
- The comparison of performance of different approaches to teamworking within the UK industry and abroad, and the analysis of experience in other sectors
- The exchange of experience and practice in teamwork-related training and technical support services for textiles and clothing firms, including that from other EU countries
- The undertaking of relevant research activities
- Collaboration with appropriate partners in programmes initiated by the European Union and with other joint projects to assist the industry.

Seminars

Prior to each seminar, a questionnaire is formulated in order to identify the key issues relevant to the topic for discussion. Members are encouraged to submit specific questions they would like answered. The questionnaire is then circulated to all member companies and replies are returned to The Centre for Work and Technology.

The results are tabulated for analysis, from which key issues are extracted for discussion. They are then distributed to all present and the questionnaire results are presented during the seminar. Where relevant, external experts on the subject are invited to take part in the meetings.

Syndicate groups are formed during the seminar and participants are asked to discuss the key issues. Members of the syndicate groups report their findings, from which conclusions are drawn by the Chair. Details of the discussions and the outcomes of the day are minuted and circulated after each meetings. Meetings to date have included the following:

- Payment systems
- Team selection
- Operator training
- Management training
- Video review
- Continuous motivation
- Balancing productivity and flexibility
- Alternative cost accounting for teamworking
- Teamworking throughout the business
- Supply chain management

Factory Visits

Factory visits offer an excellent opportunity for members to gain insight into particular examples of teamworking. An overview of the whole business can be gained and ideas exchanged. Questions can answer sessions at the end of the factory tours offer an opportunity for members of the group to express their views of the company's methods of teamworking and to ask detailed questions.

APPENDIX 3: THE SCOTTISH TEAMWORK USERS' GROUP

Based on the success of the Teamwork Users' Group, during August 1995 the Scottish Teamwork Users' Group was formed, for companies in Scotland which are unable to attend meetings in Nottingham. Topics discussed to date include:

- Payment systems
- Team selection
- Supervisor training
- Operator team building

Factory visits are hosted by members of the group and managers from other industries and coincide with the meetings

APPENDIX 4: MONITORING AND EVALUATION

The monitoring and evaluation procedure has three main objectives:

- Firstly, The Centre for Work & Technology is committed to provide funding bodies with an assessment of its impact on organisations with which it works. The report details the effectiveness of the Centre in delivering training and technical support, thus ensuring its own continuous improvement and development.

- Secondly, The Centre for Work & Technology wishes to create a body of data concerning the role of teamworking in enhancing the competitiveness of companies. In part this provides a resource for further research and also helps to establish the significance of work organisation as a focus for public policy at local, national and European levels.

- Thirdly, a principal objective of The Centre for Work & Technology is to improve employment opportunities and the quality of working life for women within the clothing and textiles industry. The extent to which benefits for operatives are created is in part a function of the quality of training and technical support offered to the company.

Information for the reports is gained from the initial audit report, all data compiled by members of the Centre during implementation, interviews with company personnel and questionnaires completed by operators. Personnel interviewed typically include Managing Directors, Factory Managers, Production Managers, Training Instructors, Supervisors, Quality Controller and Team Members (group discussion).

The reports are fed back to the company and presented to members of the Centre for Work and Technology.

APPENDIX 5: OTHER RESEARCH ACTIVITIES

The following are intended to provide an overview of some of the *most recent* research activities the author of this thesis has been involved in. The list is by no means exhaustive, but should give an understanding of the relevance of the activities which have been undertaken during the period in which this thesis has been written.

1. Strengths And Weaknesses Of The East London and Lee Valley Clothing Sector

This was a study commissioned on behalf of the London East TEC and the London Borough of Tower Hamlets in the period July - October 1996. Its aim was to analyse the current position of the industry in East London and to define a new model of competitive advantage based on an understanding of success elsewhere in the UK and Europe. It also sought to identify obstacles to restructuring, make policy recommendations and evaluate the potential impact of a proposed 'Buyers Centre'.

Research for this study involved interviewing some 88 companies in the region, the process of which involved the author of this thesis and provided a broad and fascinating view of the industry in London.

2. Leonardo Da Vinci : Team Operator and Team Facilitator Project

This was a European project, funded under the 'Leonardo da Vinci' programme which involved participants from the UK, Denmark, Holland and Spain. The research phase was co-ordinated by the Centre for Work and Technology during early 1997. Its aim was to analyse current training provision for operators and supervisors in teamworking companies and thus identify the gaps and provide an outline for a suitable training programme. Again the analysis of data for this project provided a detailed understanding of the training requirements for these two particular groups of employees in companies using team based production in the clothing and textiles industry.

3. The European Work and Technology Consortium

The pilot study for this consortium began in January 1996 and following funding approval from DGV at the end of that year, the consortium gained its official status in January 1997. It comprises 18 members from 10 European member states from organisations operating under a similar format the Centre for Work and Technology. Again, the author of this thesis has had heavy involvement in this activity and has undertaken research directly for the consortium. This has primarily included writing case studies in collaboration with partners in the consortium, which can be found on the Internet, co-ordination of specific research activities, for example, exploring the issue of 'management change in learning organisations' and involvement in planning activities for the consortium. Close contact and collaboration with the 17 members has informed many of the discussions which have taken place in this thesis.

4. DTI : Management Change Project

This is a DTI funded project currently being undertaken by the Centre for Work and Technology and initially involves working with approximately 10 clothing and textiles companies over a one year period (January - December 1997). The author of this thesis is responsible for developing audit reports for each of the companies involved in the programme and is assisting in the production of a 'tool kit' to aid companies in the change process. Work directly with the companies to date has included assistance with strategy formulation and re-organisation of the shopfloor for an improved workflow. Involvement in activities such as these, though not directly related to 'teamworking' assist in a full understanding of the industry and of the issues most pertinent to managers of clothing and textiles firms.

APPENDIX 6: CATEGORISATION OF COMPANIES

The following categorisation was used in summarising the company sample in Chapter One, figure 8.

Menswear
Suits, jackets, trousers and shirts

Other
Bridal wear, household textiles, spun wool / cashmere

Childrenswear
Children's and baby's clothing

Outerwear
Waterproof jackets, casual jackets, ladies and men's overcoats, corporate outerwear, rucksacks and gaiters

Leisurewear
Knitted tops, jogging trousers and jeans

Ladieswear
Trousers, blouses, skirts and corporate wear

Underwear
Lingerie and men's underwear

APPENDIX 7: SELECTED CASE STUDIES

The following set of case studies have been selected from the databank to indicate the type and level of information contained in them. They form a representative sample of the range of companies visited for the research undertaken for this thesis. Copies of reports on all other companies mentioned in this thesis are available on request.

UK CLOTHING AND TEXTILES FIRMS

TEAMWORKING CASE STUDY

NOVEMBER 1994

OUTDOOR CLOTHING

CODE: Company D

Compiled by : J.F.McLellan

Interviewees : Operations Manager, Production Managers & Teams

COMPANY PROFILE

Products	Waterproof jackets, fleece jackets, rucksacks and gaiters
Main customer	Own brand
Seasons / year	Work in 2 seasons - summer and winter. They also make garments which are `4 - seasonal' - interactive.
Date of first team	1990
% Operating as teams	100%
Planned extension of teams	They aim to create teams in other areas of the business.

AWARENESS OF TEAMWORKING PRIOR TO ITS INTRODUCTION

Information about teamworking came from several areas. Some were ideas that the Operations Manager himself had; from other companies and observations elsewhere, talking to consultants and reading books. Also the Training Manager they employed at the time was an ex-consultant and had the task of 'educating them'. This was achieved through the use of videos, books and discussions, so the ideas were gradually 'planted' in the minds of the workforce. At the same time there was a 'wave' in the development in teamworking concepts.

What was felt to have influenced them most were the Hewlett Packard video, which demonstrated cutting down work in progress, and the book entitled 'The Goal', by E.I. Goldratt. One of the advantages of the book was that it was 'very readable' and had a good story line. A book called 'Zap' was also considered to be good in identifying what they had been through when they were managed in an autocracy.

"Everyone was involved from there on in. Once we had got the seeds sewn, everyone leapt in". Everyone was given the opportunity to become involved and voice their opinions. They explained that things had to change - demands had to be met on time, at the right quality.

At the time the company was looking for a new direction, they were trying to change the culture, the requirements, and the way in which the manufacturing department delivered to its customers. They were finding that they were being driven by commercial pressures put on them through things like *inventory levels, redundant stocks, changes in the market place.*

At the same time, the company was recovering from an 'oppressive' management style in the manufacturing area. There was no devolved responsibility. As a result, the Production Managers fundamentally had no responsibility for anything, but if anything ever went wrong, they took the blame. Further more they were faced with down-turns in the market due to the recession and an increasing pressure to reduce cost

THE INTRODUCTION OF TEAMWORKING

The Pilot Team

They began with a pilot team, which they got up and running, and had a good response from the rest of the workforce who wanted to know 'when it was their turn'.

They did not want to choose too easy a product, which would have given them false results, or too difficult a product because they were learning at the same time, and it would have put a tremendous strain on them. So they went for a `middle-of-the-road' product which they produced on a fairly regular basis. They wanted flexibility - to be able to change styles with a minimum loss of efficiency. The main thing was how people within the team reacted to it: "it was interesting to see them starting to take new ownership".

A second team was introduced 4-6 weeks after the pilot team, then the 3rd was 4 weeks after that, and then 2 weeks later they introduced another one and then they changed 3 or 4 at once! This pace of implementation was found to be far too fast for everyone involved.

Selection

For the pilot team they chose the group of people who made the product they had selected. By co-incidence that particular team also had a Union Representative working on it. This was seen to be a help because people thought `if she can do it, I can do it'.

In general, two people who are known not to get on well might be put on a team together as it is felt that it "should not effect their work". They do have conflicts and but believe they always will. Arguments which are work-related are considered to be quite different. Teams can go into a meeting room to sort out their differences if necessary. They have had 2 instances when teams have wanted one of the operators who was `getting on in years' to leave, as she needed help *all* the time. They tried changing her job around first, which did not work, so ultimately she was transferred elsewhere.

When teams need new members, the Production Managers usually choose who it will be, they introduce them to the team leader and take them around the cell; the operators have to accept their decision.

Recruitment

Interviewing guidelines are used in the recruitment process. Recruits are told that the company is different from others because they are teamworking. They do not, however, necessarily look for better communication skills, as long as they have the machining skills and are happy to work in a teamworking environment.

They would try to avoid people who have been working on the same job for a number of years as that person would not considered to be 'skilled'. They look for people who already have a number of skills. Multi-skilled machinists are not too difficult to find. Some leave and come back. It is believed that the higher rate of pay helps.

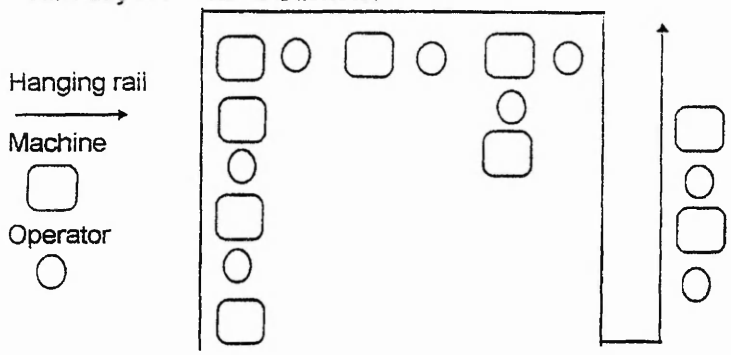
METHOD OF TEAMWORKING

Production is distributed across four manufacturing units. In the unit visited, they generally produce rucksacks and gaiters. From time to time, demand for other products increases, so those products are brought into this area. The machinists are sufficiently multi-skilled to be able to transfer to entirely new products.

The rucksacks require heavier duty machinery, and are very different to produce in comparison with fleece jackets. Starting from scratch, it will usually take 3-4 weeks for a team to change from rucksacks to fleece jackets, if they have gone through the change-over before, it takes 2-3 weeks.

All the teams have a hanging rail system. The shopfloor is 100% teamworking. They used to have a carousel system which carried work around in no particular sequence. This system has been re-designed to fit into the team environment. It has however imposed restrictions on the design of some of the teams. The 'S' shaped configuration of one for example inhibits communication.

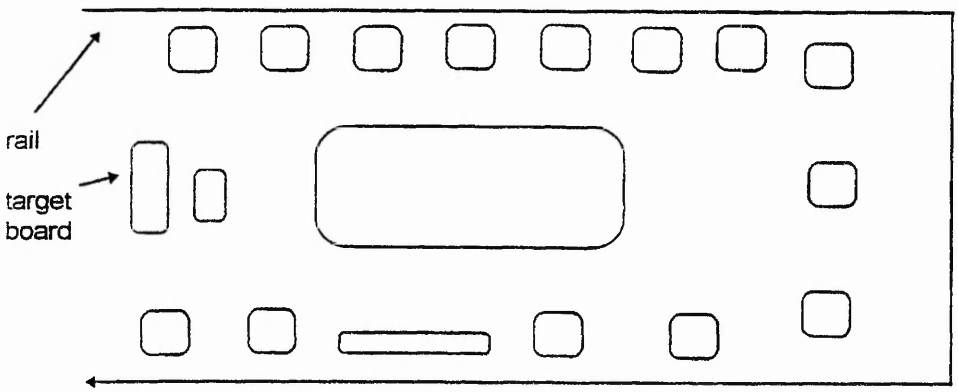
Team Layout - Fleece Jackets:



There are between 5 and 20 people per team They mostly stay within the same group as it has been found that they get a better efficiency and quality by keeping a team together.

Information which was previously only available to management is now displayed on notice boards . This includes data on: *direct labour cost, standard hours achieved for a month, standard minutes in pence per minute, attended hours, % efficiency, DHU's - defect per hundred units and seconds.* This is given for each module. However, it is thought that Operators probably do not understand the information as it has not been properly explained to them. This is something they would like to cover with training, but cannot because of their workload.

Team Layout - Waterproof Jacket



Product	Waterproof Jacket
Operations per garment	70-90
Operators per team	11
Machines per team	13
SMV per garment	77-160 mins.
Average bundle size	2-6

Garments are studded, packed and bagged for distribution in a separate section. Eyelet and press stud machines are sometimes shared between teams. There is also a separate section for marking position of studs, putting studs in, checking for marks, attaching cord grips and packing. There are 2-3 seam sealers in a team. The inspection is to ensure there is no chalk remaining - quality is checked all the time in the team.

In considering the design of teams, they thought about operators standing, but the cost of changing machinery was considered to be too great and operations are too long for operators to stand.

Electronic overhead displays are used, indicating actual efficiency, number of products which have been produced and target production. The overall aim is to have 80% efficiency throughout the plant.

Each team has an hourly target which is set by the Production Manager and the team leaders. The figure set depends on labour expected, style, knowledge of the style, expected efficiency etc. They try to make it realistic. It will then go back to the planning department who will calculate jobs for the week, day and hour.

Style changes occur every 2-4 weeks. They might have 4 style changes in a week, with no effect on efficiency. Sometimes a product has to be split between teams because of demand. They have a minimum of 96 garments in a run, and a maximum of 5,000.

They try to keep cycle times at 6-8 mins, because less than this is boring, 10-12 is too long for them. 6-8 mins can be between 2 machines. Cells are designed around this. If a garment has a high SMV (120) then it will be put onto a large team. They also consider the psychology - if a cycle is 1 min long, and they are working 570 mins at 100% efficiency, they will think that they have to process 570 garments in a day, which is an awful lot for their products, and psychologically they will feel it is an impossible target. Similarly if a garment had large work content, on a small team, would only expect 25 garments off, which is not much so the team might slow down because it looks easy.
Teams have names, such as: *Rockies, Sub-zero or Sacs R Us*. They chose their own names as a means of encouraging ownership of the cells.

Team Meetings
Teams have meetings whenever they need them, there are no restrictions. They ask the manager, and will either have them in a meeting room or on the factory floor. Some have 2-3 per week and then will go 3-4 weeks without, depends whether they need them. The Production Managers will also call meetings if they are needed. They can be used to identify training needs. Teams have a skills matrix, but they need to be updated.

Team Leaders
Team leaders are selected by the teams themselves. If there is bottle-neck, teams initially go to the team leader, but if the team leader is not there, they will move and reduce the bottle-neck themselves. The role of the team leader has caused the company some problems. It has been a case of 'learn as you go' for management.

Absenteeism and Holidays
Some time ago the company converted from a 39 hour week to a 38 hour week, which effectively meant changing from a 4½ day week to 4 day week (Mon-Thurs). Any Fridays worked are counted as over-time. This is seen to help the workforce because it gives a 3 day weekend, which has assisted in attracting labour. This runs throughout the year.

It has however had implications for the management of output and inventory. Previously they *had* to carry excess materials because if someone was absent from a working area because they were on flexi-time, there was a danger of work building up or running out, and they were not sure of whether they would be able to complete a particular production run because the people had the choice of whether they wanted to be there or not. This made it very difficult to manage. In addition, with the traditional for of working the cost of moving someone was phenomenal because their wages had to be made up, and as a result there was no incentive for them to "get on and work" with the new job. Performance would go from 100 to 10 and their attitude would be "why should I do any more, I'm being paid this high rate anyway". The sense of loyalty and commitment simply did not exist. This was also the case with style changes.

If someone is absent now, the team will cover their job, unless there is a lot of work or there are a lot of people off one team. Attendance is now felt to be very good - the 4 day week helps. The flat rate of pay is £165 per week - this is thought to be fair, as the machinists are being asked to change styles more frequently, and at least they get guaranteed earnings and can plan ahead.

PAYMENT

Teams receive a flat hourly rate with no bonus. Previousiy the company had been paying change-over allowances, so they were paying a lot of money, with very low levels of efficiency. The fall-back rate would

guarantee the original average earnings, and would be paid for weeks. Also, at that time they were not measured in pence per minute, but the cost to the factory for making garments, which told them nothing as the value of the products varied considerably.

Additionally, just prior to moving to teamworking, they tightened up their Standard Minute Values (SMVs). They had a lot of 'loose' values which had been put into place because of their piecework payment scheme. If that value was 20% loose, they could not do anything about it because it was exactly the same between different models. Piecework was phased out over a 1 year period for the 'higher bonus earners', where their income was reduced by a % over 3,6,9 and 12 months. Some people earned twice as much on the bonus scheme. 95% of the people went straight onto the flat rate of pay.

They subsequently made the values more accurate, and the overall value is now within ±1% accuracy. Also variables such as rest allowances were included in the values, in excess of the accepted rest hours. Allowances were 6%. All these have been removed, and there is now a standard rest period. Comparisons of output levels must take these into account - they are now getting a lot more money.

Pay in other industries in the area is thought to be much the same, though their working conditions and terms of contract are different. The canteen facilities used to be very small and run down, now they have been moved to a bigger building and are light, airy and modern.

TRAINING

During the year before the company was sold, all overhead costs were removed. "£1.5 million of costs were stripped out of the company almost over-night". This had a very damaging effect on the company, particularly culturally. It took out a lot of the good things which they had tried to put in and "the inevitable happened, the person in charge of projects such as TQM was taken out of the business". The Operations Director felt this to often be the case when a company is struggling to survive; that anything which does not seem imperative to the business is taken out. "Some people have the view that things like training and TQM are not imperative - they do not bring dollars through the door."

These pressures resulted in a lack of necessary support when developing the teamwork concept. The important thing now is that they have recognition from the new management of the company that there is a need for 'people development' in its widest sense.

The need for having the right people in place, trained to a high standard has been recognised as necessary if they want to achieve their business plans. They not only have this understanding, but they also have the will to do this. Through various initiatives they are starting to work towards this, and intend to pick up some of the cultural philosophies which were put in the company earlier.

Skills Training

Technicians teach the machinists any skills they need, on the shopfloor. Also, if the Production Managers see a bottleneck and recognise training is needed, they will ask the Tech-Manager to supply a Technician for the training. Teams also cross-train each other. If someone has done a particular job before, but not for a long time and needs help, the team leader will decide if the machinist can manage, and if not she will get a technician.

Team Building

In the past operators received a lot of training, when the TQM Manager was there, they found that having the teams working together doing different team building exercises worked well. It was part of a continuous training programme. The company would like to re-introduce this.

BENEFITS

Benefits Anticipated

Traditional production catered for very long run production and decisions were made around manufacturing efficiency and costs. "Styles were made for months and months on end and were poured into the warehouse well before the season started." So they were taking enormous risks because they had no idea what orders would be. One of the major changes they wanted to make was to deliver *within the season of the product.*

Also, if they were to manufacture closer to the period when they were going to sell the product, then they had to improve stock turns, requiring them to make the same styles *more regularly*, rather than making *once* for a

seasons' requirements - they would have to make them more often throughout the season. The previous philosophy was to feed the work onto the line and eventually it would come off, so if you kept feeding the line it would be OK. They had huge bottlenecks. Also machinist would hide skills to stop being moved around.

There were other problems too which they sought to solve - very high levels of direct:indirect staff, directs being 'value adding' people - machinists, and indirect being cutting room staff, stores, CAD, inspectors and management. When they first started the project they had a ratio of 1:1.

Additionally they wanted the operatives to see the finished product and enjoy greater skills flexibility of. In the traditional system operators did a single job on all styles.

The change to teamworking was also seen as an opportunity to alter the payment system. It was unfair to highly skilled workers and the change-over costs to the company were very high because efficiencies dropped significantly.

Benefits Realised

Four years ago, the cost per minute stood at 35 pence (Total costs of manufacturing + direct and indirect labour costs + overheads divided by standard minutes produced). Their costs are now in the region of 22-23 pence per minute. This has made the difference between whether they were able to continue to manufacture in the UK or not. They are currently expanding at a rate of 30% per annum in terms of sales.

The direct:indirect ratio is now 1:4 and labour turn-over is around 10%.

Absenteeism was atrocious, they actually turned is around and looked at attended time to try and be more positive! They used to have attendance of high 80s-early 90s%, now it averages around 96% attendance. "So, labour turn-over and absenteeism have both reduced dramatically, the costs have improved out of all proportion, and perhaps more importantly out of the whole thing, the level of quality achieved is light years in front of where it was...it is amazing".

Four to five years ago the company's name had become less popular in the retail trade, certainly in terms of their delivery. They did not deliver on time very often, and in terms of quality they were not what they used to be. Their delivery performance has now increased to 96%. In a more recent survey, their delivery performance and quality have both been found to be in the top figures, in relation to retailers' performance criteria they are seen to be at a very high level.

'Returns To Manufacturer' (RTMs) have dropped considerably, as have the number of seconds. Returns because of faulty products are extremely low, most of them are through fabric faults, rather than make-up faults. This does not directly affect them, though they do not want to see it happen at all because from a customers' point of view the brand label itself is unreliable.

QUALITY

Another achievement has been the enormous reduction in the number of quality inspectors. They used to have 64, and now they have 5, as a direct results of teamworking. "Now people are so much more concerned with their particular product - every machinist is an inspector". They are very pleased with this.

Before it was seen as only the inspector's job to deal with quality issues. The machinists now have more ownership and responsibility for quality. They had a number of problems some years ago when their biggest aim was delivery of the right product at the right time, price did not seem to be a problem because they were doing thousands of the same thing. The philosophy was to make as many of the same style as possible, and even though they had high incentive payments the overall cost was low. If they had a warehouse full of products that could not sell, from a manufacturing point of view it was cost effective, but from the company's point of view it was not.

"One of the dramatic things that took place then was that as people began to take on the ownership of quality, so also the whole environment became more open". At one time quality was a punishment - machinists had to correct faults in their own time, and would therefore not admit to there being a problem. If a problem was found by someone else, it was imposed on the machinist as a punishment, both financially, and because if there were too many faults, they were sacked. The prevailing culture was therefore to hide all their mistakes - a fear culture. So, in terms of measuring improvements in quality, they never actually knew how bad quality was in the first place because it was covered up. The goods would have gone out to the market place and been sold

and then returned, but people would have decided that they will never buy another one of this company's products again. This had to be avoided.

REACTIONS TO TEAMWORKING

By the operatives	On the whole, operators would not like to revert to traditional line working. There are some problems with the role of the team leader, which management already recognise and reliance on 'floaters' to balance production causes some friction. However, operatives now feel that they are able to discuss things more effectively and are closer to each other than before. Rather than feeling isolated when under pressure, they now have the support of the rest of the team. "I like it better than the way we used to work". "I think it is a much easier way of working to be honest".
By the Supervisors and Senior Management	Senior management just did not know what the result of the changes would be but suspect that other people thought they did. All the managers were happy with what was being done, and felt comfortable with it, but all of a sudden the pay dropped, and there was a strong threat that they would lose their jobs. The fear then reached supervisory level. They had a "good, solid, traditional, unionised supervisory structure. When it hit them .. it was desperate." The problem was that they were asking what was going to happen, but senior management just did not know - they could say it was going to change, but to what they did not know. This was deserved pressure - people were scared, they thought their livelihoods were going to disappear, or their authority or position or everything, so they were feeling very nervous. Trying to manage this was very difficult, and the Operations Manager admits to having a few sleepless nights over what he was going to do, how he was going to do it and what he was going to say. They got through it jointly, because he did not really know the answers, and it was not until he started to open up with people who were involved that they started to provide some solutions. This is one of the fears that the Operations Manager had too - the 'letting go' - the feeling that because you are the director you have to provide all the answers "which is absolute rubbish ... you think you do, and other people think you do, but if you can start to take your hands off a little bit, and guide rather more than direct, then it starts to fall into place". Supervisors for traditional lines are selected for their sewing skills, and assumed to be good managers. They were not given any management training, and if they were, it was very poor. Given the culture of the way they were working, the only method of management they knew was authoritarian. They had little or no skill for managing people and caused more conflicts between themselves and the people they were trying to supervise than they actually solved. What they did have was superb sewing skills, because they were always selected for their knowledge of product and their ability co construct it. So what they decided to do was to convert them to a 'tech-team' - technicians, whose function it is to work between design and manufacturing. They will take a product, make up first samples, and get it right at the 'front end' of the process. As the product starts to come into manufacturing they will 'de-bug' it. They do all the break-downs and design the way in which the product will be made when it is pout in the team. When a style change takes place, they will take that style change into the team, and, depending on the complexity of the change, and the skills of the group, either 1 or up to 5 technicians will take the style to them and 'blitz' them at once and carry through the style change. The drop in efficiency is now compressed to 4 hours from weeks-months in a change over. So, these people (supervisors) have been used for the skills they actually have and they are very happy. They say they have got a lot of job satisfaction and all the 'hassle' has gone out of their lives because they were in a confrontational situation before and now they are involved more, and can see the results of their work. So, they have completely lost that level of the hierarchy.

By the union	They had a lot of support from the union. They talked to them early on and kept them involved throughout the whole process. They were very supportive. Even went they reached a point where they had to make a lot of people redundant, the union gave them support. This only took place because they had built up a relationship with them through the whole process. They consider themselves to have a constructive working relationship with the unions. Union membership stands at 60%, where it used to be around 80%. The Operations Manager feels that they do not communicate well as a company and it is something which they need to develop, but have not done yet. They tend to use the union as an aid to communication with the shopfloor, which has caused them some problems; particularly with the flat rate of pay and a 'cashless payment system', as things normally associated with the union are starting to disappear, and people do not feel that they need the same sort of protection, also they find management are more approachable. For this reason union membership has reduced. This situation caught them out a little in terms of their communication.
By Middle Management	One Production Manager is now responsible for 2 units, work study, mechanics, the budget for buildings, the budget for plant maintenance and equipment. He would not want to revert to the traditional system - he can see that the machinists enjoy work more. Their philosophy is now to employ them "from the neck up". They solve problems themselves, and if he says he's going out for the day on business, they say it's OK because they can manage without him anyway! The other Production Manager is now responsible for 2 manufacturing units, he is also the quality manager, security manager etc. Both feel that a lot more responsibilities have been passed down since a whole level of management has been stripped out. There is more pressure on them, but a different sort. "It's about letting go. If we had not let go of other responsibilities as a traditional production manager, we would not have had the time to deal with the other parts of the company, the parts that the managers of [the company] DID NOT get involved in. They did not get involved in budgets for next year, that was all done for us. When it came to how the company really worked and was really organised, we did not have a clue". They were just reprimanded for spending too much money. They have a commitment from 99% of the workers on the shopfloor - "the commitment was already there, it was just getting them to own up to it".

FURTHER EXPANSION

They have also created, with varying levels of success, teams within other areas of the business as well. They are currently putting together cross-functional teams. The manufacturing division will also become its own profit centre and will effectively work alongside any manufacturers the company works with, world wide. There will be a co-ordinator for footwear, for example, who will communicate with suppliers in Italy etc, so there is a common thread as far as the supplier is concerned. Over time they will develop this further.

PROBLEMS

They have problems with reconciling training requirements with a production schedule that is forcing them into an over-time situation, knowing that they are already running behind delivery requirements.

They are unsure of how to deal with problem team members who perhaps are not pulling their weight and doing their fair share. To overcome this, they let them talk it through themselves and sort out their own problems.

HINDSIGHT

The initial pace of implementation was simply too fast. If starting again they would plan a much slower, more steady pace.

ADVICE TO OTHER COMPANIES

Teamworking relies on "commitment from the top". In trying to make people understand advantages, they have hit some barriers. Many of their problems have arisen due to a lack of commitment from the Board of Directors who are against the idea of cross-functional teams: "in life things happen in 'tubes' of design, finance, marketing etc and 'ne'er the twain shall meet', but one tube is better than the other". This structure has meant that nothing has ever worked as well as it might.

Case Study Company E

Monitoring Report

Initial Contact
The company was first visited by members of the Work & Technology team in November 1993, and subsequently an awareness session was presented to key members of the organisation in February 1994. Initial introduction to the Managing Director (MD) was through direct contact with members of the Work and Technology team, during which time information conveyed was clearly stated and relevant to the company. This was followed by a visit to Speedo (International) Ltd, where teamworking had been installed by Work and Technology six months previously.

Immediately following the awareness session, a 4 day 'training of trainers' course was agreed, with support from Greater Nottingham Training and Enterprise Council (GNTEC). This was carried out by Work and Technology and an independent training consultant, between March 3rd and April 13th. An audit of the company was then carried out by Work and Technology in May of that year and it was agreed that the company required 'management team building' before teamworking could be further discussed. A three day training session was thus conducted by the Work and Technology team in July 1994, and following this it was agreed that management team building should form the principal element of the project. At this point GNTEC was approached again, and funding covering 75% of costs was agreed.

Initial Audit
Work and Technology was considered to be the appropriate organisation to carry out the necessary training as the company management did not have the skills to make the changes themselves.

Considering the broad scope of people the presentations were given to, the MD feels the Work and Technology team presented the information well. He further stated that he "could not fault" the quality and delivery of information given. His only concern was in ensuring teamworking was not just 'another good idea' and he thus expressed that he did not want to go ahead with teamworking immediately. "I was in favour of teamworking, but I would not entertain teamworking on the factory floor unless I felt there was a stronger measure of teamworking in the management." Some members of the management team were working on their own "and it had a knock-on effect".

Training
Operator training was considered to be good by the MD, and the independent training consultant was effective in her skills training for the machinists, however not all team members agreed with this. More detailed information on this is given in section 4.2 of the report. Management training was considered to be effective, and made the management team take a step back to consider things which they had not before. Details of the management training can be found in section 4.1 of this report.

The Workforce
The teams both state that they would not like to revert to traditional production methods having worked on teams. This is probably the clearest indicator that the changes made in the organisation have been positive. However, there are some issues of concern raised by team members which are addressed in section 5 of the report. Regarding the management team, some of the longer serving members of staff are still "difficult to cope with", but are loyal to the company and on the whole the management team building has helped staff become more communicative.

Technical Support
Technical support was generally good and "the balance between Geoff's management experience and Carole's personnel expreience" was described as extremely effective. Additional support offered by Work & Technology throughout their contact with the company has been invaluable to them, particularly support in areas such absence control, skills registers and job descriptions. Production and training meetings were considered to be very useful. "She's very down to earth and calls a spade a spade, but she knows what she's about". Continuous help and support from Work and Technology's research student was also noted, particularly in relation to assisting the training instructor in setting targets and offering assistance with the compilation of data for the MD. His suggestion to offer the 'Slips' Team a greater variety of products to relieve boredom has also been welcomed. This team were having lots of personal differences, and had been told to sort themselves out and work as a team or they would be disbanded. Having more variety seems to be making some difference.

The strategy meetings conducted by Work and Technology were found to be effective and well presented. In particular, it helped to "bounce ideas off someone else, as being an MD is a lonely business". The MD pointed out that it was easy to slide into an ineffective way of working when there was no-one to discuss ideas with. It challenged him and others. He feels communication is a lot better now than it was 2 years ago, but there is still room for improvement.

Financial Assistance
The finance available played a part in the decision to go ahead with the project, and the MD is hoping to attract further funding for a second phase of teamworking in the New Year. GNTEC have not visited the company.

Performance Indicators
From the audit the following were both expected and achieved:

An ability to respond quickly to allow repeat orders 
To unlock potential of shopfloor 
To improve cashflow 
To improve quality and instigate pride in the product 
To reduce absenteeism 

Excess costs have not improved although they could have become worse either, so the MD's 'gut feeling' is that the effect is positive.

He has looked at common styles with conventional production and teamworking, but can see no major differences between quality for the two. Last week lines had 0.57% rejects and teams had 0.69 % rejects. However, if there is a fabric fault the teams will stop production and report the fault, whereas the machinists on the lines would continue to make up the garments because they are on piecework, so it is " a number crunching game" for them. The teams "own their own quality" and if they are unsure about the quality of the garments, they will ask The MD to check and decide if he wants to pass them. An example of such a case was given; the traditional lines once made 2000 of a cut with black marks which cost £200 to be dry cleaned. On the team they had the same problem, and by the third garment they noticed it and they dealt with it at that stage. One of the machinists noticed that oil was dripping from

the needle bar, so it needed to be cleaned every 2 dozen garments. Machinists on the traditional lines would not take this initiative.

Absenteeism was 10% when the audit was carried out, and it has reduced, however they have had unavoidable absence from some of the team members.

Concerning, labour turn-over, 7 operators left the company of which 5 came back. Of the other two, one left due to illness and the other (a team member) left Nottingham. The company still finds it difficult to attract skilled workers, though by moving towards more teamworking, packers will be trained to machine, reducing this problem.

In the audit, work in process levels were 5-10 days, this was reduced to one day, but it has increased considerably again, partly because they are producing more. Balancing production is considered to be more difficult on conventional lines; the multi-skilling of team members helps balance production in this sense.

Throughput time is 2-8 weeks on conventional lines, whilst teams work is delivered within the same week.

Hindsight

The only disadvantage they have come across is that if the first machine on the team breaks down, the whole team is out of work, other than that, all the effects have been positive and in the long term the MD would like to have 100% teamworking "because it doesn't make sense not to."

He would recommend teamworking to another company, and has done. He feels that with the further introduction of teamworking planning would be a lot easier, particularly in terms of balancing production. "If I could do it without the blood sweat and tears that I had the last time, I'd go for it tomorrow!". He likes the quick response element - the garments are cut, sewn and out of the door very quickly and it is forcing people to plan better, in contrast to conventional production. His problem is deciding which product line to extend teamworking into. It is still not perfect by any means as they still have high excess costs, machine breakdown and personality differences with team members, but on the whole quality standards are far better and seconds have reduced. Quality problems with fabrics are the biggest problem to the customers, but The MD is pleased with the teams themselves.

In summary, and in the words of the MD, there is absolutely nothing which Work and Technology could have done better!

ACTION POINTS

- Dealing with the more "difficult" members of staff
- Addressing boredom and personality differences of the 'Slips' team
- Assessing excess costs and machine breakdown
- Obtaining more quantifiable data for comparisons

3. COMPANY OVERVIEW

General Information

Since initial contact with the company in November 1993, the organisation structure has changed. The production manager has been made redundant from the company and a sales manager has been appointed. Work once carried out by the production manager has been divided between the MD and other staff, such as the training instructor, who now prepares garment specifications. The absence of this role is not particularly noticed by members of staff. The sales part of the MD's activities have now been passed on entirely to the new sales manager, thus freeing some of his time to cope with the additional work from the loss of the production manager. The sales manager is doing a much better job of selling, partly because he has more time and also because he is able to work with the designer in a more effective way than the MD, "he is more focused on the right type of orders". This new structure is considered to be "more effective".

This also had an effect on communication as once the production manager left, there was no longer a 'middle man' and people came directly to the MD. For example, one member of staff questioned why some machinery had been bought and not used and although it was too late to send the machinery back, they can now make sure that sort of thing doesn't happen again.

Despite these improvements, and a clearer strategy at senior management level, personnel at middle management level and below are unaware of the company's objectives and do not contribute to the development of a strategy. However, they do not consider this to be important to their own roles. The training instructor knows little about customers other than that they come into the factory to asses new styles. The supervisor is not at all involved in the company strategy and does not know anything about the customers - "that's [planning and purchasing]'s job".

Markets

When Work and Technology first visited the company it had 10 customers. Since then it has lost Tesco, which it did not want to do and Empire Stores which was not such a problem, as they were not making a profit on their orders. However, they have opened up 3-4 new accounts, including Morrisons, which more than cover the losses of Tesco and Empire Stores.

Manufacture of waist slips originally accounted for 80% of production and had reduced to 50% during the audit and is reducing still further. The losses in waist slips are being replaced by full slips, cropped tops and brief sets. Waist slips accounted for £123,000 of production, but now full slips have equalled them, now accounting for £125,000. Full slips were not popular a while ago, but are now having a revival. The flexibility of the teams helps change from one product to another, and if there were more teams in the factory, it would be easier still.

The number of styles has considerably reduced. Whereas there were up to 21 styles in production before the audit, there are 5 main styles now. They used to make dresses, bras, and night-dresses as well, but no longer do so. They were not making enough money and productivity was poor because they just kept on changing styles.

Customers satisfaction and delivery performance is not assessed formally and new accounts are particularly problematic. They mostly deliver on time, but have not got such a good

reputation with GUS, which is both their fault and GUS's. They are assessing their custom with them at the moment.

Planning
More pressure is put on planning now, as information needs to be gained quicker. The training instructor faces occasional problems when information is given to her last minute as really she needs it well in advance. She used to just collect packing details from the production manager, but is now responsible for collecting information herself, with help from planning and purchasing.

They are becoming more sophisticated about assessing lines which are profitable or loss-making. They can also evaluate costs much more effectively than they used to be able to, particularly as the figures they now produce are current, rather than historical.

Finance
The company's turn-over has grown, whereas the number of staff employed has decreased. In the year ending 1994, the company made a loss of £82,000 and aimed to break even. They are still working towards this, and a lot depends on whether Littlewoods take in all their stock (their year end is in October). They have sold machinery and cleared stocks to try and redress the balance (They had 92 machines for 24 machinists at one time). The problem is mainly due to tighter margins from customers. They are also reviewing contribution to standard hours etc.

Major Recent Changes
One of the most major changes for the company has been the redundancy of the production manager. Problems with him were encountered at an early stage, and following a 'management team building day' a frank discussion took place in which it was clear that problems existed between himself and the MD, mainly triggered by the ineffectiveness of the production manager. In January 1996 the production manager was made redundant.

Future Strategy of the company
The MD would like to extend teamworking further on the shopfloor, with an ultimate aim of becoming 100% teamworking. When they do extend it, the training instructor suggested that they should ask all the machinists again if they want to become team members as opinions may have changed. If the factory became 100% teamworking, she feels some may need more persuading than others, principally because of personality differences.

Additional Support
During the management training, procedures were also set in place by Work and Technology staff for absence control, a skills register and job descriptions. In addition Work and Technology's research student has provided the training instructor with garment specification sheets which she completes on a daily basis. Though she knows what is happening anyway it helps to see it written down. The training instructor has had a lot of contact with Work and Technology's research student who has spent time with her explaining the tables, and giving her the confidence to try things out herself. She has found the support offered by the Work and Technology team very effective. Though sometimes she finds it frustrating, she recognises it is necessary as "you're learning all the while". She is also "learning with the teams, they realise they have skills which they have not used. One young lady only did overlocking... going onto the team she has shown us what she can do and that she can achieve it."

A placement student from Nottingham Trent University also worked in the company during the implementation of teamworking. She produced target sheets for the teams to fill in and trained them to do so. They completed them whilst she worked for the company, but once she left, the training instructor took over the task of filling them in, because she's "got into the habit". Now the teams tell her if she's got it wrong.

Similarly, the placement student used to make sure the teams kept their workstations tidy, but since she has gone, they are no longer bothered. The training instructor tidies up the plastic from the bagging machine sometimes because of safety reasons; they've got used to her doing it now.

ACTION POINTS

- Awareness of company objectives at middle management level
- Improvements in production planning to avoid last minute panics
- Assessment of customer satisfaction and delivery performance
- Housekeeping of team members

4. ANALYSIS OF WORK AND TECHNOLOGY TRAINING

4.1 MANAGEMENT TEAM BUILDING TRAINING

Management team building training took place over a period of 10 months (July 1994 to April 1995), with 3 days of Management Team Building Training, followed by SWOT (Strengths, Weaknesses, Obstacles and Threats) analysis, in which the following were identified:

Strengths
Well established, experienced, reliable
Skilled on and equipped for the company's traditional garments (slips).
Offer customers good value for money and acceptable quality
Good financial control, EDI and (potentially) IT systems
Design (hidden strength)
Variety and stability of customers

Weaknesses
General
Failure to see change as a challenge
Lack of expertise on structured garments (bras) and unstable fabrics
Layout and organisation of existing factory
Inadequate pre-production, buying and planning systems
Insufficient internal liaison
Insufficient training

Sales, Marketing and Design
Major product group (slips) is a declining market
Failure of existing customers to see the company as a source for other products
Lack of Specific sales and marketing function to research other markets and customers
Having a design agency as a major customers limits the design service available for other customers
Inability to achieve a constant production flow throughout the year.
Difficulty in remaining price competitive
Design work often not focused on a specific customer

Opportunities
Improve profitability by increasing volume through existing factory
Develop prime accounts of Tesco and Littlewoods' Stores
Develop export markets (Europe / Middle East)
Develop direct mail
Develop new products (e.g. blouses, swimwear, large sizes) for existing customers
Invest in new equipment and technology
Source some garments (e.g. briefs) outside
Develop quick response systems
Scope for saving in raw materials

Threats
Complacency
Imports
UK competition
Decline of the slip market
Lack of clear marketing strategy
Inability to recruit staff
Risk of losing major accounts
Risk of bad debts
Inability to produce bras profitably
Risk of over-dependence on the design agency
Poor material supply sources
Cost of supporting expansion
Payment security of new accounts (especially export)

In order to carry out the SWOT analysis, the MD was asked to collect data on sales / customers. In one of the meetings with Work and Technology, he commented "looking at these figures has changed some of my conceptions about the business". This type of analysis was thus an effective catalyst to the company re-assessing its position. A list of 'possible actions' was produced by Work and Technology, in which it was noted that the intention was to give the company a starting point, and nothing was prescriptive.

The subsequent strategy planning meetings were slow, as the information needed to proceed was not always collected by the agreed times. At this point certain frustration was experience by the Work & Technology team, as the process seemed to stagnate. Ultimately, the strategy evolved, mainly driven by the MD. It was agreed that the company should aim for 40% growth over a one year period and profit increase of 3.5%, with concentration on simple garments (slips, vest tops, bodies etc.). A review was set for March 1995 to consolidate the decisions into a formal statement, however, by April, in the final review meeting, although the headings for the statement had been agreed, no strategy statement had been produced.

In the final review meeting, the MD wanted the management team to take responsibility from there on and focus on the company in the year 2000. The Work and Technology teams' commitment to ensuring that the company takes ownership of the project was clearly demonstrated by these remarks.

In the initial audit and during the SWOT analysis, it was the company's intention to introduce two new companies to direct sell to the public by mail order. Though it seemed "a good idea at the time", it was not successful. Colour brochures of the products needed to be produced, which would have cost £20,000. The MD produced a black and white version - which might have been the reason for it not succeeding, however he is glad he did not invest the money.

They were also considering sub-contracting briefs during the audit in 1994, but decided against it as they are not making enough to do this. In addition, they no longer do business with the design agency who were charging 10% when the company were doing most of the designs. They may re-establish business with them in the future if the work is good and the charges aren't so high.

In an example where they have successfully used the training received by Work & Technology, the company had a product with a low selling price, so the management team were brought together, and the MD gave them the costing and asked how they might help. They managed to reduce the SMs by 9 very quickly by changing the machinery they used - they were including an unnecessary process. Now they've got an order of 20,000 garments from the same customer.

The training instructor feels more rests on the MD's shoulders now, and though they try to sort out things themselves, she requires his opinion more often than when the production manager was employed. She feels more able to relate to the MD now and finds he is working *with* them, which she likes. In the management training course, she recognised the games were for a purpose, but there was a lot she didn't understand. She realised it was necessary, but didn't always follow it.

The MD was interested to note that there was greater input when he wasn't present at the management training - maybe because his "style of leadership was suppressing". He tries to encourage people now.

Some of the management team are still not working together well and need some form of training to change their attitudes. Cutting is the biggest problem as it effects everything down the line.

The SWOT analysis was described by the MD as being very helpful and he has found that people are more able to voice their opinions than before. Some people came out as being very positive and innovative who had previously been quiet. Since then one in particular has developed very well and is now doing a lot of the buying and is responsible for some of the cutting area and dispatch, so his part in the organisation has grown quite a bit. There are still some people who cannot think for themselves, if they are told what to do they do it very well, but will not use their initiative. The flying egg and desert survival games were good for developing initiative and so on. They have not had cause to use these sorts of activity themselves though since - training is more via 'sitting next to nelly', even for management, even though he recognises that this is not the most effective way to train.

4.2 TEAMWORK IMPLEMENTATION

The implementation process

In April 1995 a programme for the implementation of teamworking was agreed, with a target of teams being 'up-and-running' by the Summer holidays, encompassing a total of 15 days training/contact. Target start dates were changed from June 20th to July 3rd to July 10th. They were in fact operational by July 7th 1995. It was agreed that there should be two teams, one manufacturing slips and the other vests and bodies, named the 'Slips' Team or the 'Supremes' and the 'Tops' Team or the 'Disneys'. Meetings took place during May and June to calculate style break-downs, draw up team plans, decide on team size and products and so on, this included prospective team members spending a day at Nottingham Trent University to try out the stand-up system. This was followed by operator training and ultimately the commencement of teamworking. During July and August several meetings took place regarding practical issues such as cutting problems, lighting, space and so on. These problems were openly discussed and actions were agreed.

The decision to stand

In June 1995, prospective team members visited the University to try out the stand up system. Reports on how the decision was made differ between the team members and management. The MD stated that the teams opted to stand up, and there was no pressure from him because he had no preference, though he believes standing up will have a long term benefit on RSI.

When the 'Tops' Team were asked what they though of trying out the machines in the University, they said:

Well, we didn't try out anything, they just showed us the machines and gave us a test

We didn't take any work did we?

We didn't decide, it was decided for us

We were asked, and we said we'd give it a try but if we didn't like it could we go back and about 3 months in to it we decided we'd like to sit down because it was hurting us

Our backs ached

And they said 'you've decided one way, it has cost the factory too much we'd like you to stay the way you are. So we just had to go along with it. But, in the long run I'm pleased I stayed standing up

I am now, yes

Opinions about standing up are now positive with comments such "I prefer it" or "I'm used to standing anyway". One team member sits down due to health reasons. The decision for her to sit when all other team members were standing was a difficult one and the training instructor feels that "we gave into her, really she got her own way in the end". She suggested this was the case as they were told it would be standing up and she volunteered, then she changed her

mind, however because she had the skills and was willing to join the teams, it would have been hard to replace her, and they wanted to "get going and did not want to waste time choosing a replacement". Also, when they started, she understood that it was "see how you go standing up", so she thought she had an option to sit down. One of this team member's colleagues supported her in the group discussion:

> *We've got a member that sits down because she's got a longish job, she does most of the overlocking, so its easier to sit down. When you stand in one place all day, it tends to ... it hurts your legs doesn't it, so [the team member] is better off sitting down*

This was a good indication that the team had gelled well together and were naturally offering support to one-another.

The discussion with the slips team supported the comments of the 'Tops' Team. When asked about trying the stand-up system in the University, the comments were:

> *They were like pushing us towards standing up really, because it was something new for them.*
>
> *There was a stage when we said we wanted to sit down, but they said they had spent too much money altering the machines*
>
> *Yes, they said at the start that if we didn't like standing up they said we could go back to sitting down, but that never [happened].*

For the 'Slips' Team, standing up was "hard at first, really hard", "our feet killed us for months". However, they do not think teamworking would work sitting down because they move around all the time and seats would just get in the way.

The company's mechanic was not included in the visit to the University and only became involved when Work & Technology gave a presentation to the entire workforce, asking for volunteers. Being the only mechanic, he had no choice, but was supportive of the changes. For him "it was difficult for the first few weeks" particularly as he had received no real training. It was decided how many people were to be on a team and how many teams there were going to be and the mechanic was given a diagram showing what shape the team was to be "and that was it". The floor had to be repaired because the gangways were boarded. He re-did the area according to the maximum number of machines needed and changed the lighting. The next problem was the height of the machinery. One team wanted theirs lower than the other. Some wanted to sit and other stand.

New stands were bought and some new machinery because some were out of condition. They needed twice as many machines. It was difficult for the mechanic because it took time for everyone to settle. The pressure arose when styles were changing as much as 3 or 4 times a

week, he just didn't know where he was. He doesn't really think much could have been done to make his life easier, and took a very philosophical view of the matter:

> *"it was one of those things, it was a new thing they'd developed"*

He had another mechanic to help him for a while, and it was a rush to start with because a deadline was set to get the teams up and running. "It all turned out reasonably well in the end".

> *"I had an idea of what they wanted and an idea of the way I wanted to achieve it, and I think if there had been too many other people involved in my particular side it would have been difficult"*

Team selection

An awareness session for the whole factory was conducted in May 1995, in which operators were asked to volunteer if they wanted to work in a team. The training instructor then informally asked people if they were interested and twenty people volunteered. An interviewing guide was produced for the production manager and the MD and a '7 point plan to collect essential information about the candidate'. Interviews were conducted by Work and Technology in June of that year when all 20 volunteers were interviewed. The production manager provide information about the hours worked by each individual, their existing skills and their average earnings. Team members were selected by the MD, production manager, the training instructor, and Work & Technology. The training instructor was asked her thoughts and "they picked them in the end, we just gave our opinions and so on." Team members were selected according to the skills they had and the hours they worked, as well as their performance at interview. An operator who was on shorter hours was asked to go full time. "No one was forced into anything, she was asked to think about it." Most of the team members who were selected already possessed more than one skill. A trainability test was also carried out on the operators who were not machinists.

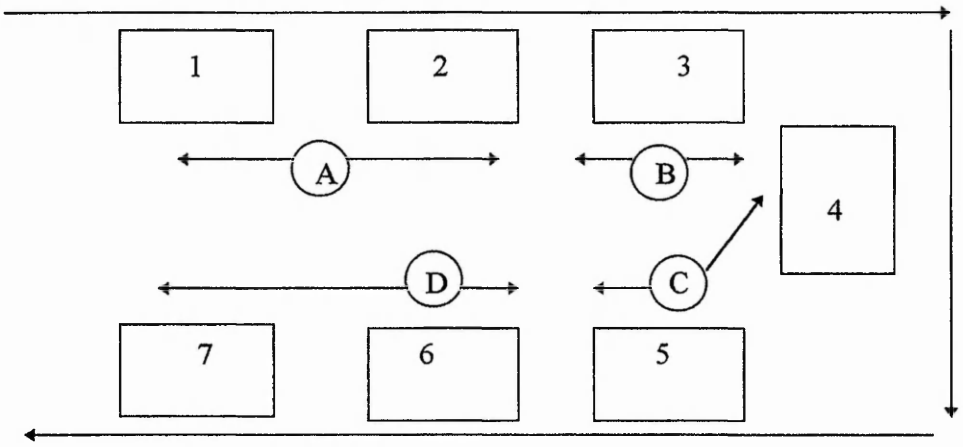
The 'Tops' Team now has 3 out of the 4 original members. The examiner has changed. The 'Slips' Team has two original members and has been increased in size from 3 to 4.

Layout

Both teams are standing (with the exception of one member - see above) and machines are arranged in a 'U' shape configuration. They work on single garments and 'pull' production through the team.

The full slip has 9 operations, including exam, so there are 4 operators on this team now instead of 3. The MD feels that this many operations requires more skills. In 10 days the 'Slips' Team have achieved 94% performance, with 3 trainees, 2 of which had not ever been on a machine before and the other not for 20 years.

They fill in their achieved rate against the target every day on a 2 hourly basis. The MD can look at these sheets when he comes in to ensure all is OK. They also put in break-down time and reasons. These sheets help the training instructor keep an eye on things too. She also has another table recording the seconds and duplicating machine breakdown. She fills them in every day, but not in the detail stated on the form



The 'Tops' Team and the 'Slips' Team

Work and Technology suggested that both teams should have a name, so they discussed possibilities whist they were working and "had a bit of a laugh" deciding. The 'Tops' Team call themselves the 'Disneys' and the 'Slips' Team call themselves the 'Supremes'. The two names are used interchangeably, so for the purpose of this report they are named according to the products they predominantly make - 'slips' and 'tops'.

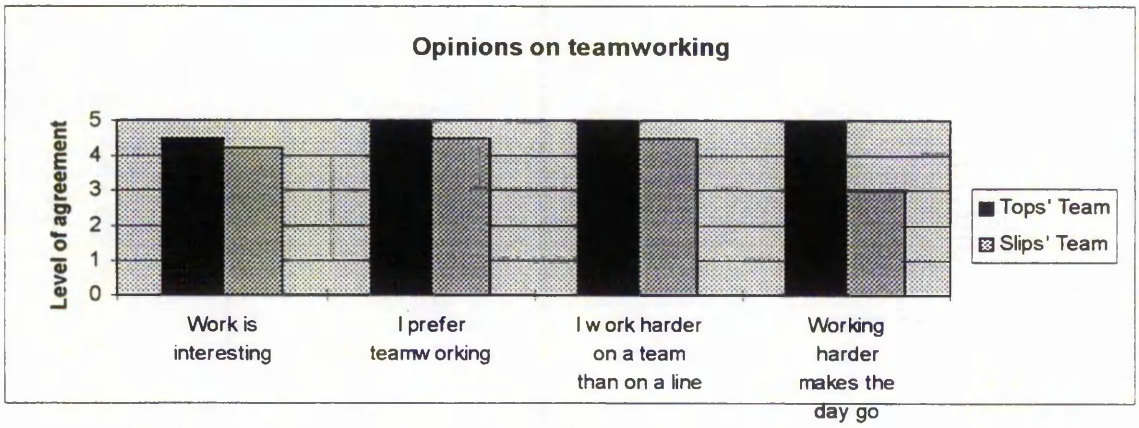
The 'Tops' Team

The training instructor stated that the 'Tops' Team have always worked well together, with a few minor problems, and are more efficient than the 'Slips' Team. The new member of the 'Tops' Team was an examiner, who was asked if she would like to do small amounts of machining. She does the first and last jobs which are short operations. She is excellent at examining and packing, and does some machining. She joined the company nearly on year ago. She is a high performer on packing, and 80% on overlocking. The training instructor believes she will not increase this performance because she is not on machines all the time. To take her off and train her on other machine skills "would knock the other members off their skills". If anyone on this team is off, they can all cover because they can all do all of the sewing operations, so it is not considered necessary for the new member to learn too many new skills.

The 'Slips' team

The slips team used to have three members, but now has four, two of the current members received training from Work and Technology (the others are new to the team). Having only been working together for a couple of months, the training instructor feels they are working well together. However, when they reach their targets, they would not push themselves to go higher. The training instructor knows they could produce more. She sees the change to a different product as a good one as the team is happier with having more variety in their work. She was not really involved with them so much before because they were able to do everything themselves. Now they are on a different product and need training the training instructor is more involved with them.

As can be seen from the following graph, where information is taken from the questionnaire completed by the teams, the 'Tops' Team agree more with the four statements about teamworking, although there is still a high level of commitment shown from *both* teams. Working harder does not necessarily make the day go faster for the 'Slips' Team.



Covering for absenteeism

The 'Tops' Team

The team was asked what they do when someone is absent. When the recent recruit to the team (the examiner) is away, covering her job is not a problem to the team, as the majority of her work is not machining. However if one of the others is away "it is a slog":

You haven't got time to put your head up

It's like when they bring somebody in, like [the examiner] was off the other week and they brought somebody in to cover for her and she couldn't do it

She was packer

She didn't understand that she had to keep up with us and she was getting a pile

Fast for a bit and then slow

We weren't reaching our targets at all

They prefer to carry on their own.

Carole said that as you get more experienced in teamwork you'll be able to pace yourself, which we do don't we

They found it difficult to adjust to this extra person.

Its hard work

They all say when they come in our team how hard it is

It doesn't seem hard to us does it because we are used to it

The 'Slips' Team

They have had full attendance since they have all been together as a team, so this has not been an issue yet. However, one team member recalled working on her own once: "the thing I didn't like was when [one team member] was off and [another one too], and I was left to do everything on my own, all day... every single machine, the bagging, everything, and they still put a performance up for me and I was on my own". They recalculated the target on the basis of one operator doing it.

Team Meetings

The teams do not have formal meetings, but are "communicating all the time" to the training instructor. They have 'discussions' when they are going on a new style where they have the garment specification and discuss who is doing what etc. Theses are held in the canteen. The 'Tops' Team have more meetings than the slips team, as they change styles more often.

The 'Tops' Team

The 'Tops' Team suggested last week that they ought to have a meeting once a week with a member from each of the two teams and the MD. This has not been acted upon yet. The training instructor noted that if they have any new ideas, the MD will always see them straight away. However, they have not had a team meeting since the production manager left the company, when they used to have them every 3 weeks. They discussed possible improvements, production and solutions to problems. "We don't get nothing like that anymore". When asked whether they miss having meetings, they said "yes", because "it helps you get all your feelings out...like you bottle them all up don't you".

The 'Slips' Team

In answer to the question "Do you ever have meetings?", the team responded:

> *No, we're not allowed ... we did at first but...*
>
> *They promised us the earth at first, but nothing's turned out that way, we was going to have meetings, if the quality was bad that it was our decision, all the cutting was wrong and we just got told to do it, even though it was wrong, and at the end of the day it just comes back on us*

It was particularly difficult for the trainee working with poor cutting because she was slowing people down even more and felt under a great deal of pressure. They think the responsibility for setting meetings lies with The MD. They were told initially by Work and Technology that they would have a meeting once a week, but they have them once a year now.

They feel that although the MD goes up onto the factory floor, he doesn't really talk to them, they don't feel their voice is being heard.

Training

Team Building Training

The training instructor understood the basic principles of teamworking, though she thought it took a lot of time to be told what they wanted to know. However, she still refers to things she

was taught then, for example, in conversation she assumed something and then corrected herself, saying "never assume anything, that's what Carole told us". She was made to feel relaxed during the training, though sometimes she "felt silly" and struggled with having to make calculations. "The games made you think together, and you recognise some other people's skills". She felt the training methods were an effective way of portraying the message, though training sessions were prolonged, as she is "used to being on the go constantly". They were expected to sit still for a long time, they wanted to be up and doing things. She can't identify what could be cut out from the training course to make it shorter.

The supervisor does not consider herself to be involved with teamworking any more, though she attended the training programme, "it was about how to work together and things like that"; it was not something she had come across before. She remembers playing games, but was unable to relate it to work. She saw the purpose of the course as ensuring communication was more effective, "it was so everyone knew what was happening in the whole factory". The supervisor suggested that there is still a lack of communication, though she speaks to the training instructor about work more than she used to. Her contact with the MD is much the same as before, if they can't solve problems they ask him.

In her view, "teamworking saves a lot of work", in terms of 'progress chasing' in particular, but has little effect on her daily work. "In some ways it is a good thing .. it stops all this running about around the room and they think for themselves". She sees no particular bad things about teamworking. She has little contact with Work and Technology now, as any contact is in relation to the teams, which are not her concern. She was off work for 18 months and teamworking was up and running when she returned. She knows little about how it was arranged and has little contact with them now, no meetings or discussions. Contact is usually if the training instructor is not around and they need something.

The 'Tops' Team

Three of the four team members received training from Work and Technology. They remember going to the University twice:

We built leggo men

And chucked eggs out of a window!

I think it was basically to see how we got on as a team, wasn't it, to see what we have achieved and that".

We learnt that we've all got to stick together, didn't we, and that you've got to talk about things before you decide what you're doing and what you're not

You can't just sort of jump into something, you've got to sort it out

They think the training could perhaps have been done in the factory, and "it went on a little bit". They feel it could have been done in just a day as much of what was said was repeated.

What they were doing was trying to stress to us how important it was to work in a team, to work all together, I found they were repeating themselves

Although they put it in a different way, it was the same thing ... they went on a bit

All agreed.

The new team member had no team building training. "She was just dropped in". However, they knew from the start that she would fit in. They had previously had a different team member who had not fitted in, though through no fault of her own. She "had problems at home and just couldn't get going". The new team member was trained by the training instructor, and the rest of the team help her as much as possible. "We train [her] on most of the things ourselves, whenever we get time she goes on something new. Her main job is packing and trimming and that, but we like to involve [her] in everything really". "You've got to have the right attitude".

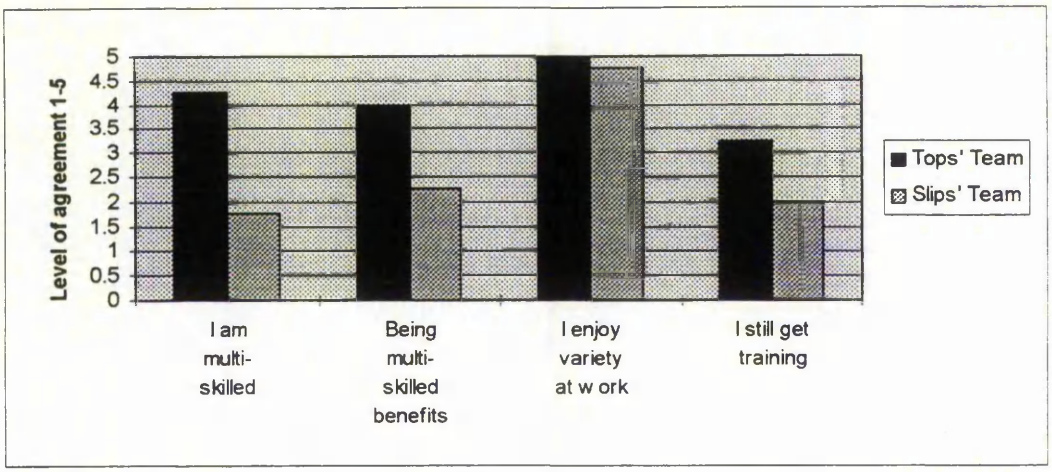
Skills Training

Team members were already able to change tensions and thread up the machines themselves - everyone can. Not all operators needed skills training immediately. The independent training consultant carried out much of the initial skills training. The 'Slips' Team required more training than the 'Tops' Team, as there were machinists who had not done certain tasks before. The examiner on this team was trained from scratch, and she "didn't take very long to pick it up". Another team member only used one skill on traditional production, but had other skills, and the other was willing to learn new skills and picked them up easily. The training instructor did any subsequent training and production started almost immediately.

The training instructor has a book detailing all trainees who join the company, dating back to 1994. This was set up by Work and Technology and is still kept up to date. She has no trainees at the moment, but still uses the book for training on the teams. One team member was a trainee off the shopfloor and learned quicker on the team "she was working with the other members who were pushing her, she had to get going. They help each other, you know, 'oh, come on', they are hard working as a team, they really encourage one-another you see". It is not just left to the training instructor. She feels a part of their team when she is with them as they are all working together.

<u>The 'Slips' Team</u>

The team was asked about training from the independent training consultant "She was here about 2 days". They did not think much of her because "I don't think she was a skilled machinist". They thought teaching each other was more effective. The two new team members feel they have been trained by the other two. One of the new team members was an original volunteer who then backed out. "I just didn't think I was capable of doing it ... it is the speed that does it, I've only been on it 3 weeks anyway, so... It's very difficult". When they were on underskirts she could do all the jobs. Now they are on new products "it is like training all over again, because they are giving us different things to do." One team member was already trained and another received training from the training instructor whenever she had the time, "well you was just chucked on it really, weren't you". Because the training instructor was busy they had to teach themselves. "Learn as you go, and help each other".



The differences between the two teams' opinions on training is evident in this graph. The 'Slips' Team do not consider themselves to be multi-skilled, yet they enjoy variety in their work. This suggests that more effort needs to be put into ensuring these new team members receive sufficient training to work effectively.

5. Payment

The teams were paid their individual averages when they were first established. They originally wanted an incentive scheme, but the MD pointed out that they would have to "put up with the downs as well as the ups", so they opted for a fixed rate according to their (6 weekly) average. Their payment is linked to the performances and skills they posses and as they become more skilled their wages are beginning to equate. A fixed rate was agreed for an initial period, and management said they would talk to the teams about it later on. They considered offering the same rate to all, but did not think it would be fair to the higher performers. However, the MD recognises that the slower machinists offer different attributes to the team - quick on examination etc. and suggests not going for a flat rate is a lack of confidence on his part. Even though they are not on incentive their performance has not dropped; they still have targets to reach.

<u>The 'Tops' Team</u>

The 'Tops' Team found they were doing a lot more when the new trainee was there, so they asked for her wages to be increased to their level. The MD agreed to this, believing she will eventually get to 100% performance and be the same as the rest. The team arranged to meet the MD and asked him directly. They agreed that one person would ask. Though she is not officially the spokesperson, they feel that they can't all keep going to him all the time. They all went as a team and one person voiced their opinions.

We said that we weren't happy with [the trainee's] pay, when she first came, after about 3 weeks wasn't it, and we said that we wanted [her] to be on more or less the same wages as us

Because I was keeping up you see

We said to [the MD], didn't we, [the trainee] works hard, she keeps us going, if it wasn't for [her], we wouldn't be able to do our performance, because we're not as experienced, although we're fast aren't we, we're not as experienced on packing as [she] is".

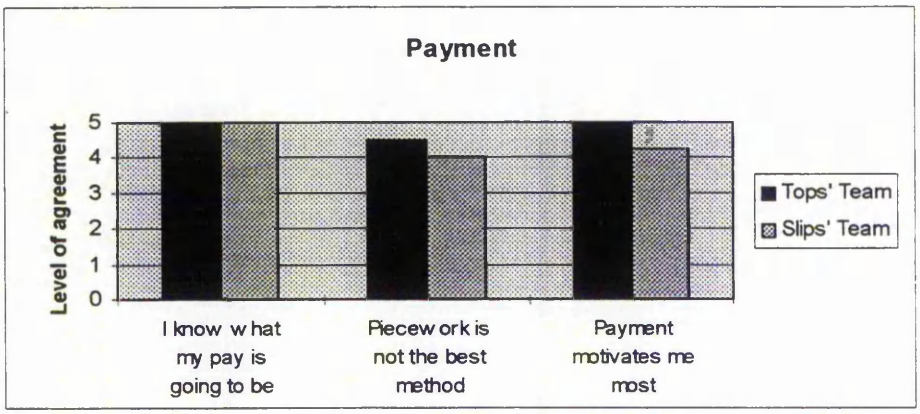
The 'Slips' Team

"We are paid basic now ... its all right at the moment, it's just if they start swapping it about and changing it .. 'cos we've got two trainees on."

The team members are happy with their wages, so long as they do not reduce. It was their main concern when teamworking was being introduced. They weren't really told what the payment system would be, "we had to keep asking". They were told the week before they went onto the teams

and then there weren't like no guarantees. They said it was going to be 6 weeks, and then they come around and said another 6 weeks, and eventually, we've been on it a year and 4 months now

They do not think a flat wage would be fair to the high performers.



As indicated in the above graph, both teams are very clear about what their pay is going to be, and recognise the pitfalls in piecework payment. They are also both highly motivated by their pay, the 'Tops' Team members more so than the 'Slips' Team.

11. Commitment to and current understanding of teamworking

Teamworking has changed the training instructor' work a lot, she feels she is constantly learning. If they only have 3 days of work she struggles because she needs the time to ensure she has all the components ready. She needs to keep pushing herself to ensure everything is ready. Before, when there was a style change, everything was done for her by the production manager. They have had problems with personality clashes, but as they are progressing they are getting better and better. She used to dread being with one in particular because of her attitude, but having more contact with her she is overcoming it, she can weigh her up now and knows how to handle her

The supervisor noted that teams can be given work to last the day, but stressed that it is not because the teams are self-organised that there is less work for the supervisor. "They do a bit here and a bit there and it is passed backwards and forwards". Her main tasks are to make sure the machinists have work, examining the work, checking the machines etc. The training instructor is more the team's supervisor.

The 'Tops' Team

The 'Tops' Team's comments were as follows:

I think it's a good idea really ... you get different jobs to do, you're not in one place all the time, you see a finished garment at the end of it. You get like job satisfaction a the end of it.

It spreads the day out better as well (because they work on a 2 hourly basis).

All members agreed with these comments, and saw no real disadvantages.

The teams have no say in setting targets, and though they do not particularly want to, they feel they are not listened to when they say targets should be set differently to the conventional system:

Its good to have somebody there to be telling you what you should be doing and what you shouldn't be doing because that saves us time

Basically, we don't know how they set the target, because they are still doing it as though we were on the line still, the minutes ... at one time we tried to explain to them that when you are working on a team, and you time a garment, its entirely different to when your on the line. You see, you're dealing with 4 people, but we can't seem to get management to suss it out ... they don't understand what we're saying. [The training instructor] tried to time us

They write the time down for 20 garments and you don't do 20 garments before moving to another machine

You keep the person in front going, its usually about 6 or 8 garments

However, on a team because they are only doing part of a bundle it is impossible to say whose minutes that are wrong:

You can't seem to pin-point which operation is [timed] wrong

The 'Slips' Team

The slips team's comments on their feelings about teamworking in general were:

It's all right

It's a good idea, yes ... you're seeing the work from start to finish aren't you, you're not just seeing it in bits, you're doing the whole garment

It's more exciting ... standing there bagging all day, bending up and down, [in a team] I get to move about a bit, but like when I was on bagging I used to be in the same place

Machining is all right, apart from the hump on my back!!

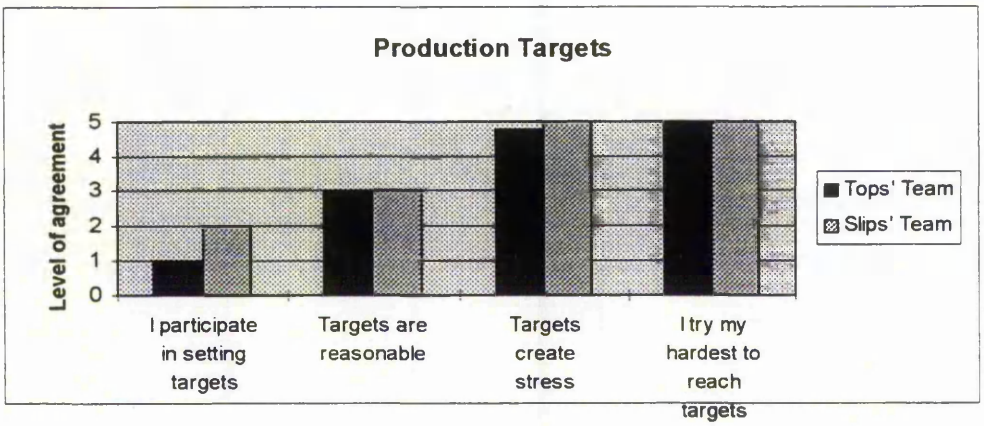
And you get sore feet

We was told that we would make all our own decisions, and we don't ... if we've got a complaint, like with the cutting we could have [the cutting supervisor] down and have a meeting and explain all our problems. That happened in the beginning, but now it doesn't.

It's just get on with it, isn't it

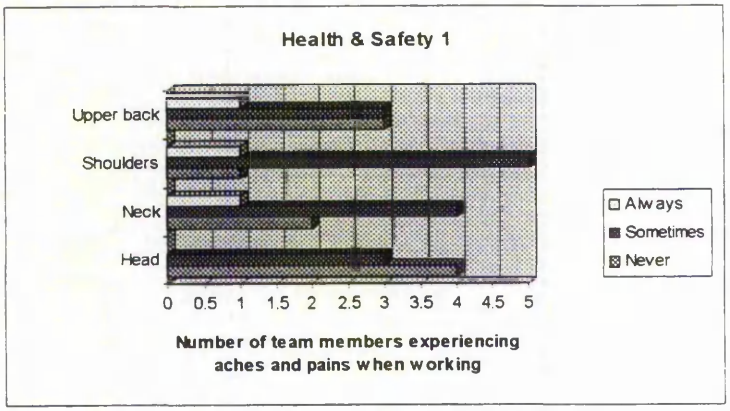
Things like laying us work out, there's nowhere, its not planned

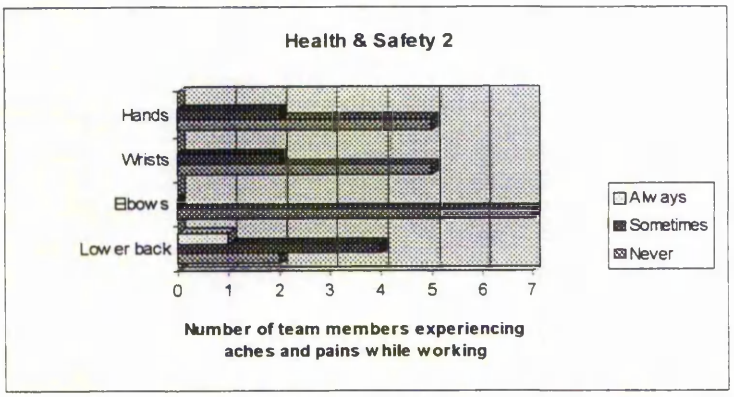
The training instructor plans the machines, but they put work on boxes which they "pinch from everywhere". If they had meetings, they might have chance to say this. When they needed a trolley to put underskirts on they waited 7 months.

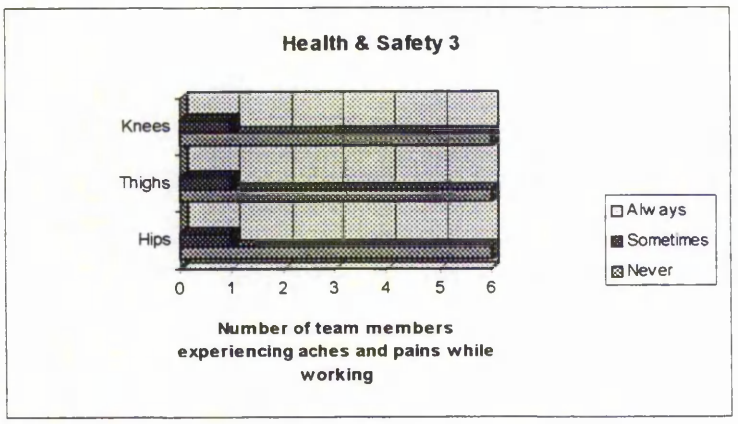


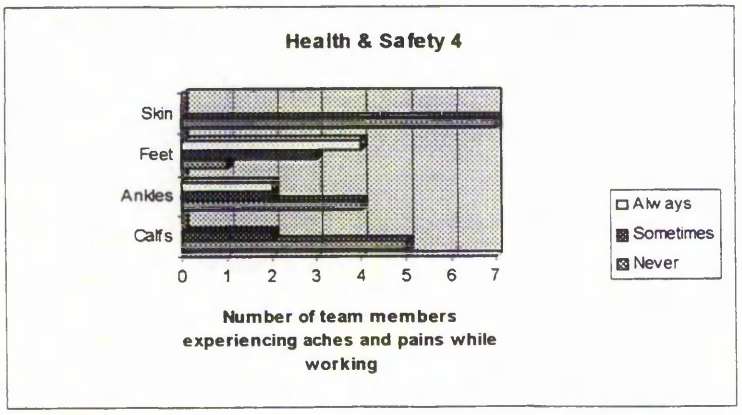
Regarding target setting, the teams consider them to be set by management, with no input from themselves. They used to fill in their own target sheets, but now this job has been taken over by the training instructor. Both teams put full effort into reaching the targets set for them, but at the same time find it creates stress.

12. Health and Safety



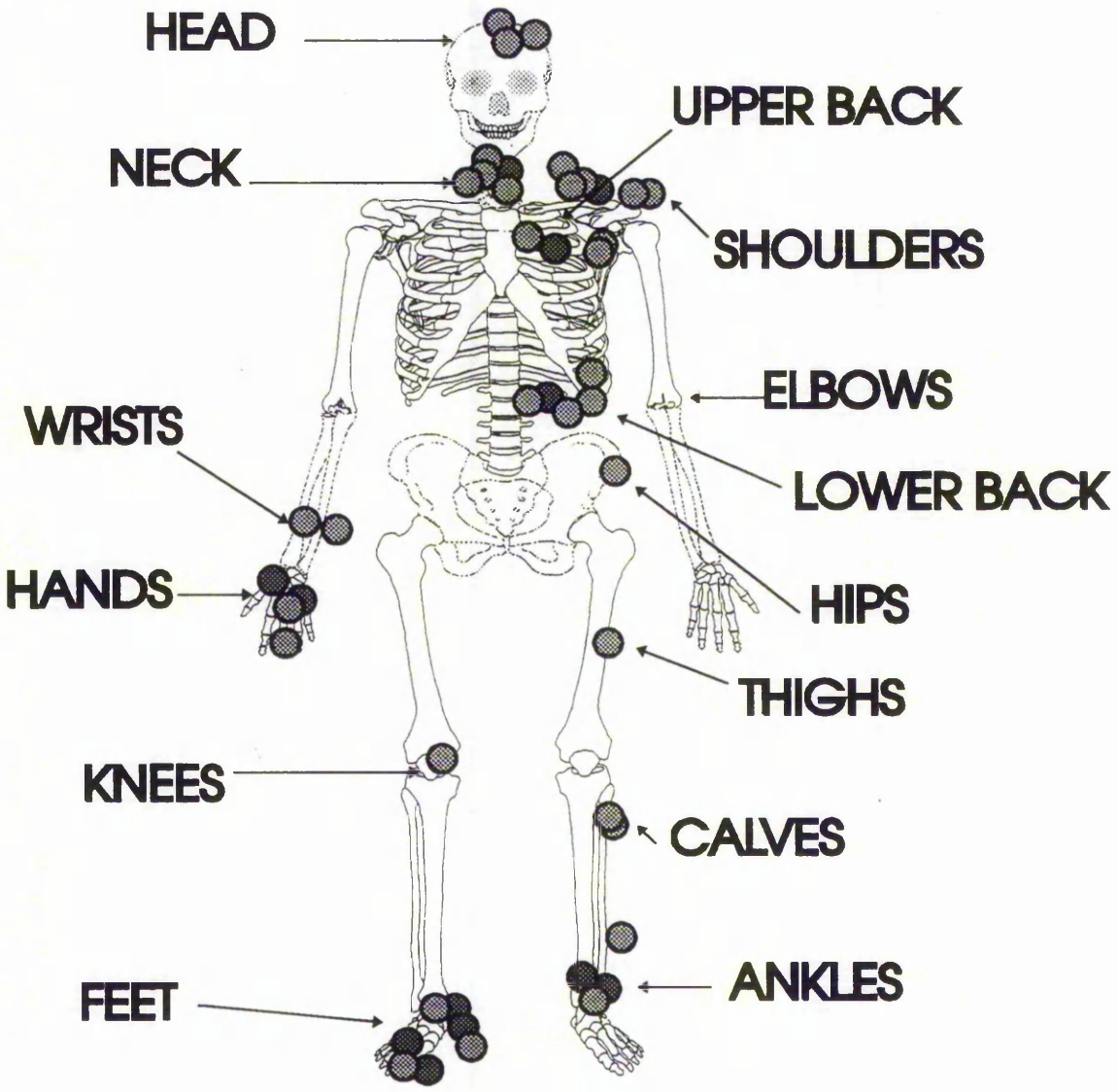






As can be seen from the above graphs and the diagram below(!), many of the aches and pains from working occur in the upper part of the body, particularly the upper back, shoulders and neck, as well as in the feet and ankles. The majority of these discomforts occur occasionally, with one team member suffering from them always.

● Always
● Sometimes



ACTION POINTS

- Further management team building and encouragement for staff to 'think for themselves'
- Further review of lack of motivation of the 'Slips' Team
- Assessment of skill levels when teams cover for absenteeism and of new team members
- Re-establishment of team meetings
- Assessment of the role of the supervisor with the teams
- Awareness of the quality standards and the teams' needs in the cutting room
- Assessment of whether teams were really given a *choice* to stand or sit
- Assessment of the need to involve the mechanic earlier in the process
- Assessment of duration and location of operator training

5. RECOMMENDATIONS

5.1 TO THE COMPANY

The company has obviously enjoyed many benefits from the organisational changes made by Work and Technology. It is a pleasure to see how the training instructor has gained so much more confidence in herself and her abilities, and is able to adapt to the additional responsibilities placed on her through the loss of the production manager. In the same way it is good to see that team members feel able to approach the MD when they feel they have an issue to discuss, such as the payment of a fellow team member. These sorts of issues indicate that not only are barriers within the company breaking down, but that team members are offering one-another support and help. From the point of view of the business, a more strategic outlook is being developed by management and sales are being more closely monitored to ensure the most profitable lines are being targeted.

Although the overall picture is very positive, certain disciplines have slipped, and it would be beneficial to reassess some of the initiatives which were established at the beginning of the project and have since taken a back seat. In particular this is with reference to:

Team meetings

The teams were told initially that they would have meetings once a week. This apparently slipped to once every three weeks when the production manager was employed, and not at all now. The teams are noticing the absence of theses meetings as they were an opportunity to air their differences and discuss production issues. The renewal of these meetings would benefit the teams greatly, through increased morale and an opportunity to put forward their ideas for continuous improvement.

Target sheets

Target sheets were set up by the placement student and teams were trained to compete these themselves. The training instructor automatically took over the responsibility once the student left, whereas the teams should have continued to do these themselves. This has now become a 'habit' by the training instructor, and the element of 'empowerment' offered by the responsibility of completing these forms themselves has been lost

Team 'housekeeping'

Similarly, the placement student ensured that the teams took responsibility for ensuring their workspace was kept clean and tidy. Once she left, team members reverted to not taking an interest in their own 'housekeeping' and the trainer now feels she must step in to tidy up for them. This discipline should be reiterated to the teams.

Quality issues

The teams were told that they should take responsibility for their own quality, and if there were problems to discuss them with the relevant personnel. However, when they do identify problems, particularly with cutting, they are told to ignore the faults, and so now feel there is little point in raising the issue in the first place. It would appear that most of the problems stem from the cutting department, which seems to be a separate issue in itself.

Strategy formulation
Currently it would appear that only more senior levels of the management team are involved in strategy formulation, when middle managers could also be involved. The training instructor, for example, has opinions on the development of teamworking, and if this is discussed, it could be beneficial for her to be involved in the decisions.

Training
New members of the teams say that they are just 'dropped in', with little or no training, thus preventing good team cohesion. This also puts pressure on the other team members to multi-skill them. A structured training plan for each new team member would assist both them and their colleagues to cope with the changes.

Management presence
The MD had good intentions when he moved his office up onto the factory floor. However, because all his files are still in his original office, he now spends very little time in the new office and has pretty much reverted to working downstairs. Whereas the move upstairs displayed extremely strong commitment to breaking down barriers and becoming more accessible, the move back down has had a negative effect. Team members say that he may be around, but their opinions are not listened to. Moving into his old office can only be seen as a step backwards by the teams.

5.2 TO WORK AND TECHNOLOGY

Most of the effects of the changes have been positive ones, and the majority problems stated above are minor organisational adjustments. To reiterate the statement made by the MD at the beginning of this report, "There is absolutely nothing which Work and Technology could have done better". Additional support offered by the Work and Technology team was especially appreciated. There are, however, some issues which need to be addressed, particularly ones raised by the team members:

Most of the problems related to commitments made at the beginning, but which were not adhered to, and although the onus is on company management to ensure plans are followed up, Work and Technology still have a similar responsibility. For example, teams felt that they had to keep asking about their pay, when it was the issue of greatest concern to them during the change process. They were also told that their pay would be their average for 6 weeks and then it would be reassessed, but it was not. Before teamworking goes ahead, it is suggested that the payment system to be used is agreed early on and that it is clearly stated in writing to the team members. In the same way, they understood that standing up was experimental and if they did not like it they had the option to sit down. Although they are now happier standing, they were made a promise which was not kept. If the company had no intention of reversing the change to a stand up system, it should have been made clearer.

In relation to the use of independent training consultants, it is advised that in future activities they display their practical abilities and emphasise their experience in the industry to team members in order to gain their confidence during training.

Regarding team building training, the only negative comments were that is was somewhat prolonged and on occasions the training instructor 'felt out of her depth' and the supervisor

was unable to relate it to a work situation. Reassessment of the training programme with these comments in mind might be beneficial. Also, when the team came to the University to try the stand up system, the mechanic would have benefited a great deal from being included too, as this would have aided his understanding of the new system.

TEAMWORKING CASE STUDY

January 1994

LADIESWEAR AND CHILDREN'S WEAR

CODE: Company F

Compiled by : J.F.McLellan

Interviewee : Production Manager

COMPANY PROFILE

Products	Ladies skirts and childrenswear. Now diversifying into outerwear and swimwear.
Main customer	Major retail chain
Date of first team	1990
Number of employees	113
Seasons per year	2
% Operating as teams	50%
Planned extension of teams	No further expansion planned

This factory is one of two owned by a company in Scotland. the second is 100% teamworking and has 13 teams. This factory currently has 7 teams totalling 55 operatives, with the remaining 54 operatives making wax jackets on a traditional line production system. Formerly 100% of their products were manufactured for a single retailer, but they are now diversifying into new markets and 22% of their production is in brand named wax jackets, subcontracted swimwear and ladies skirts for a wholesaler. They are happy to do this as it keeps the factory busy. The company were in a loss making situation and needed to take drastic measures to turn this around. Their main competitors have also introduced teamworking; they too needed to do something dramatic and break existing work practices.

AWARENESS OF TEAMWORKING

The production manager had been to an exhibition in Cologne and seen teamworking in another company in the UK and was convinced that it would be one method of introducing a radical change to the business' prospects. Principally, they wanted a system where they could change the method of payment to cope with the increasing number of style changes they were facing. The conventional system resulted in 30% of operatives' time being paid on a piecework basis, and the remaining 70% on their average whilst coping with the style changes (which were becoming more and more frequent). This resulted in the company losing money through the wage system. Additionally, they wanted to improve their operator efficiency.

THE INTRODUCTION OF TEAMWORKING

The company was originally interested in Just In Time (JIT) manufacturing and managers had read a lot about it. The production manager, the production director and the managing director were the most enthusiastic about installing the new system. It was introduced 9 months after the Cologne exhibition. The managing director knew it was 'flavour of the month' and went along with it, knowing they had to do something about their efficiency levels. They decided to buy an entire cell from a machine supplier and then paid a consultancy firm to set it up for them. However, it did not work as well as they had expected and the company were faced with a financial crisis. They then employed a different consultant with a background in electronics to try and rectify some of the problems. He was a good leader and involved 4 young potential managers. He had a 'back to basics' look at the company and helped manage the project, giving a pace to the change process. This was found to be the advantage to using an outside consultant and having to pay for it. Some funding was received from the local enterprise council.

The machine company did not set the 'pitch' times accurately, and they needed to be more precise, so the company management helped set these themselves.

When their third factory closed down plenty of machinery became available, so they needed very little investment in the long run. Also they did not need so many machinists.

The Pilot Team
They introduced a pilot team at first to compare efficiency figures (units out/people). They had a budget for the pilot to cover the cost of consultancy and machinery. Machines were slowed down a little, as this caused fewer problems. However, work study did not want to do this, so they compromised with the speed to which the machines were adjusted. They introduced teams at a rate of 1 per month. This was all carefully scheduled to follow a major introduction plan.

Selection
They initially asked for volunteers and then the factory manager selected operators according to their attitude. They had 10 volunteers and needed 6. A skirt was produced on the first team because it was their most common product. They did not look at performance figures "because everyone is required to work at 100% performance". They have a work study department and use GSD time study.

METHOD OF TEAMWORKING

Layout
Teams of engineers decide on the methods used, with some input from key operators. Garment engineers follow the design to the line and check it is being manufactured as prescribed. This is an advantage to having design and cutting on the same site. The other factory is sometimes use for production ideas. If the cycle time is too short, it is not efficient, so they have 2 machines doing one job within a team. They also use 'check mates' to monitor production and overhead electronic displays, so if there is no good reason for performance being down the operators "are in trouble". They may be sent somewhere else if they do not have the right attitude. Swapping jobs is disruptive to the team, though they do not always keep the teams together - it depends on the product. If people are not using the right methods, work study will help them. A stand up, single garment, Toyota style Sewing System (TSS) is used.

Product	Skirt
Operations per garment	8-15 (up to 21)
Operators per team	Approx 10 (15 is best - more than 18 does not work)
Average bundle size	1

Team Meetings
Teams have meetings when they change styles - they are quick and to the point because "Operators would like to sit in a meeting all day". Meetings are only paid for if management call them. Any time lost in meetings is made up for afterwards by machinists. Latterly they have introduced team briefings and line managers regularly have appraisals. In the team briefings, machinists say what the problems are, for example if cut work is not right, the line manager summarises it and brings it to a meeting in the morning and it is up to the line manager to sort it out. Management are quite prescriptive about the amount of work given to the operators. "It doesn't work to let them sort out their own problems".

Absenteeism, shifts and holidays
They have 'back-shifts' to cope with production at its peak and are interested in introducing a flexi-week where some weeks they have a 4 day week and others they have a 5 day week - their busiest time is after the summer holidays. If a team member is absent they use 'floaters' If they can't the team has to cover, though targets are not lowered. Absenteeism is around 6%.

PAYMENT

All team members are paid a flat rate of £166 per hour. They receive no more money if they work over 105% performance. so they stay at that rate and pace themselves.

Weekly target are set and teams are able to carry over excess to the next week if necessary. Targets are not altered if there is machine down time. The teams work side by side. and if a machine breaks down they can use one from another team.

Teams can earn a bonus for achieving between 100% and 105% performance, which is calculated as follows:

$$\frac{\text{Total SMs for garment x no. produced}}{\text{SMs in week x number of people}}$$

TRAINING

Skills Training
Initially operators are trained by training instructors on the spare machinery on one specific skill and are given 'mock-ups' of garments. This basic training lasts for 1-2 days. They are then put 'on line' and build up their skills over a period of time. The team 'line' has to help trainees, and "when all is well they get assistance". Raw trainees are counted at 50% performance. or 'half' a person. The training instructor will train them and a key operator will be asked to cover. There are currently 4-6 trainees. A job trainer will be sent into a team if necessary and operators can have additional training at night if they wish. Standard methods are used. Work study people are moved around to exchange ideas.

Machine Mechanics
Machinists are not taught basic machine mechanics, though they are starting to introduce vocational qualifications (SVQs) and will do as part of that. They are also actively involved in investors in people. They do not have an assessor at the moment, but the local authority is training an assessor. Financial assistance is also given for 're-starts', this is considered to be a good idea by the production manager, but he feels it needs to be assessed.

Team Building
During the initial implementation process, communication exercises were given, but they have no team building training now. Machinists are not asked to solve too many problems, just to return work if it is faulty and are told to report any problems that they have to management. Management decide whether or not to involve machinists in difficult problems as it is non-productive to use their time.

BENEFITS

Benefits Anticipated
They had a 'silly' piecework system where they had to pay 2 weeks average for operators to change jobs. This was OK for long runs, but was 'crippling' them as a company and it was easier to change the whole lot rather than to change just the payment system. It was also considered to be a good way of breaking traditional work practices and was more efficient for style changes.

Benefits Realised
They have turned from a loss making situation to a profit making situation in 2 years (with the help of a patient bank). Change-over is now good, but not good at high speed. The quantity of cut work has reduced - they now cut 1 day ahead of sewing, whereas they used to cut a week in advance. They produce closer to the ratios required by their customer and respond to what is being sold. If garments are not selling they will stop and change. However, they still have long lead times from customer to delivery (1-3 weeks), though if ratios are changed they will get them tomorrow. If team are running out of work they will be given something else. Benefits were that absenteeism reduced and there was better morale within the company generally. (Labour turn-over was never a particular problem). The greatest benefit has been in changing styles.

QUALITY

Quality problems have been made easier to control, though quality standards set by their main customer have not changed.

REACTIONS TO TEAMWORKING

By the operatives and the union	The production manager believes that the benefit to the machinists is that their work is more interesting. Attitudes from piecework have changed and "operators are transformed". Managers also have fewer complaints from the union. They were told that the company was making this change and accepted it; "at the end of the day it was change or go bust". A disadvantage to the operatives is that some have lost money. Particularly high earners were 'bought out' - this was agreed by the union. Union membership is about 98%.
By the mechanics	The mechanics are under more pressure, but have to accept it the changes.
By the supervisors	Because the teams were no longer on piecework the supervisors had to motivate the workforce and learn to communicate well. Supervisors therefore received a lot of training in communication. motivation and problem solving. There were also role play exercises and presentations and meetings for line managers.
By senior management	The production manager was a work study engineer previously, and is now in charge of production. Management need to work as a team. Close partnerships with planning and garment engineering have thus been formed.

FURTHER EXPANSION

It is not planned to extend teamworking further. because the remaining production 'does not need changing'. The company is now targeting more customers and is looking to subcontract from other firms.

PROBLEMS

The reduction in WIP exposed a lot of problems and it became harder to run the system. Also it was difficult to motivate people - "they can either do it or they can't". A union representative received some training specifically to tell the workforce what was happening.

HINDSIGHT

There is "not much" they would change if starting again as it was all very well planned and with hindsight the production manager would introduce it again.

ADVICE TO OTHER COMPANIES

Plan carefully and modify it if necessary; they evaluated their plan and re-worked it. Make it realistic and then stick to it.

TEAMWORKING CASE STUDY

October 1993

LINGERIE / BRAS

CODE: Company G

Compiled by : J.F.McLellan

Interviewees : Factory Manager, General Manager, Supervisor, Teams

COMPANY PROFILE

Products	Bras, suspender belts, lingerie, knitwear
Main customer	Retail chains, own brand
Seasons / year	2
Styles / season	Bras : 20, Suspenders : 7
Date of first team	December 1992
Number of employees	110: Bra division, 90: Lingerie division
% Operating as teams	18%
Planned extension of teams	Yes, so teams can cope with more than 2 styles.

This is a division of a large manufacturing group making bras lingerie and knitwear with a total of 800 employees. The lingerie section experimented with teamworking in 1989, which was later abandoned. Management had identified the payment system as the main cause of failure; the operatives were paid a flat hourly rate, with no incentives. They felt that motivation was lost as a result of this system. They have since, however, put teamworking into the bra division.

AWARENESS OF TEAMWORKING PRIOR TO ITS INTRODUCTION

Apart from the knowledge of the system introduced in the lingerie division, the General Manager obtained information from a JIT (Just In Time) seminar, which was not sector specific. He was also director of the local TEC, who supported the initiative. In addition, the knitwear division were experimenting with the concept, and their results were encouraging. As a consequence the bra division observed the knitwear system and adapted theirs to suit their ideas. An external consultant was also used in the initial stages, but they were unable to assist in establishing a suitable payment system, which was an area where they needed most help.

THE INTRODUCTION OF TEAMWORKING

The main advantages of the introduction of teamworking had been outlined to the company as a reduction in off-standard time (time-work) and absenteeism, and the multi-skilling of the workforce. They felt that these were benefits worth perusing so they implemented the first team. No one knew quite what to expect, and it was seen largely as a question of sitting back and waiting to see what would happen. The management team made decisions on methods of payment and so on and then gave a presentation to the people they wanted to put on to teams. They were told how it would be done, why they were doing it and explained what difference it would make to their working life. The mechanics did not attend the initial presentation, but were aware of what was being done. This was all well accepted, except for one person who did not want to join the teams, but now does not want to come off.

The total investment per team was around £800 as they needed about 30% more machinery - they received no financial assistance from local TECs. The Union was involved from the start and were present in all meetings

regarding methods, payment, etc. They were very supportive and were happy with what the company had done.

The Pilot Team
The company installed the pilot team and then thought "now what do we do?". Nobody really knew what they were doing or what to expect. There were two machinists on the teams who were determined that teamworking would not work, so they were "quickly removed". The first team was very difficult for the company to cope with and they had many problems with them. They then installed a second team because they thought that a little competition might encourage the first team to make the project successful. This team turned out to be much better than the first. Having proved from this team that it could work, they installed 5 more teams in May/June, one at a time.

Selection
Team members were all selected by management. When selecting the pilot teams, operators were chosen with one each of the necessary skills to make a complete garment. They purposely did not choose high performers, because it would have left all the low performers to be put together at the end. The first team consisted of a combination of trainees, part-time and full-time machinists with differing performance levels. They found this difficult to organise, but felt that in order to prove the success of the teams they wanted the pilot team to be a realistic combination of people. Selection for subsequent teams was the same as the pilot team, where skills were matched, personalities were also considered to some extent, and they tried to please the team members as much as possible. If one person did not like another, they did their best not to put them together. Also some did not like to be put near the window or near a draught, so they were put elsewhere because they will be there for a long period of time.

Recruitment
Because production had been increasing they had been recruiting more staff. They have some problems with recruitment because their knitwear division are targeting the same labour market, so they have to try and share them equally. Interviews have not changed significantly since teamworking, but they now explain what teams are so they know what to expect. They usually considered personalities anyway.

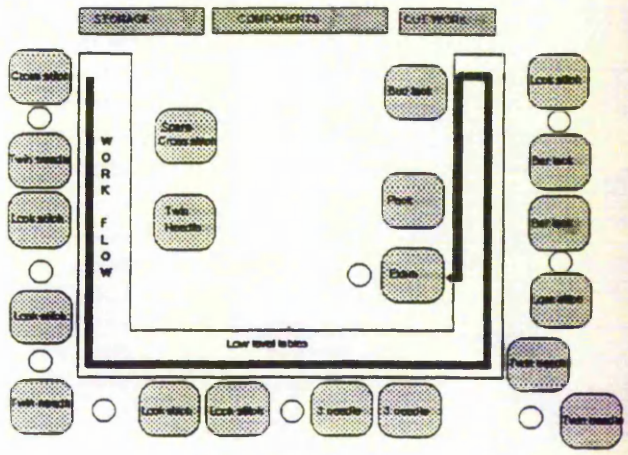
Opportunities for promotions have not changed though the factory manager thinks it is a lot more likely that team members will become supervisors than line workers, because "in an indirect way they have gained a lot of experience."

Training
Due to the fact that all necessary skills were covered within the pilot team, the company could then utilise cross training for machinists to become multi-skilled. They did not actually start producing efficiently for the first 2-3 months. The Factory Manager feels that this is the best way to train them, as they have no space for a separate training area, and being trained on the team helps them gel. Also, this way a team leader naturally emerges. Team leaders act as communicators between the team and the supervisor. The leader selected by the team usually is not someone the management would have chosen : one is very quiet and well respected, another has the most skills, and another is the one who 'shouts the loudest'. If the Factory Manager chose someone who the team do not respect, then the company would not get all that they could out of a team. If trainees are unable to cope with sewing room work, they are transferred to the cutting and preparation site a mile down the road, where labels, straps, etc. are made.

METHOD OF TEAMWORKING

Product	Bras
Operations per garment	20
Operators per team	6-8
Machines per team	13-16
SMV per garment	3hrs 50 mins
Average bundle size	24

Machinists are seated in a 'U' shaped configuration, with swivel chairs to turn to the next machine when a bundle is completed - they typically carry out 2-3 consecutive tasks. Work is put into small plastic trays when completed and passed along a low level table within the team to the next operation. An examination and packing table is positioned in the middle of the team to allow easy communication between operators and examiners when faults are found. They have a bar tack and a bud tack machine on stand up units and tried to put lock stitch machines on ones too, but could see no advantage to doing this and changed it back. Teams are given a full day's work, which equates to around 30 baskets or 60 dozen bras. They work in bundles of 2 dozen, but the General Manager would like to see them working with single garments. The Factory Manager and Supervisor work out the production methods and give them to the teams, who will make the adjustments accordingly. Production is calculated weekly, with the number of hours a week needed for each operation. For example, one operator will do the same job for 31 hours, while another in the same team will do 3 operations each lasting 10 hours. Charts on the walls indicate skills of the operators, and teams have target boards with actual performance filled in below the target. Targets are calculated by dividing contract hours by hours per dozen.



Team Meetings

They started off having team discussions once a week, for ½ hour every Friday, where teams would talk about what they were doing and what was coming next, in the presence of the supervisor. They were asked whether they were happy and whether they were having any problems. "When you first start up a team you need them [meetings] about once a month, for the first few weeks". They no longer have team meetings however, except if they have a particular problem. If the Factory Manager can see a particular problem, she will talk to the whole team. Machinists can decide on their own work station layout if they wish and who will do which job. In some instances they are able to have some influence on who is in their team, for example, one person left a team and the rest decided not to replace her, neither did they want their target reduced. However, after some time, they did find that their target was a little to difficult to attain, and they asked for a new member.

Absenteeism and Holidays

Part-time workers are mixed with the full-time teams. The part-time worker will either make up sufficient buffer stock for the rest of the team to continue for the remainder of the day, or other machinists within the team cover for that particular job. They arrange this themselves, and know exactly what is needed and where it is needed. This is why they need more work-in-progress than they would like .

The company have recently introduced an absenteeism monitoring system, where charts are displayed on the wall for each team to indicate who is not in work. This is said to have had a positive effect on absenteeism levels as people are less inclined to miss work now because their names will appear on the wall.

In terms of holiday leave, the factory shuts down for set periods, which causes fewer problems than individuals having an annual leave system.

PAYMENT

The General Manager explained that paying an hourly rate failed for the company because it resulted in all the operators working at the pace of the lowest performer. He thought that the principle was good, but it did not work. He feels that the present system is a good motivator because it rewards skills and output, however, it does still need a ticket system. They are now relatively happy with the scheme they have, though the factory manager feels it could be made simpler to calculate. They have a team piecework system, with a bonus, providing they keep their time-work to a minimum. They additionally have a skills bonus, which is dependant on how many jobs they can do at a certain performance. All figures are currently calculated manually. No one has had a reduction in pay; they are all £10 a week better off, depending on the number of skills they posses. Skills are categorised into groups of similar skill types, and machinists are paid according to which category

they fall into. Their primary job is counted as their first skill. and they decide which skills they want to class as their second. third and fourth skills.

They are then paid an additional : 5% for the second skill
10% for the third skill
15% for the fourth skill

They have one operator who has reached the ninth skill category! This system encourages machinists to learn new skills and to be able to transfer to other jobs within the team when a member is absent. It also helps to reduce their time-work.

TRAINING

Skills Training

They have two training schools, one in the lingerie division, and one in the knitwear division where raw recruits and returners are taught 3-4 machining skills. The training instructor then trains them on the specific skills they will need within the department. New skills for existing members are taught via cross-training on the teams, with the help of the training instructor. 'Checkmates' are used to monitor teams performance constantly, which gives an over all performance figure at the end of a day. These are checked by the training instructress. It is a computerised system where a button is pressed for every completed bundle of work. The figures are given to the Factory Manager every week. Anyone who is continually absent is sent to the Factory Manager.

Machine Mechanics

Machinists are trained to change needles and adjust the machine tension, but the mechanics are unhappy with them altering the machines at all.

Team Building

No team building training is given, though the company are now looking into the possibility of offering such training. "They learn to work together in-so-far as they pass work to each other in the training school, but no more than that." Additionally, many trainees are school leavers, and are happy to be told what to do to begin with, though this does change over time!

BENEFITS

Benefits Anticipated

They were told that teamworking would reduce their time-work, lower absenteeism and serve to multi-skill the workforce.

Benefits Realised

They did not enjoy all the benefits expected as absenteeism is now being monitored to try and reduce it. Machinists are now very conscious of time-work, which they were not before ; "they had never had anyone question why their time-work bill was so high", so this gave the machinists a greater awareness of how their wages were calculated. Labour turn-over and quality have both improved.
Average performance of a team is 103-108% compared to 90% on conventional production.
Throughput time reduced from 2 days to 2 week.

QUALITY

Quality standards are set by the company, not its customers. They are intending to go more up market next season. the company itself are constantly improving quality standards. Buyers and consultants from their customers visit the factory to see the teams.

REACTIONS TO TEAMWORKING

By the operatives	All operators spoken to were happy with the new system. One operator said that she felt a lot more guilty if she was off work and that the peer pressure was high, though she would not like to return to conventional production. Another had left the company because she was unhappy on conventional production, but returned to work on a team. A third person spoken to had her pay double as a result of working on a team. Each person interviewed would not like to return to conventional production. Operators in general were used to having a lot of work in progress around them and kept asking for more baskets of work to give them confidence. The suspender belt team found it most difficult to adapt "partly because of their attitude and partly due to a lack of understanding". Also a natural leader did not emerge, which caused some communication problems with the management.
By the mechanics	The head mechanic contributed some ideas. The others were happy enough, though their workload was increased by the purchase of 30% additional machinery.
By the supervisors	Life for the supervisors is considered to be easier now, though it was more difficult for them in the initial stages. Supervisors find they have more time to check work and monitor the teams. Initially they had more work to do because they had to help and support the teams. They found it difficult to stand back and let the teams get on with it. One supervisor feels insecure about having so little work in progress around her, and needs confidence that work will arrive from the cutting division.
By senior management	All 3 members of the management team were fully committed to the transfer to teamworking. The General Manager would particularly like to see a greater reduction in work in progress, but they have experimented without success so far. The Factory Manager feels that planning has become easier because they just need to ensure there are enough staff hours available to get the work completed, and a lot is left up to the teams.
By the retailer	The company now has a better reputation for deliveries, and as a result their sales have increased. Their customers give details of deliveries to them for inspection. The company are finding that it is becoming more an more necessary for them to be flexible with their orders.

FURTHER EXPANSION

The company would like to install more teams in the future, but want to ensure that what they have done in the bra department is effective first. Also, there is some resistance from the manager of the lingerie section to try teamworking again, and it would be more difficult because they have shorter runs of more styles than the bra division.

There are people currently waiting to go onto teams if the opportunity arises, who want to know why they can not go on the teams so they can have a similar payment scheme.

At present they are only able to put 2 styles onto a team at once. If the Factory Manager can find a way of putting more styles on a team, then she would like to convert more of the factory.

PROBLEMS

It was difficult for the supervisors to portray to the teams that they must start making decisions. This was especially a problem on a team where a natural leader did not emerge. Supervisors did not receive any training to help adjust tot these new roles.

They initially had problems with the suspender belt team because they did not have enough room on the factory floor, so they had to move it elsewhere. The team were finding it very difficult to reach their targets and keep

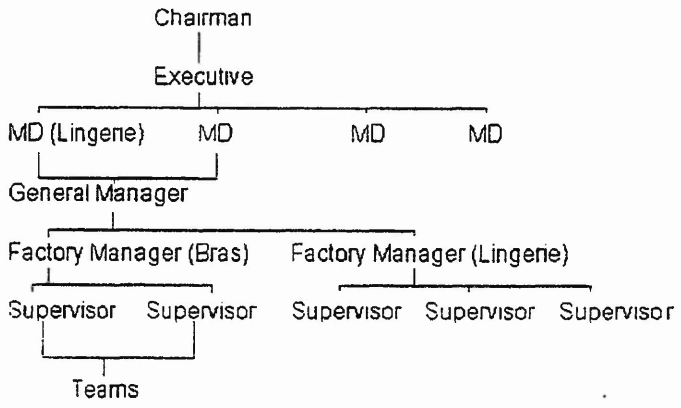
their time-work down because they had 7 styles to make. It was still not felt to be successful, though it had improved. It is hoped that when they have only four styles to make that their performance will improve. An added problem is that the styles are very different. Where one suspender will take 1 hour per dozen to manufacture, another will take 2 hours. Supervisors found it very difficult to get the machinists to move as they had a tendency to want to finish a large bundle of work before moving, rather than to try and make the whole garment between them. "They are now superbly multi skilled, and go from one machine to another, but are not getting the work out and do not seem to have the team spirit at all".

One team was not performing very well due to absenteeism and attitude problems, and because the company had been hit by a bolt of lightening in a storm they had spacial problems! So the company joined this team with another to try and help them understand how it worked. However, the Factory Manager was unhappy with having 13 people in a team, which was justified by the animosity between the teams which occurred, particularly as the good team had to have the 'time-work bill' of the poorer team. They had to stay in this large team until a particular promotional line was finished on the team, they were then split again. The company were planning to put some teams side by side to try and encourage a little competition between them.

HINDSIGHT

If starting again they would give the supervisors training to cope with their new roles. Also they would change their method of operator training and train them before putting them on a team. They would also put the training instructress in the team to train, rather than use cross training because "you loose 2 people in production" by doing so. However, in light of their experiences they would introduce teamworking again.

ORGANISATIONAL STRUCTURE



TEAMWORKING CASE STUDY

OCTOBER 1993

CURTAINS & ACCESSORIES

CODE: Company L

Compiled by : J.F.McLellan

Interviewees : Factory Manager (FM), Supervisor. Job Trainer & Planner

COMPANY PROFILE

Products	Ready-made curtains, cushion covers, pelmets and tie-backs
Main customer	Small retailers
No. of 'styles'	Approx. 100
Seasons per year	2
Date of first team	Spring 1991
Number of employees	230-40
% Operating as teams	60% (17 teams)
Planned extension of teams	Extension to accessories department

60-70% of this company's customers are small retail outlets, grouped within the same localities and the remainder are large retail chains and mail order companies. They also have a growing export business, particularly in Germany, where they supply the biggest mail order catalogue.

The 48 hour turn-around service has always been part of the culture of the company, though it was previously difficult for them to attain. They used to achieve it by holding high levels of stock and a great deal of work in progress in the factory which proved to be uneconomical. Now they have a small finished goods stock, and less than a day of work in progress and they reach the target 88.5% of the time. the remainder being lost through late fabric deliveries. This is accomplished through the use of teamworking, and as a result the company has been brough to a profit making situation in a 3 year period.

The company aims to blend the philosophy of teamworking with the demands of the business in order to try and strike a balance between motivation and the attainment of quality and production volume. They feel they have achieved this to a large extent and it is felt that this is why they have grown as a company. The 24 hour 'Goldstar Service' has also been a feature of the business. "Many people try to emulate it without success because they have not had the basic culture. Team working has enabled us to enhance our culture more positively and effectively. "

AWARENESS OF TEAMWORKING PRIOR TO ITS INTRODUCTION

The FM had previously been involved in teamworking in other clothing companies, so he already knew some of the approaches available. He was not in the company when the original pilot team was set up and they used a private consultant who carried out the initial work and discussed it with management. He was involved in selecting team members by looking at skills and attitudes. this got the project under way. When the present FM arrived he decided to take teamworking further and selected members for a further 5-6 teams. They then recruited and trained one team at a time.

THE INTRODUCTION OF TEAMWORKING

One reason for the introduction of team working was to try and change the culture of the company. They were suffering from a large number of strikes and poor industrial relations as the company had a very back street. sweat shop image resulting in a labour revolt. Additionally the previous management were extremely autocratic and relations with the workforce were "diabolical" as they all had rules of their own also the factory was at the time very behind in their marketing techniques and many other ways in comparison with clothing companies. Part of the change involved the employment of a completely new management team. For the first year. the factory manager spent most of his time restoring labour relations. and he feels his work has now been rewarded. Teamworking has played a major role in providing a platform for this change.

There was little Union involvement in the implementation of teamworking, though the union official for the area gave them full support. The factory manager feels the workforce have changed enormously as people and now work well together, though " it has taken two years to get there."

The Pilot Team

They used a pilot team initially to introduce the concept of teamworking and then put the system in properly. The investment on equipment totalled around £300, as their budget was extremely tight. They did not have the hanging rail system until later, and that cost £2,500-£3,000 per system (for 2 teams). They introduced the teams at the pace of 1 per week / fortnight as they were tied to how quickly they were able to adapt the machinery. They saw that the pilot team had worked well, and after many discussions. felt it 'looked right' and decided that they would not know the true results until they introduced more. They did not install a complicated system using electronic displays etc. instead they had a purely manual system which was ideal at the time. "The beauty of the system is that once the product is in there you can't get it out again so it has got to get through. Providing you put the work you want doing into the system, you know it will come out. This has been a great help."

Selection

The FM feels that he may be "a little blasé" regarding team selection, but he feels people ought to just make a decision and get on with it. When he first joined the company in 1991 and they had started teamworking the machinists were behaving as if they were on 'bus trips' ! "One week she wants to sit with May, then next week she's fallen out with May and wants to go and sit with Nelly. If you let them do this you'll never have a settled team." In the end they made the decision that no teams could change unless there were very valid reasons for doing so, and everyone settled down. They did have one or two problems where teams were sent up to his office and asked to sort their problems out amongst themselves. They have since only changed one team over because they could not get on with each other, and the company were not happy with the way they were working. "From the moment we put a stop to teams swapping members it became a success"

Additionally they were in a fortunate position because the company was expanding and new recruits were set up and trained as a team immediately.

Recruitment

Interview techniques did not especially change, though the FM feels that they did not have a terribly good selection criteria. They introduced a trainability test immediately and subconsciously looked for people who stood out as being aggressive who would not fit into a team. They did not consider psychological testing as the FM feels that it causes unnecessary anguish and that the sales team for example would not be particularly interested in whether teams are getting on well or not, providing they are hitting production targets. "If teams have problems you obviously need to sort them out, but you do have a factory to run. Many people forget this."

Training

Multi-skill training was given to the pilot team members , but no team building. Some machines were slowed down, but not too much because of the length of the seams.

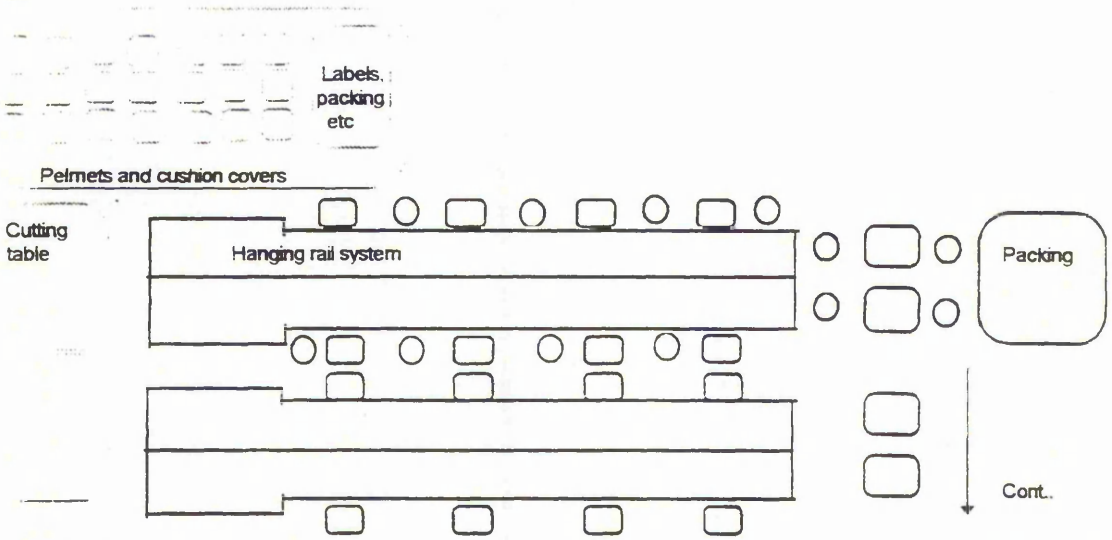
METHOD OF TEAMWORKING

There are 17 teams, 14 of which are on the overhead rail system and 3 specialist teams, on a table-top system. One specialist team makes velvet curtains. one makes short run orders and one is named the 'Gold Star Team' who have to get all work out on the 24 hour service.

All curtains are cut in pairs to ensure they match. Curtains are loaded onto the centre of the rail system by the 'loaders' who are paid as part of the team. There is one rail system between two teams so one set of work goes

down the right of the rail and the other set down the left. The hanging rail system has taken a lot of the physical side of the work away for the machinists, has saved on floor space and has cut down on handling time by 12%. The remaining three teams do still need to make some physical effort. A great deal of engineering work has been carried out on the rails to make it easier for the machinists to pick up and place the curtains at the machines. They have a clamping system which presents the end the machinist must work with, to avoid making mistakes. After the completion of each operation, the machinist will clamp the curtain so that the correct end is passed onto the next person. Generally overall efficiency of these teams had improved, with the exception of one or two who are in the 70-75% bracket of performance, but more teams are getting into the 80%+ efficiency bracket, some are even above 90%.(They use GSD).

Layout



Operations per curtain	6
Operators per team	3 (+2 packers and 1 shared loader)
Machines per team	4 : 2 blind hemmers, 1 lock stitcher, 1 twin needle taping machine
Operator movement	Dependant on how well the team interact
SMV per curtain	Total : 8.63 (Machining time 6.33, with 1.15 for the two packers)
Throughput time	4 hours (previously 2hrs-4weeks)
Average bundle size	10
Team efficiency	75% (as is factory efficiency)

The Quick Response team

They have a team specifically set up for designs with very small runs, for example, the end of a line where customers occasionally request an order, and the company do not want to have to retain. So every now and then they get 2 or 3 orders for about 30 of a design which they will put on the quick response team, who have their own cutters, all within the framework of the quick response system throughout the factory. This has given them an enormous advantage in terms of turning around at the end of a season because they do not need to hold large stocks. This has resulted in them saving money from having fewer 'right-offs' and a reduction in the need to sell off excess stock cheaply where they only just cover their costs.

On an average curtain they only have 3-4 machine operations, 2 of which are very similar. If specialised machinery is needed they tend to designate a team to produce those curtains rather than having a bank of machines. They do have people who can step in if necessary, but never to the same level of productivity because they don't have the opportunity to practise.

- The planning department go to great lengths to keep the same work on the teams. though it is not always possible.
- Operators will move according to the length of their operations: most teams self balance.
- There are no set kanban rules as it is difficult to let too many pairs of curtains build up anyway because of the space.
- Most team members can do all operations. though they will generally just do 2.
- If packers are experienced sewers they will join in if needed.
- The loaders are on an incentive scheme so it is in their interest to supply the teams with enough work.
- Teams monitor their own quality though it is difficult to detect quality problems on such a large item.
- The teams do not have names, though the next step the FM wants to make is to have a picture of every team in the rest room with a designated 'team of the week' for the team with the highest productivity.
- The target board is completed by the supervisor every 2 hours. The FM would like to see the previous days performance displayed as well.

Team Meetings

The teams do not currently have team meetings, though the supervisor would like to have them. It is the next thing she would like to start. The FM agrees with the supervisor's comments that they should be talking to the teams more than they are at the moment, however, if there is no focal point, such as discussing operational sequence, then it becomes difficult for teams to contribute. He feels it may simply provide a forum for the teams to "have a moan".

"If there is a particular problem with a team they will be taken off production to talk the problems through, so in that sense they do have meetings, but they are not regular meetings." Some things which were included when team working was originally set up they have not continued either because they do not have the time or because they do not feel they are worthwhile. For example, style changes do not need meetings because the teams can not have input into making up a curtain in the same way as teams in clothing companies because curtain manufacture is relatively straight forward.

Each team elects a representative, so that if messages need to be conveyed to the teams it can be done through the representative. They are the communication link between management and the teams. Management have altered their style since the implementation of team working and have improved communication.

The FM feels that the business is being pushed to develop and there is so much pressure on management to get the finished work out that they have never had time to do some of the things other companies can, for example team briefing.

Absenteeism and Holidays

They do not have set holidays, and this causes some difficulties for the company, so they have one main period for people to take holidays to try and alleviate the problem. The biggest obstacle is that the holiday period is always just before the launch of the new range, so it will always be a problem. The supervisor feels that "With teams you have more of a problem because you'll never get a whole team taking the same week off."

The company has an unusual system where operators work 43 hours for the busiest period (September to December) and then after Christmas they take every other Monday off for a long weekend to compensate. This scheme is now in its second year. Most people are happy and it offers much more flexibility for the company.

The FM feels that an important element of team working is to get absenteeism under control because one absent team member affects the whole team more so than an individual's absence on conventional production. They had an absenteeism monitoring system to indicate in what category the absentee is, in terms of how frequently they are off. If they fall into the bottom category (c) then they are very quickly told that they are not desirable as an employee and something has to be done. and if they don't do anything then disciplinary action takes place.

PAYMENT

When they first installed team working they introduced a payment system "which was far to attractive". It rewarded the teams far quicker than expected compared to productivity levels. The FM would like to revise this completely. One of the main aims has been to get as many of the teams to a good earnings level so that if they do make any changes it will affect very few people. They have a banding system over a 2 week period where each team's

earnings are assessed. Each team has a set of SMVs for each type of curtain they do. They differ from clothing production because for just one style of curtain they will have 9 standard minute values - (3 widths and 3-4 drops) because the sewing distances differ too much to have an average value. The team's daily production is calculated into SMVs and from this performance is measured. This is purely for the feedback to the operators on a daily basis, intended as a motivational factor. The performance measure is of the team as a whole, as the whole team is responsible for their productivity. Each performance band pays a particular sum of money - they will receive this sum for 2 weeks until the next assessment is made. Each team has a target board, so they know exactly what their targets are to help motivate them. The problem with setting the target is that values can not be precise - one minute they could be doing a 90 drop curtain and the next a 72 drop curtain which makes it very difficult to be accurate, so it is only intended to be a general guide. Targets are set by the FM through the supervisors or the production manager. They have tried electronic target boards. but the same problem arose, and the administration required to make a precise target would be uneconomical.

Average earnings are £4.39 per hour, which equates to around £15 per week more than people earn in a comparable industry. The FM does not think any of the team members took a drop in pay, and feels that most people have benefited. though some initially were not happy with the payment system.

In the long term he hopes that the industry could move away from the piecework culture towards a flat rate of pay. If a good basic rate system could be developed then "no one would like it more" than the factory manager.

TRAINING

The planner sees teamworking as forming a wave which had reached about team 8 at the time of the visit. The ones lagging behind are not doing so because they are not good machinists or good teams. it is because they are still becoming accustomed to working as a group and used to moving around. "Once they have found their own balance the team will be successful."

Training for the new recruits takes 3-6 weeks and then they can be put directly onto the teams. Over the last 18 months - 2 years they have tried to train packers to be machinists and vice versa to make production more flexible and develop the teamworking concept further. Unfortunately some of the teams have got packers who can't machine. mostly people from the original labour force. They tried to highlight the need for flexibility in their plan - a controlled flexibility to ensure efficiency.

Type of decision made by operators include quality issues, performance levels and dealing with personality problems. They will be asked to discuss a new product if it is though by management to be relevant.

They usually have 4 trainees at a time and tend to have to cover for pregnancies more than anything else. They have just one training instructor, who was somewhat over-worked in the initial stages of setting up the teams.

Skills Training

The company carry out a trainability test at the interviews and tend only to employ a-b categories. Machinists are 80-90% multi skilled, but packing requires a lot less skill, so the emphasis of the training for packers is quite different - quality inspectors are more involved in their training. The training programme takes as long as needed relative to the person's ability and is carried out 'on-the-job'. The instructor makes training pieces out of off cuts and trains the machinists on one job initially to ensure they are able to adjust tensions, get correct measurements etc. They are mostly trained to carry out all operations, which makes it very flexible and enables one operator to cover for another. They do not use any cross training as it would effect production. It takes a few weeks for team working to fall into place with experienced machinists. and a couple of months for new trainees. Problems arise when someone who has learned the skills quickly is much further ahead than the rest. If this does happen she will tend to help out more and use more of the machines than the rest of the team. The factory manager does not think it is possible to get everyone to reach the same standard simultaneously.

Initially it was necessary to give the teams a production target to aim for so they had some idea of what was expected of them. Now one of the supervisor takes 2 hourly checks. The more established teams have gone further through the learning process and have been exposed to the system longer.

Training in Machine Maintenance / Mechanics

The operators are taught basic machine mechanics. changing needles, oiling the machine, tensions etc. Once they have achieved a satisfactory quality standard and understand how the machinery works, then they will be transferred onto a production team. Most people come from the clothing industry.

Team Building Training

The philosophy of working and thinking as a team was difficult to convey initially. People used to complain that they were doing more work than the next person. Once they got over this problem it became easier. The factory manager thinks that only time can solve this problem. When training the teams they did not have any team building/communication training as such " it was all down to personalities ". In the interview they try to decide whether personalities are likely to clash. Out of 90 people, they have only had 2 'failures', though it is recognised that it is easier to get 5 people to get on well than it is 8, and whether it was by luck or judgement, it has been successful.

BENEFITS

In the past the production unit held enormous quantities of fabric and finished stock, totalling £5-6 million, and throughput time ranged from 2 hours to 4 weeks, making planning extremely difficult, so the company could not function in this way any longer. At the time they were making a limited range of products (a velour selling 8,000/week and a few printed products) but because the way the business changed, the disciplines they worked within had to change as well. They now have a wider variety of stock, trims and goods generally. Without the discipline and culture needed for their 48 hour turn-around they would be the same as the rest of the curtain manufacturers which is why they had to change. Now they need to be more specific with their timing. They have the flexibility to bring production forward or take it back if needed. They are not necessarily at the stage where they can do this the same day, but they have come a long way.

Regarding performance level the factory manager thinks that in real terms you will lose some degree of operator performance, but you will gain on utilisation of labour, which balances out the difference so the overall position is equivalent to piecework.

Benefits Anticipated

- To compete with imports by offering fast delivery and quick response
- Improved quality and performance
- Enhanced worker relations.

Benefits Realised

- Overall improvement in productivity since teamworking of 211%
- Repairs and seconds were at 6-8% and now are <1%.
- Customer returns are now 0.4-0.1% for manufacturing (previous figures unknown).
- Planning is improving as teamworking helps them to refurbish the stocks in a more controlled way so that planners
- have a chance to regulate the stock much better than ever before.
- The company can offer reliability and quick response to their customers

Quality

The trainer feels that "Quality is a lot better on the teams because they are self managed and responsible for their own quality - they must get it right first time." The quality standards set by their customers have increased and the factory manager feels this is true of all product types because customers are becoming more discerning. The curtain industry is now becoming a fashion area and as a consequence they are more aware of whether items co-ordinate.

Most quality problems are caused by fabric faults, the most common type being differences in shades. They get some fabrics from Australia where they have problems with shading more so than late deliveries.

The factory manager's opinions on Total Quality Management (TQM) are that it is very good when looking at administrative functions, but quite different in relation to manufacturing. Teamworking can be used as a catalyst for TQM because people adopt responsibility, ensure high quality and work together, so in this respect one way of achieving TQM in manufacturing is to introduce team working.

FURTHER EXPANSION

Currently the curtain section only is teamworking, but it is to be extended in another format to the accessories section by July 1995. Because the curtain part of the business accounts for 85% of the fabrics, the attention has focused on that so far. The accessories department is far more labour intensive - they have 3 supervisors to 50 operators because of the high degree of work content and change overs. The supervisors are there to organise, not to move work or sew. However, the company has also concentrated on ensuring that consumers are offered a wide choice of accessories and the FM feels that this has helped improve their business.

The FM would also like to include the cutters in the team, who are currently on piecework. However, he feels it would be difficult to do in reality because they supply more than one team at a time.

PROBLEMS

They have 2 teams who make unusual products and in the event of absenteeism it can be difficult to transfer production to other teams e.g. they make frilled curtains which require very specialised machinery. They have cross trained as much as possible but it is not always possible to cover for absenteeism.

REACTIONS TO TEAMWORKING

By the operatives	Standing is believed to be better for the machinists because the product is so big. They changed from sitting to standing when they converted to teams and the number of back problems has reduced as they can move around a lot more. They initially suffered leg pain for 2-3 weeks. The FM feels that everyone is very enthusiastic, and are encouraged to make their own decisions. They are now much happier.
By the training instructor	"You can't believe the transformation". It has only taken 2-2½ years to change the entire culture. The trainer has been in her current post for 2 years, before that she was a machinist in the accessories department.
By the supervisors	The supervisor not only has to provide the teams with work, but she has to keep the cutters supplied with work now too. She is more involved in planning, and her role requires more management skills, making sure the right work is going on the right line. Now they have 2 supervisors, one pushing work into the system and the other pulling it out the other end. The other supervisor left the company out of choice. The supervisor interviewed now feels she has a lot more responsibility and she has got more people to provide work for. She is in charge of 100 people now as opposed to 24 previously.
By the planner	The planning department used to make a production schedule which they were tied to until the end of a week. Instead they now have 2 planners and production managers who raise a plan and are responsible for ensuring it is followed. This has made an enormous difference. In an unwritten way they have tried to apply the teamworking philosophy to the management, so planners are also production managers, and work closely with the supervisors to ensure it works. This is very effective. The head planner is responsible for fabric buying and the other two liaise between the FM and the supervisors which is in itself is considered teamworking. They have management meetings once a week where the factory manager, production planners, warehouse managers, sales people, buyers of packaging etc all get together to discuss what is coming up, sales etc. This too has made an enormous difference to the company and had served to integrate what used to be entirely separate departments. This too is another form of teamworking. In the past there was no communication between sales, production and planning and the planner feels that the business simply could not function like that any more - they need as much information as possible from the sales department as quickly as possible to service them. The communication has improved drastically in the last 2 years, as much as other improvements in the rest of the factory. They settle differences amicably and will meet regularly so " the whole team situation runs through from top to bottom". The planner feels this is vital for anyone using teamworking.
By senior management	The FM feels that the change in management style occurs subconsciously, "In teamworking you need to forget that you are running a factory and think that you are running factories within a factory. Instead of looking at the overall strategy, you think that you have 5 teams or 10 teams and each of those is a factory within itself, so if you've got a girl off you've got 20% absenteeism. If a machine breaks down the team is affected. You must look at management style and planning within each of these little factories. This is where the difference in management lies. It is a forced change, which can't be prescribed. Many people may fail if they try to run the factory as they always have in terms of planning, their approach to supervisory structure, how they implement the disciplinary procedures if there are any etc." It is felt that the company do not necessarily receive commitment from senior people in the sales department. He believes that they are simply interested in whether orders will be delivered on time. " If teamworking gives them the end result, then they will be in favour of it. If it was something else, they would be in favour of that." The MD however was committed to teamworking and the FM feels this was essential for its success. People on the manufacturing side are all fully supportive and see the benefits it offers.
By the retailer	Customers know that the company are teamworking. The catalogue companies in particular are very supportive and are convinced it is the right thing to do, and from their point of view they can see the benefits it gives them. They do use teamworking to sell the image of the company. It is difficult to tell whether it has won them more orders, it has allowed them a quicker turn round and the ability to deliver, so in that respect it has.

HINDSIGHT

The main lesson learnt by the factory manager is that they have not given the team sufficient technical expertise or spent as much time with them as they would like to have done and as a result the productivity level has been slower to increase than it might have been. With more technical help, productivity would have increased faster. If they were to have done anything differently, they would have introduced the hanging rail system immediately.

He feels that in general senior management are not interested in the learning curve. they just want to push production out. and this puts pressure on factory managers. "Once team working is up and running it is not a problem. but the pressure from senior management is huge during the growing pains of any new system".
What has helped teamworking the most is the success of the company, as they tell the workforce of the improvements and benefits to the company which builds their confidence. They see it working and see that more and more work is being brought on which gives them enormous confidence. This in itself has convinced people of its success.

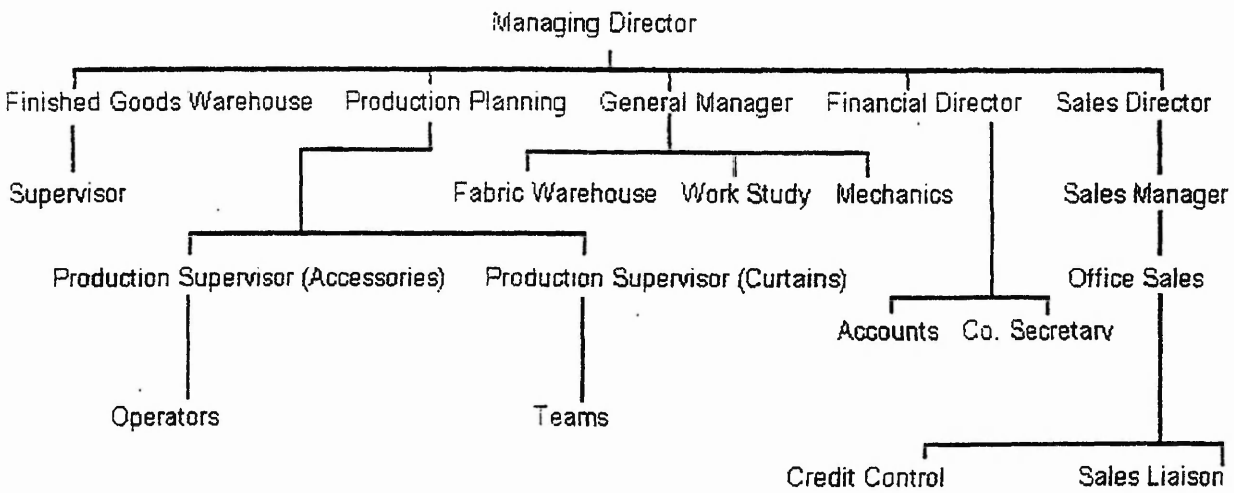
The FM would, without question, introduce teamworking again, in this or any other company. He doubts the effectiveness of team working on products with very low work content as he feels operators would have to change jobs too often and conventional production would be more efficient, and that absenteeism would be more of a problem. He feels teamworking is far better suited to high work content, high quality products, where unit cost is not as important as the quality. He believes that the greatest benefit that most companies could enjoy is improved quality.

ADVICE TO OTHER COMPANIES

His advice to other companies is for them to be absolutely clear as to why they want to do team working and to talk to as many people as possible and see as many systems as possible. They should not assume that one company's system can be transferred into their environment.

Finally, the FM also advises that when introducing team working a great deal of consideration needs to be given to the payment system. He experienced a high basic rate, low incentive structure in a company he worked in previously and observed it "back firing" on them.

ORGANISATIONAL STRUCTURE



TEAMWORKING CASE STUDY

July 1993

Bridal and Evening Wear

CODE: Company P

Compiled by : J.F.McLellan

Interviewees : Factory Manager

COMPANY PROFILE

Products	Wedding dresses, ball gowns and evening wear
Main customer	Own brand retailers
Date of first team	January 1993
Number of employees	100
% Operating as teams	100%
Planned extension of teams	N/A

This factory is part of the same company described as 'Company O' in the case study databank. They manufacture high quality bridal wear for their own retail outlets. Some of this company's production is carried out in Naples and Hong Kong, who they can not compete with in terms of cost. However, they can compete on *quality* and *service*. With the current system, it would take 2 weeks to turn a garment around, taking into account bundling work, going through sewing briefs etc. At the moment there is not specifically the demand for quicker turn-around, but in 1989 the company were doing extremely badly and were close to shutting down and it has gradually built up since a new director joined the company and has put a new focus on the business.

AWARENESS OF TEAMWORKING PRIOR TO ITS INTRODUCTION

When the factory manager joined the company they were already 100% teamworking on the sewing floor - the installation had been carried out by the factory manager of 'Company O'. He carried out some research into teamworking when he started this job - journals, books from the library and knowledge passed on from other managers. He learnt from his previous job that teamworking was a good thing, providing the market was suitable i.e. not for long runs and volumes of production where setting up the machines and getting them running is all that is needed. His first contact with the concept was when he was working for another company in which team working had been set up and had failed dismally because it had been used for samples and all sorts of work. It was a stand-up, single garment system, making a very simple T-shirt which took about 7 minutes, so it was quite easy. The machines were slowed to half-speed which helped, not because they were trainees, but because it was seen as the 'right thing to do' to reduce machine break-down. On a normal job they would have about 80% handling and 20% sewing, so it did not make that much difference, it was better to have more reliable quality. They learned all the jobs first, so they could do every job, including pressing and trimming thread ends before starting proper production. They were responsible for their own quality, but it had a final inspection because they were trainees. He left just before the end of the 6 months and the team was disbanded when he left. The person who took over his position as factory manager was an ex-production engineer and it just "wasn't his thing". He was therefore not too keen on having it in his factory because he had always been brought up to see factories working in straight lines, so putting teams in horse-shoe shapes meant taking up a lot more room in his view, and he was generally very sceptical of the idea.

THE INTRODUCTION OF TEAMWORKING

The Pilot Team

They have extended what is being done in 'Company O' so that teams carry out all operations, but it is on a trial basis at the moment and there are 2 pilot teams which make the entire product from start to finish. Bridal wear changes style much more often than ladieswear and needs more machinery. What they have found is that they have a 7% reduction in SMV because it needs less examination, less pressing and less handling time, but most of the reduction is through the reduction of examination.

Selection

The formation of groups is considered by the factory manager to be very important. There should be a natural leader. If there is a group with 2 leaders then there are problems, and if there is no leader, decisions are never made. Personalities are considered when putting the teams together, the factory manager believes that it is possible to tell instinctively who is a leader, who may be a decision maker, and so on.

METHOD OF TEAMWORKING

Operators move to other machines as little as possible and are very good at balancing; you never see anybody waiting for work. They will tend to work on 3 bundles and only move once a day, rather than moving say 3 times a day. Some people like to have a lot of work around them - (from the days of piecework). One group never reached a reasonable efficiency because they kept moving. This was because they did not re-arrange their machines when they had a new style, and the work flow was confused.

Product	Bridal wear (all ops)	'Core' garments
Operators per team	8	6
SMV	65-220	65-220
Machines per team	12	8-12
Average bundle size	7 (finish 1 at a time)	7 (finish 1 at a time)

A new style is timed once it has been on a team for 3 days, and the SMVs are corrected either way. The bonus is usually good enough to serve as an incentive. Lower performers tend to hover around bonus earning level - teams see who is not keeping up.

The cutting room are 4 days behind and are 'running very close to the wind'. They may transfer work from one team to another if they are short of work. When for example they ran out of taffeta on 3 teams, they moved similar styles onto those teams. Teams have no say in what work they will get.

Team Meetings

The teams generally get to 'boiling point' before anything is done about their problems. Team meetings are advocated by the management as a means to solving conflicts. The factory manger feels that good teamwork is displayed when people are able to criticise and accept criticism from others, however, it is difficult to convince people of this belief. The teams hold meetings as and when they are needed, for example if they have problems with quality. The team leader will consult the factory manager about having the meeting - he will ask who will be present. The teams generally prefer him to be present, but he usually sits and says nothing, allowing them to solve their problems themselves. If one member in particular is letting the rest of the team down, he encourages them to resolve their differences as a team, however is there is conflict between 2 members of the team, he suggests they try and sort it out without the rest of the team being present.

Absenteeism and Holidays

Absenteeism of the whole factory is around 10% (5-15% for the groups). The best attendance is by the highest performers, the others are no different.

PAYMENT

Operators receive a high basic, plus bonus for over 85% performance. The factory manager feels they need some sort of incentive, and the one they have is fine. They try not to share machinery between groups because they want to give them all the tools they need to make the garments - they decide how they want to do it etc. The Bridal wear teams receive a higher basic wage than 'core' teams as they have no continuity of work and need to be highly skilled.

TRAINING

New recruits receive basic training and join the training group where they are trained specifically for teamworking. They will then join established groups. The team leaders are consulted when a new members is needed as a replacement. It is felt that it is much better to *ask* than to *tell*. The factory manager feels that with the traditional system everything was dictated by managers, work study engineers etc. - they would have 500 garments to make and would *tell* everyone how it would be done. He believes it to be very necessary to move away from this, and as long as people are comfortable and consistent, there will not be any problems.

BENEFITS

There was a lot of stock between them and the customer, and the long term plan is to reduce this to as little as possible. When they reach this minimum level, the short lead-times will take effect. By doing everything within the group, the throughput time is 6 hours.

Benefits Anticipated
They expect to see a 10% reduction in SMs on bridal wear which would pay for any additional machinery needed. (Sometimes teams have to share one button hole machine between 3 for the 'core' garments).

They also needed to improve their quality. Inspection was very fragmented where garments were checked, finished, examined, pressed and examined again. Inspectors are seen as safety nets and are there to be tested. So now teams are responsible for their own quality and when they finish their 2 bundles of 7, they are audited by primary inspection, and instead of the normal procedures, if they find one wrong, all are sent back. This is just on the 2 bridal teams. It gives them much more responsibility for their work. It has helped the quality. Average returns is 15% for the factory, these groups are about 5%. The aim is to do this with all the teams there by the end of January. Getting it right in the bridal group is the best test because the garments are so complicated.

Benefits Realised
The advantages of teamworking are firstly the reduction in lead times, also an improvement in efficiency through less machine breakdown. Off standard time can be around 15% on conventional production, with teamworking there is a natural instinct to help each other and work on something else because the focus is on the end product. So there is almost no down time.

QUALITY

One person sets the quality standards, and it is never disputed. About 10% of the work is checked on the 8 person team. The central quality department go to the factory once a week and check the quality on approximately 20 garments. Some quality inspectors are being trained to be machinists.

REACTIONS TO TEAMWORKING

By the supervisors	The supervisor's role has become easier, as she now has to make sure the group has work for the day, with less input being expected in terms of technical support, personnel issues and quality issues.
By senior management	The factory manager feels it is good for a group to have autonomy and believes they should be given more authority for decision-making. It is seen to take management away from the 'grass roots' level, with which he has no problem, as it releases more of his time for more *management*. On conventional production he spent all his time planning individuals' work, whereas on the teams he has to plan groups of people, which takes less time, and has less 'fire-fighting' allowing more focus to be put on communication and general management of the staff.

HINDSIGHT

If the factory manager came to the factory now, and there was no teamworking, no spare machinery and the workforce were single skilled, he *would* put teamworking in. He feels UPS / rail systems are too difficult to manage and believes managers with such systems will tell you of all the advantages of producing the biggest volumes etc., but he feels it is not conducive to high efficiency because of the substantial overhead costs.

He feels teamworking is a good means of resolving problems and dealing with conflicts, and there is more time for management. There is much more scope for giving and receiving. It turns a lot of production management into human resource management.

The training took too long, and 3 months was reduced to 1 month. He feels they are a lot better prepared now for training - they have a 2 tiered training group, with simpler garments, which over time will include more complicated garments. The training group will eventually become a group of their own - in 6 months, and then they will bring in another training group. He would also like to change the grading system to include 4 and 5, and perhaps give the team leader some sort of bonus.

Finally, he would like to put the whole process into all groups so the next person in line is the customer, where quality can be guaranteed.

ADVICE TO OTHER COMPANIES

You can not use specialised equipment as well as you can on a conventional line. Also, group conflict can be a problem (he feels sometimes he ought to be a trained psychologist!).

Also, teamworking takes up more space. Even though there is less work in progress, they have still taken up 30-50% more space. (WIP can be piled up). It does depend on the product though.

NON-UK CLOTHING AND TEXTILES FIRMS

TEAMWORKING CASE STUDY

JULY 1993

JACKETS AND TROUSERS

CODE: Company AC

Compiled by: M Peeters

COMPANY PROFILE

Products	Jackets, trousers, suits, overcoats
Main customer	Multiple stores
Date of first team	1990
Number of employees	85
% Operating as teams	100%
Planned extensions of teams	Finished

THE INTRODUCTION OF TEAM WORKING

In 1989 a management buy-out took place, leading to the reorganisation of this Dutch company. Three alternatives were possible: closing down, transition to commercial activities or reduction of production activities. The new management opted to reduce production activities. The local company now is orientating to the Quick Response market. Before 1989 the production was located in three departments: one for materials and cutting, one for the assembly of trousers and one for the assembly of jackets. Two production facilities were closed at once and all activities were concentrated in one building. About 80% of the production now is made by subcontracting in low wage countries.

The reasons for maintaining a production facility in the Netherlands were as follows:

- Technical know-how can be preserved;
- It is possible to deliver actual products;
- It is possible to anticipate technical developments;
- Prototypes can be produced;
- Maintenance and attainment of subcontracting and import contingencies
- BSI-brands can be supported on the West-European market.

The director of this company had experience with the introduction of teamwork in another company (making sports trusses) where he worked before. Following his appointment, the sewing room was reorganised and 10 groups of operatives were constructed. In addition, management were required to change away from the former autocratic leadership style. In parallel with the production teams a management team was also constructed.

THE PILOT TEAMS

This company changed all the production to teamworking at once. The reason for this was that the company management thought the whole company was ready for this fundamental change.

Selection

A big advantage in this respect was the fact that the company was forced to diminish in personnel, so one could select the most motivated employees for this new type of work. The teams now themselves select new personnel.

TRAINING

The company is applying a form of cross-training. The employees in the traditional system also need to become multi-skilled. This is achieved by exchanging operatives from the modular towards the traditional and vice versa. For the training of the operatives in the modules the company director has expressed the following statements:

> *"Many times people ask me whether my personnel are qualified for this kind of responsible work. Don't you take too many risks, one is wondering. Otherwise one takes it for granted that the same people set out for the complex traffic each day and that they are managing their household very effectively."*

PAYMENT

In the modular system everyone is paid according to a certain fixed level. This level is related to multi-skilled working. This amount can be replenished with a relatively low bonus which corresponds both with the quantity and the quality of the output.

BENEFITS

The three systems can be compared in terms of productivity, quality, logistics and flexibility. These are summarised in terms of benefits to the management by the following table.

	Bundle system	ETON-system	Modular system
Productivity			
Returns (average)	110%	105%[1]	95-100%
Absenteeism (average)	10-11%	8%	5%
Machine utilisation	100%	87% (40:46)	37,5% (9:24)
Quality			
Disapproval (average)	2,5%	1,5%	0,5%
Logistics			
Lead times (average)	5 days	4 hours	18 minutes
Stocks (work in progress)	10 days	5 days	3 days
Flexibility			
Flexibility	Low	Moderate	High

In general it is possible to see the positive results of modular working in view of the company, especially relating to quality and logistical results which are spectacular. Some disadvantages arise because of the machine investments and the increased time expenditure for non-manual tasks. Of course with the integration of these tasks in the lower echelons, the company will receive other benefits by relieving the work of other staff personnel. The proportion indirect : direct personnel is reduced.

REACTIONS TO TEAM WORKING

After asking the machinists in the teams, they all do not want to return back to the former line system in spite of some suffering from standing. The company is now considering installing a more advance ergonomic system, which already has been implement in another Belgian company. In this company the workers stand above the pedal and the mechanic control of the sewing machines is substituted by electronic drives. The intention is that the operatives can stand upright.

PROBLEMS

No explicit problems were mentioned. It took some time to get the whole process after introduction again going on.

ADVICE TO OTHER COMPANIES

Good leadership is a conditio sine qua non. This means a leadership wherein everybody is considered to be a full member of the company.

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[1] In the ETON-system they worked with lower standard minute values

	Old Structure	New Structure
Output rates	85%	83%
Absenteeism	16%	8%
Turnover	15%	7%
Machine utilisation	100%	50%
Proportion indirect: direct personnel	>12½%	6%
Percentage disapproval	5%	0%
Percentage repair work	>0.4%	0.4%
Lead times	6 weeks	3 weeks
Deliver reliability	80%	100%
Work in progress	+ 8000 pieces	+ 3000 pieces

The main results were shown in the field of logistics. Lead times were reduced from 5 weeks to 2 weeks if fabric is in stock. Also the delivery reliability received a push. Formerly only 70% of the products could be sent within the time promised. With teamwork in place this has risen to 95%. This is also caused by a closer integration of cutting and sewing departments. The extra machines in the teams could be implemented because of the reduction in size of the workforce . More universal machines were chosen, so more operations were possible on one machine.

REACTIONS TO TEAMWORKING

None of the present employees would like to return to the old system. This is not surprising because of the enthusiasm to participate in the teams. With certain operatives one can perceive a pride concerning their work for the company.

PROBLEMS

In the beginning much time was spent on interaction within the teams. Charismatic leadership is very important. The supervisors need to educate the operatives to find solutions to the problems for themselves. This entails the supervisors operating at a distance to the operatives. This is for many traditional oriented management a tough issue.

ADVICE TO OTHER COMPANIES

It is very important for management to adopt new attitudes, which not only instruct and control, but also listen, help and stimulate. Advice from this company is to create an open culture; do not keep secrets. Everybody's responsibilities need to be stressed.

Training
Initially much time was spent on non-manual training looking at co-ordination within the team, problem solving, team determination aspects, stock control. This refers to the domains of organisational and social-communicative skills.

The company still observed omissions in the operational flexibility of the teams, so last year a further training programme was established to multi-skill the operators, with assistance from a national training institute for the clothing industry. A total of 66 people were retrained over a maximum of 1½ years. The financial cost was case, and subsidy was received from the Labour Provision (a governmental body) which receives funding from the European Social Fund.

Problems encountered
A great deal of attention was paid by the initiators of teamworking to team dynamics, as operatives had to become open and communicative. At the beginning many conflicts (sometimes physically expressed!) had to be solved. Re-grouping of teams was also necessary. In addition, differences between wages caused difficulties. In principle, the company offers fixed wages, but the tradition of the former wage system was retained and employees were paid at different levels, resulting in some team members being paid more for doing the same job as others. This problem could only be dealt with through careful negotiation and openness.

METHOD OF TEAMWORKING

The method of teamworking displayed the following redesign principles:

- Parallelisation towards the main products i.e. jackets and trousers
- Segmentation of modules of the products. These modules are based on principal assembly parts of the jackets and trousers

This resulted in a transparent layout of the sewing room. The teams are positioned in a square format. The company has deliberately not selected a team leader or spokesperson.

Team meetings
Once a fortnight every team has a meeting with the management team. Problems in production, new orders and product styles are discussed. The management presents its calculated standard minute values. The teams may comment on this and propose corrections. The company uses 'action forms', where all the determined actions plus the person responsible for it is noted.

TRAINING

Until 1992 no special attention was paid to training. the best machinists were selected and one trainer fulfilled some activities. In general, a distinction can be made between the manual and non-manual skills:

- Manual skills refer to the occupational controlling of the sewing machines
- Non-manual skills refer to the social-communicative and organisational tasks in the job.

PAYMENT

Employees are paid a weekly rate related to their skills through a grading system. No bonuses are given for achieving target output. Contrary to the expectations of some, this did not lead to idleness and high labour costs.

BENEFITS

A comparison between the old and the new structure shows the following overview:

TEAMWORKING CASE STUDY

JULY 1993

JEANS COMPANY

CODE: COMPANY CC

Compiled by : M. Peeters

COMPANY PROFILE

Products	Jeans
Main Customers	Retailing
Date of first team	1991
Number of employees	+ 200
% Operating as teams	+ 30 (i.e. 2 modules): + 40%
Planned extension of teams	End of 1994: +80 (i.e. 5 modules): + 40% Ultimately: 12 modules: 100%

AWARENESS OF TEAMWORKING PRIOR TO ITS INTRODUCTION

New forms of work organisation needed to be introduced into this Belgian company because it:

1. Wanted to retain production in a country with high wages, but close to the Quick Response market.
2. Wanted to find capable personnel, who still wanted to be employed in a sector surrounded by an expanding services sector and higher demands in terms of quality of work and flexibility.

The main attention lies in addressing the Quick Response market, but in addition the need for total commitment of the personnel through teamworking. The initiator of the whole policy, the director Product Support, quoted:

> *"It becomes more and more difficult in our branch to recruit sufficient motivated employees, because not only have the markets changed but the people have too. People do not accept being degraded as automatic. They require a work situation wherein they can develop themselves, and where they possess an active and creative influence, wherein they have the possibility to undertake something."*
>
> *"In the old structures machinists were treated like robots, in order to gain high productivity. For the organisation, the methods of working, the quality control or summarising the thinking other people were recruited. Our traditional cost calculation is focused on the thorough analysis of time in executive activities. New techniques like "Activity Based Costing" are teaching us that especially in the general costs there are several non-value adding elements. e.g. stock costs, quality costs, repairing costs, late deliveries with loss of customers. These costs were not recharged."*

Under traditional manufacturing, the focus was on achieving 5%-15% added value through:

- methods improvement
- further sub-division of operations
- work and movement study
- automation
- robotization

The new form of work organisation concentrates on 85-95% non-value adding elements such as:

- costs of quality control
- costs of production planning
- costs of stocks
- costs of production registration
- costs of inventory

THE INTRODUCTION OF TEAMWORKING

The sewing employees for the modular system were recruited as volunteers. The company has chosen to implement the teams step by step.

In earlier times the factory only possessed one production system, i.e. the traditional bundle system. Three production lines were visible. First the company introduced an ETON-system, the materials handling system with advanced transport technology. So 1½ bundle lines were replaced by three ETON-lines. Later (in 1992) ½ bundle line was replaced by 3 team modules. So at the moment three different systems are functioning at the same time next to each other:

- The traditional bundle system: one line concentrating on production runs above 1200;
- The technological ETON-system: three lines concentrating on production runs around 800;
- The teamwork system: three modules concentrating on runs of between 400 and 200.

The interest of this company is that three production concepts can be studied and compared simultaneously. At the end of 1994 the whole bundle system will be replaced by the modular system, so 12 modules should then be operating. The Eton-system for the present will be maintained for the production of medium sized production runs.

THE PILOT TEAMS

The three teams started in 1991. In an ergonomic sense the company chooses the standing-walking position. In the near future the three modules will be concentrating on different families of products. Each module then gets it's own typical machinery and routing products.

METHOD OF TEAMWORKING

The three groups have a fixed personnel composition. No spokesperson has been appointed. The nine operatives execute different manual tasks. Depending on the person there is rotation among the stations. In two of the three modules operatives now are able to do all the manual tasks. The employees frequently take over the work of each other in conformity with TSS-pull concept.

The teams have the following non-manual tasks: preparatory, supportive and organisational activities.

Preparatory tasks are:
- collecting bundles;
- readjustment of the tension in under-and upper thread;
- control on faults in the fabric.

Supportive tasks are:
- administrative or registration of faults;
- internal logistics, the tuning of the stations;
- re-cutting in case of fabric faults;
- keeping of performance lists;
- repairing faults from previous operations;
- repairing of faults;
- first line maintenance;
- innovating the layout of the working environment

Organisational tasks are:
- the operatives themselves decide how the work should be divided. There are working meetings when there are fundamental problems or when the operatives need to talk. All operatives are present at the meetings, which take place in working time. The operatives determine who needs to join the meeting. In the early stages, teams had frequent meetings, but now this has reduced to once a month with an average duration of ½ an hour. There is no chair person. Real determination takes place in the working meetings of the teams.

The modules are considered as mini-companies. The members of the team know exactly what their costs are and what output they need to achieve to stay cost-effective.

TEAMWORKING CASE STUDY

OCTOBER 1993

LADIES JACKETS COATS & DRESSES

CODE: Company DC

Compiled by : J.F.McLellan

Interviewee: Factory Manager

COMPANY PROFILE

Products	Ladies jackets, coats and dresses.
Main customer	Subcontractor for 5-6 customers
Date of first team	1990
Number of employees	30
% Operating as teams	100%
Planned extension of teams	None

Competition from abroad has a major influence on the functioning of this Danish company. Flexibility is becoming more and more vital, where the firm who can give the quickest delivery wins the order. The factory Manager therefore tells his customers that he is teamworking. If the delivery time is long, companies will use Poland instead.

They do not export. Though 2-3 times per year they deliver to Sweden. They do not know if material is imported because work comes to them ready cut.

AWARENESS OF TEAMWORKING

Teamworking has been discussed in the industry for many years, and in particular abolishing piecework. Both the company and the employees wanted to change the payment system as the sizes of the orders were reducing. They wanted to make payment more equal. A group of 4 machinists and 3 leaders duskiest how the changes could be made.

The employees, the union, the company and the employers association were involved in the decision to move to teamworking. The employers association was only involved in an advisory capacity. The Union supported the decision and were fully informed.

THE INTRODUCTION OF TEAMWORKING

They set up all 4 teams at the same time. The Factory Manager does not believe it is a good idea to start up one team only as he feels there are likely to be too many problems between the pilot team and the rest of the sewing room. You are likely to start off with the best of the employees and end up with the worst.

Six of the workforce did not want to change. The Factory Manager said "take it or leave it"! they all stayed except one machinist. They had to do this because they had spent a year negotiating payments and making agreements with the Union. The Union was supportive because they too wanted to see an end to piecework.

They used a Danish consultant who had put teamworking into other companies, though this was the first time he had put so many teams in at once. Previously he had only put one team into large companies. He was considered to be very useful and discussed problems.
A fundamental decision made by the Factory Manager was that everyone should be able to see each other, so this is why the specialist machinery is included, this way they can have contact, communicate and make decisions.

No budget was allocated for the teams "we just jumped!". Neither did they have any financial assistance from local government. The Factory Manager believes that companies should be responsible for their own financial difficulties and not expect government support them.

Setting up the teams was very inexpensive 50-100,000dkr, which is a small investment. Machines were not slowed down, it is very rare to do so in Denmark. In making a coat, sewing contributed to only 25% of production time, 70-75% is handling time.

Selection
The team members were given the same operations as when they were on line production. For example in group 2 they always manufacture the collars, straps etc but now it is a formal team because they have group payment. On the line they were all individuals, now they do the same operations, but as a team and are increasing the number of skills via cross training, this is with the aim of getting a better efficiency. All the groups have 3% added to their efficiency figures to allow for instruction and cross training and to plan the work. This 3% is therefore incorporated into their pay.

METHOD OF TEAMWORKING

Team	Function	No. operators
1	Cutting and fusing	2
2	Sewing	14
3	Sewing	6
4	Sewing, finishing and steaming. (Coats go on hangers).	8

All teams manufacture the same product, though each team does not make an entire product, they make part of it.

When team 2 has finished, that part of the garment will go to the next team. All products do not necessarily go through all teams, for example a coat might start on team 2.

There are approximately 20 operations per garment, depending on how you define an operation.
There are approximately twice as many machines in a team as operators. They have many specialist machines which are taken into the teams when necessary. They have a total of 60 machines. 50% of extra machinery is specialised. The remaining 50% is L/S and O/L. They need different sorts of button holing and bar tacking, so that they must be available. The machine is included in the team when needed.

They work in bundles of 10 coats maximum, usually they work on 7 or 8. Throughput time depends on the season. In this season, when they know the styles, throughput time is 5-6 day, before teamworking it was 10-15 days.

They change styles every day! The order size is usually 200 pieces, so depending on how many minutes in a coat, they usually produce 120 coats per day. They have 5-6 different styles in production at a time.

They have a maximum of 5 days work in progress at the moment.

Product	Ladies coat
Operations per garment	20
Operators per team	2-14
Machines per team	Average of 2 machines per operator
Average bundle size	7-10

Team Meetings
Teams have short meetings at the beginning of the day, for which they are paid for the first 5 minutes. If they want longer meetings they can have them, as any money lost should be covered by the 3% extra. Meetings take place on the factory floor. In team meetings, they discuss how the team will work for the day according to how many garments need to be produced. The Factory Manager will come and say what he wants and they set their own targets. They usually match!

Absenteeism and Holidays
If someone is absent, the team must cover for them. The absentee receives sick pay. The company has 3 part-time workers and because everyone can cover their operations there is no problem.

Machinists can work over time, though it is not usually necessary for the whole team to stay. If half a team work over time the pay is divided between them.

All holidays are at the same time, when the company closes. If they want a day off they can decide between themselves, providing they can guarantee the delivery time.

If machines break down, 90% of the time there will be a spare. If the machine stops they will receive basic payment. This is to motivate the team to ensure production continues and for the machinists to move to new machines. In the piecework system they could trick the supervisor and have half an hour 'off standard'.

PAYMENT

The teams pay is divided equally among its members, according to their production. there is also a group bonus which they can earn for reaching a certain target. When they worked as individuals, their pay difference was 63dkr (lowest) and 95dkr (highest). Today the difference is 79-82dkr, so the gap has closed and earnings have equalised.

If there is a daily drop in performance there is no problem because "you do what you can". It is only a problem if it is every day. The girls are aware that there are other things which are important for the payment - that you come every day, you can do many operations. It is not simply a question of speed of working.

Some machinists had a decrease in pay; 4-5 people had 95dkr and now they have 80dkr. This was not a problem. The biggest problem was with the machinists who earned about 70dkr per hour and their pay increased to 80dkr; they felt guilty that they did not work hard enough. It was not guilt brought about by the rest of the team, it was just themselves. It was a problem and still is sometimes!

TRAINING

Skills Training
When new machinists join the company the supervisor trains them for 6 weeks and then they join the team. The group receive an allowance of 25% for the first 2 weeks, the next 2 weeks 17%, then next 2 weeks 10% and the last 2 weeks 5%. One supervisor is trained in time measurement, so if she is doing this the other supervisor will look after all 4 teams.

Machine Mechanics
Machinists are taught basic machine mechanics within the company. They are able to change needles, spare parts - presser feet, guides etc. The company does not have a mechanic, they call one in if necessary. They did have one for 4 years.

Team Building
The teams received external vocational training before starting teamworking. The course included production planning, quality awareness, and instruction techniques to enable them to cross train. Also some psychology was included. A psychologist came into the company 3-4 times for training on problem solving, cooperation communication. They saw an American film on teamworking. They also had group discussions.

BENEFITS

Benefits Anticipated & Realised
The main benefits have been the flexibility and delivery time. Flexibility being the most important. Also a reduction in work in progress. Also an increased efficiency.

The factory manager believes they have gained more customers because of the reduction in throughput time. In the middle season (now) they are able to compete with Poland who take 15 days to deliver. They have won orders which used to go to Poland because of this.

Costs of holding stock have reduced. Before they had 3-400,000dkr in production, today they have 150,000dkr, so they are saving a lot of money.

Benefits they did not expect were that sick pay reduced, along with absenteeism. This was because everyone can see what they mean to the team. Absenteeism has reduced from 5.2% to 2.9%. Labour turnover is difficult to say because the industry as a whole has shrinking in the last 6 years. In the past 12 years the number of employees has reduced from 120 to 30. (35 including management and supervision).

QUALITY

Number of returns has not changed, it is below 1%, and is not a problem. "Quality is when the customer comes back, not the garment!"

If poor work is passed through the team, operators will freely take it back to the person responsible. Sometimes it may not be repaired until the next day, and will be repaired by the individual in her own time so that the team's efficiency is not affected. It is better for the group to find faults immediately because coats are extremely expensive. It is to everyone's advantage to ensure that quality is of a high standard throughout production. There is also a final inspection by Quality Control at the end of production and any faults are sent back to the team responsible. In addition the supervisors of the teams inspect quality through out production.

REACTIONS TO TEAMWORKING

By the operatives	Everybody has to change, there is no one group for whom it is more difficult. They have all had to change their way of thinking. Operators are asked to think for the first time after 25 years of being told what to do.
By the supervisors	Their job is as a consultant now because the teams are able to solve many problems themselves. This allows them to look forward, plan and make calculations and develop new methods. They have much longer term goals. Now the supervisors like their new roles, but in the early stages they were unsure of what to do and felt a little lost. The older supervisor may feel she is taking the bigger risk because she has been used to supervising by control - telling people to be quiet. The machinists have been taught to communicate, which could worry the supervisor.
By senior management	The factory manager feels that his job has changed since they have introduced teamworking. He feels that the demands for production planning and time measurement have increased a lot because it has a greater effect on the team if they get it wrong. However, on piecework, it was necessary to be aware of each machinist, now you just have to be aware of the group, because they will tell you if they have problems. Only if the team are unable to solve problems themselves will they turn to the management. The factory manager much prefers this style of management. It is more a function of over-viewing than looking at individuals.

FURTHER EXPANSION

They are discussing the possibility of only have 3 teams or maybe 2 in the next 6 months, by making the teams bigger.

They may merge the first 2 teams to have a 16 person team. This is because team 3 is in the middle of the start and end of production. They can't split team 3 because a 20 person team is too big. 16 is the maximum.

These changes would result in the cutters being included in the sewing team, where cutters would be trained to sew and sewers to cut.

Team 3 sometimes has to wait for team 2, while team 4 are waiting for team 3. The reason for this is that team 3 is 90% sewing and 10% steaming. Group 4 is 90% other things and 10% sewing which makes it difficult to balance. They are discussing this at the moment.

PROBLEMS

Problems were related to payment; how to cooperate, and how to create the groups and learn how to synchronise the movement of the garments from one group to the next. Many of the coats have linings and different accessories, interlining and sometimes 2 different types of lining in one coat.

HINDSIGHT

Other than giving supervisors and managers more training, the factory manager would not change anything he has done. The factory manager told the supervisors what they should be doing instead of offering them training. They needed to be taught about how to cope with handing over responsibility.
The most important thing is how the employers and the company are thinking. "80% depends on communication and motivation, 20% relates to production". All management need to be committed for it to work.

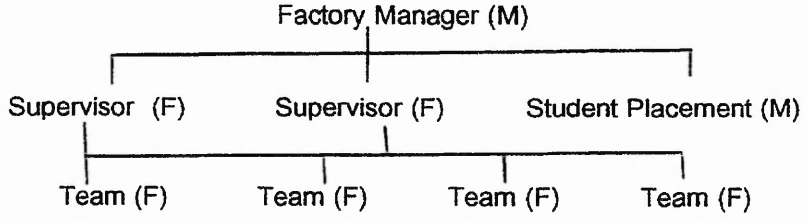
ADVICE TO OTHER COMPANIES

He feels the same principles can be used to make other products, but it needs to be tailor made to suit the business.

His advice is "be sure that you will do it yourself, and do not rely on outside help too much". The Factory Manager does not like financial support from outside because he believes you don't get the commitment. "You have to do it your own way". He also suggests that it is better to change over all at once to avoid conflict.

In looking to the future the Factory Manager thinks that the industry will continue to receive smaller and smaller orders, having to offer quicker and quicker deliveries. Companies such as this may end up only making samples, with the bulk of production going abroad, e.g. to Poland, Portugal and the Far East. This is purely because of low wage costs. For example, a jacket made in China can be bought for 100dkr, including material, sewing, transport, buttons, zips...In Poland it would be 250-300dkr and in Denmark it would be 500-600dkr. So the Far East will get more business, and from the point of view of delivery time, Poland is close enough. Some of his competitors have closed because there is not the same need for sub-contractors today. Teamworking has helped this company to survive. The Factory Manager cannot see the company expanding but he hopes to stay the same size - he has no illusions about the company ever employing 50 people again.

ORGANISATIONAL STRUCTURE



TEAMWORKING CASE STUDY

SEPTEMBER 1994

CHILDREN'S WEAR

CODE: Company GC

Compiled by : J.F.McLellan

Interviewees :Production Director, Planners and Trainers

COMPANY PROFILE

Products	Childrenswear
Main customer	Retail Chains
Date of first team	1991
Number of employees	4,000 - 5,000 over 10 sites in the USA
% Operating as teams	100% in this factory
Seasons per year	3
Styles per season	30-40
Planned extension of teams	N/a

This factory is the largest of ten owned by an American producer of brand named clothing. The management of each plant within the company focus their time and effort on their own factories and see themselves as competitors within the company as a whole.

For many years the group's customers accepted late deliveries of big shipments, but are no longer so understanding; they now demand *on-time* deliveries. The company is therefore moving towards quick response and a faster throughput time with lower levels of work in process. The entire factory has been converted to teamworking, with the exception of the embroidery department, because they have too wide a variety of designs. (Some have a small stitch count and require two operators to do a job on one machine, and others have a high stitch count, where one operator is able to work the machine.)

The company's first experiment with teamworking was with a UPS (Unit Production System). The overhead rail unit had 66 work stations, with 5 teams of 10 operators and a programme for each team. It worked well, but they experienced equal success with the manual system, and some products had to be taken off the rail to be handled manually. They still find it is a "constant challenge" and have monitored it over 3 years. It has been found to be *as effective* as the manual system, but having paid $200,000 for it do not think it was worth the cost. It is considered to be more flexible to *not* have the UPS. Efficiencies are certainly the same.

AWARENESS OF TEAMWORKING

They did not really consider a Toyota style Sewing System (TSS) as an option when choosing the design of their system. The production director believes there are certain products where TSS could be effective, but not theirs. He considers that it is made to look simple in seminars, "but they are always demonstrated with simple garments! When you get into a 'style environment' you need more flexibility than having just 1 or 2 garments between operations." They use '*SAMs*' - Standard Allowed Minutes - so they need the buffer of 10 garments between work stations to allow for variations.

THE INTRODUCTION OF TEAMWORKING

"All employees were told *up front* that the company was going to 'go modular'. This stopped most resistance to change -they had commitment and knew we were dedicated." Through seminars it was explained how and why other companies had introduced teamworking, and that is was what they needed to do in order to survive as an apparel company in the USA.

Selection

Notices were displayed when setting up new teams, asking people to put their names forward. Through interviews with team leaders operators decided who went where. The production Director considers this the "best way of forming a team". Operators of similar performances tended to group together. They also took into consideration the others' absenteeism records as it affected their earnings. "It is interesting to see peer pressure coming into play in the formation of a team". Once a team is formed they have certain rules to keep them together - a minimum time period before anyone can change teams for example.

Training

Staff at all levels were trained in problem solving techniques and received counselling sessions. They used training material from *Climston University,* which was found to be very useful. Climston seminars included the "Theory of Constraints" and "Deming Management". They felt it was useful to collect the information, but "there was no road map to follow".

METHOD OF TEAMWORKING

Production

Regarding the design of teamworking, the factory's management were able to make decisions with a degree of autonomy from the board of Directors. "Every factory has its own character and every area of our country has its own character, and what may work for us may not work somewhere else, and vice versa".

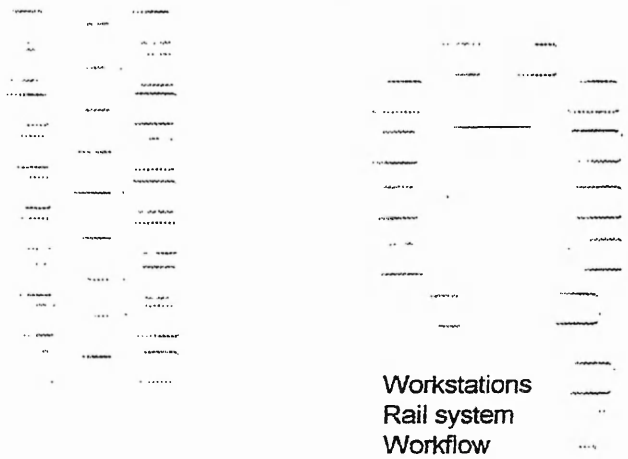
All teams are in a 'U' shape configuration with 10 operators per team - this was considered to be the optimum number because of the standard minute values of the garments. They like the 'U' shape and feels it 'works for them'.

Teams change styles 3-4 times per season, though teams with more skills might change more frequently, and vice versa. Style changes are seen as a challenge, as most of their products are complicated. However, teams have now become proficient through practice and as far as possible styles are matched to team skills.

'*Cycling*' is used to balance production. When a new product is started, it will go through all operations and be *clocked.* They then use this time to calculate how many garments they will be able to make as a team. The team will then start *cycling* 10-20 units each. If work starts to build up, another operator will move to help reduce the *backlog of constraint.* They have found that the better people are at *cycling*, the more successful the modular unit - by keeping a set number within the line and not allowing bottlenecks [See case study Company FC for more details of *cycling*]. There are no strict rules needed because their payment is directly dependant on *finished* garments. This is seen as a motivational factor.

Layout

Product	Trousers
SMV	8.9
Operators per team	10
Average bundle size	10-20



Cutting
Three years ago the building as a whole was extended and with it their cutting room. The cutting teams process 350.000 units per week. They now want a new cutter to increase capacity, as the maximum they get out of the current one is around 400,000; this is their first constraint if they want to expand production.

There are 17 people on a team, from spreaders to final cutters. They have overlapping skills - most spreaders can cut and vice versa - but they tend to stay with their strongest jobs until there is a build up of work. They work off a dispatch list which is printed twice a day stating the cuts to be processed. The distribution centre at the other end of the building works on a just in time (JIT) basis. They too have the dispatch list and bring in work to be cut as it is needed. The spreader identifies what is needed next and will know which factory it is for.

They have a system where bar-coded stickers are placed in the middle of each bundle, which is considered to be very effective. Before, they were transferring the cutting head from one table to another, but were getting very high down times as a result. So they now spread the paper, which gives all the information needed for that bundle. This worked very well. The greatest success has been in the cutting department.

Printing
The printers also operate as modular units - 10 operators run 3 machines and 1 dryer between them. They have the same payment scheme as the sewing department. There is a total of 3,000 screens, one for each *colour*.

Embroidery
Some designs are very difficult to cope with in embroidery. The machines are constantly running at 650 stitches per minute, so down time and quality are their main concerns. They try to mix low minute values with high to keep the work moving. A new 15 head machine was invested in 2 weeks ago and another one has been ordered. The production director feels they "could use a dozen, but appliqué may not be the 'in thing' next year", and they don't want to risk having very expensive machines standing idle. At the moment they cannot cope with orders for the holiday and spring seasons, so they are having to contract out some work.

Storage and Delivery
The fabric storage and delivery room has a separate manager, who is responsible to the company director. He works on a daily schedule which must be within ±15 minutes of the delivery time. Fewer goods are now stored because work is turned around much faster. Suppliers are also pressurised to deliver on time. Also, waste disposal is becoming a bigger and bigger problem through pressure from environmentalists. They found re-cycling to be the most effective solution.

Absenteeism and Holidays
Sickness and absenteeism are very serious problems - teamworking has had a positive effect through "peer respect". The company's philosophy is that when you are a real team player, you do not want to let team members down.

PAYMENT

They have just started an hourly payment scheme, and have 2 teams on it on a trial basis. They still have a '*quota system*' where instead of having a rate for a job they have a rate for the product or the team. The team is paid for each finished product that comes off the line. The structure however is built on the rates for each job.

TRAINING

Training includes problem solving techniques and leadership skills for management to help make the transition to teamworking. "We are very up-beat about it, and have a lot of confidence in it". Training of operators is calculated to cost about $2,000, though their training programme is still continuing.

BENEFITS

Benefits Anticipated
The principle reason for introducing teamworking was to achieve quick response in reaction to pressure from their customers and to lower costs through the reduction of work in progress.

Benefits Realised

A reduction in work in progress (from stock to finish) from approximately 12-18 days to 5-6 days; they are still in the process of reducing it.
A reduction in indirect personnel from 1:7 to 1:4
A reduction in labour turn-over from 20% to 2%.
A "favourable impact" on absenteeism, though current figures were unknown.

QUALITY

The quality department was re-developed so that the majority of auditing is now carried out prior to the quality audit. The number of quality auditors has reduced significantly because teams are responsible for quality themselves.

REACTIONS TO TEAMWORKING

By the operatives	Operators now have some say in the machine layout and are able to participate in scheduling. Operators on the UPS are not particularly concerned about working on a rail system.
By senior management	The production director has been in the business for 40 years and "it's a long time for an old guy like me to make a change". However, he feels it is much better; "you would expect 'old style' managers like me to put up the most resistance, but I found it fascinating and rewarding and exciting. I would not have it any other way. Having seen the results and knowing what we can achieve going forward, I realise that our whole method of producing apparel could not continue to exist". Other industries, such as General Motors and Xerox are also finding it successful - he believes the "Japanese taught a tough lesson in the auto industry".
By the retailer	"Customers like to do business because they do not like to order too far in advance." If the company has a short throughput time it will gain more custom.

In the reduction of direct:indirect ratio from 1:7 to 1:4, supervisors, quality inspectors and training instructors were most effected, though *every* department lost staff. They will have to see how it grows to see who will be effected next; some people may have to change jobs / tasks. The company is seeing more and more people being "cross-functional" rather than just from one department. They want them to start thinking that they work for the *whole* company, not just one department within it. They are seeing this growing and developing which is considered to be "very healthy".

PROBLEMS / HINDSIGHT

They feel they made one mistake when setting up the teams, and that was to make a team of "super-stars" - the top operators from the factory. They did it because they wanted a quick success, but the operators were so used to being individuals that they found it very difficult to balance themselves with the 9 other members of the team. Ultimately this team was disbanded and had better success was enjoyed by mixing them with others. They also had some problems convincing 'old style' managers to change.

OTHER INDUSTRIES

TEAMWORKING CASE STUDY

NOVEMBER 1994

CENTRAL HEATING BOILERS

CODE: Company CI

Compiled by : J.F.McLellan

Interviewees : Production Managers & Manufacturing Director

COMPANY PROFILE

Products	Central Heating Boilers
Main customer	Builders Merchants / Installers of central heating systems for domestic and industrial use.
Date of first team	1992
Number of employees	800, of which 620 are production operatives
% Operating as teams	The Assembly Section (25%)
Planned extension of teams	A teamworking philosophy is instilled throughout the entire company.

The factory visited is over 100 years old and the company are currently in the process of major refurbishment in order to bring the working environment of the entire plant to a higher standard. They consider themselves to have a 'tour-ready' factory, and have entertained over 1000 visitors in the last year.

At the entrance of the factory is a display board, clearly illustrating the structure of the company. It shows how each department and each team within that department help to fulfil the aims and objectives of the management team. The philosophy of teamworking is instilled throughout the whole of the workforce.

The company has attempted, as far as possible, to break down any barriers between management and shopfloor workers. They all wear the same coloured overalls, for the simple reason that there are "no more suits".

AWARENESS OF TEAMWORKING

The company started a process of improvement with an initiative called 'Pride', in 1988, at which point the workforce were taken off a piecework payment scheme. The initial consultation regarding teamworking took place with a large consultancy, but this was not wholly successful. Further work was then carried out by a different consultancy firm. However, they now install new teams themselves. The book 'The Goal' by E.H Goldratt was also a source of reference to the management team.

THE INTRODUCTION OF TEAMWORKING

The company was finding that its selling price was being driven down, so they needed to make small changes to improve the overall costs. Teamworking was one way of encouraging this strategy, through increased communication and empowerment of the workforce to make such changes. Their policy was to clarify to the workforce that they need to make a profit, otherwise *they* would lose their jobs, rather than thinking in terms of the "*company* going bust". The company have tried, as far as possible, to create an environment for change, so then they will find it easier to change.

The Pilot Team

Traditional shopfloor teamworking only exits in the final assembly section of the business. This entire section was converted at once.

Selection

All workers in the assembly room were transferred to teams. Teams are changed approximately every 10 months in an attempt to keep them 'fresh'. They try, however, to keep a 'core' team together.

Recruitment
Full induction is given to every worker which also involves an assessment. The assessment includes the consideration of *attitude* which indicates whether the recruit is positive, talkative or imaginative. If their attitude is felt to be appropriate then it is believed that they will have the ability to learn new skills.

There are currently very few female employees in the company, although they are aiming to achieving a ratio of 50:50 male:female employees by the year 2000.

Labour turn-over is currently 0% - this is thought to reflect the economy of the area, where unemployment levels are high, with few employment opportunities elsewhere. They have recruited 60 people over the last year, all of whom have stayed with the company. However, it is felt that having such low labour turn-over is not as beneficial as it may seem because the result is that they have no "fresh ideas". It is also believed that the workforce may feel that they *have to* accept the changes because they have few alternatives.

Training
At the outset each person was introduced to the concept of teamworking through an awareness session. The company recognise the need for continuous training of its employees and are implementing a structured training programme.

ELEMENTS OF PRODUCTION

Manufacture of Castings
The production line begins in the foundry, where the inside of the boilers are cast. This department has a multi-skilled workforce, but does not operate using a team-based system. Each person is trained to set up their own machinery and undertake all the relevant operations. Operatives tend to stay on the job they like most. They work on a Just-In-Time (JIT) basis, so if a machine breaks down it must be repaired as quickly as possible. Work in this section is organised by the line manager.

A display board contains photographs of the foundry team, and a record of the number of days between injuries and since injuries - including very minor ones. Actual and target performances are displayed on a white-board.

A rest room has been installed within the castings department which was designed, costed and maintained by the workforce within this area. Their involvement in this has instilled a sense of pride which encourages them to look after the area. Much of the machinery within this area was old, so operatives were asked to paint their machinery to try and obtain a more pleasant working environment.

Cores and Moulds
Once the moulds are checked, the cores are blown and the moulds are checked again, so there is a rigorous quality inspection at each stage of production. The moulds are made at a temperature of 1400°C. Once the iron is cool, the castings are first vibrated to remove excess sand, then blasted with pellets to remove any remaining sand, and finally filed to remove 'flash'. Each casting is then inspected for flaws. Quality problems can be traced back to the individual responsible.

Press Room
The press room has 4 days of work in progress. The lead time is still reducing, so the minimum work in progress is fed into the machine. It is fully automated, which has reduced handling damage. Previously a major part of the work in the pressing area was moving the components around. The teams were involved in deciding on the layout of the press room and the height they would like their machines, which used to be the job of an engineer. A 'Housekeeping Audit' is carried out by the teams every week, where marks out of 10 or 20 are given for each area.

Final Assembly
Teamworking in its most recognisable form is present within the assembly section of the production process:

METHOD OF TEAMWORKING

Product	Final assembly of boilers
Operators per team	10-12
Machines per team	10-12
Skills per operator	3-4 (Floaters have all skills)
Average bundle size	6

Teamworking begins at the stage where the boilers have been set and are ready to be bored with holes. One team is responsible for this job. Here the display of charts and other information produces a team-like environment.

The assembly teams are arranged in a 'U' shape, with operatives facing outwards. Work is carried around a track system which carries a specific number of boilers. There are also 'test stations' throughout the team.
They operate on a kanban principle, where production is 'pulled through'. The kanban quantity is 6. Tasks are fairly well defined, lasting approximately 5 minutes. Members move within the team to maintain efficiency. They typically produce 11-13 boilers per hour.

Depending on demand at the time, absenteeism is either covered by the team or other personnel are used; operatives from the foundry are able to work in the assembly teams if necessary. There is also a team of 'floaters' at the end of the line who join the teams when there is a backlog of work or when bottlenecks occur. Floaters also assist when teams have new members who are unable to work at the same speed as the rest of the team.

Each team has an individual performance target, with an overall target for the whole department indicated on an overhead display. Teams do not have an input into the target set, though production control are ask not to display an impossible target.

There is a significant quantity of graphical information on display which has been developed by the operatives: "Teams can have any graph they ask for". Sales and production figures are also displayed near the rest room.

Team Meetings
Team meetings take place once a fortnight, lasting for a minimum time of 1½ hours. These meetings centre around the subject of continuation and improvement of major projects and involve staff at all levels.

Teams also have meetings once a week, with the focus being on more practical issues, such as targets, work plans and so on. In these meetings they are encouraged to put forward any new ideas they have for discussion.

Once a month there is also a full-scale meeting of the teams. Each team, apart from the assembly teams, has their own room for team meetings, some of which are purpose built.

It is common for shopfloor workers to attend managers' meetings. They are also able to set agendas if they so wish. Team leaders can alter team meeting dates if it is for an important reason, for example, if production is particularly busy. However, meetings are never *cancelled*.

Setting the ground rules for team meetings is considered to be very important. Each team compiles their own ground rules and must adhere to them at all times. For example, one team's ground rule was that they could say whatever they want, with no threat of recrimination. Another team had the following two ground rules: 1. Pay attention to *what* not *who*, and 2. Nothing is to be repeated outside of the meeting.

It is accepted that people will have differing levels of ability and will not necessarily want to contribute to team meetings, especially those who have been doing the same job for 25 years and are now being asked to offer ideas. It is also felt that many of the employees are used to being reprimanded and tightly controlled through their experience in National Service. It thus is recognised that it is difficult for some people to change so radically, so pressure is not placed on operatives to participate in discussions.

Team Leaders and Facilitators
The team leader is only regarded as a *representative* of the team - they do not tell the teams what to do. If the teams need support, the leader will ask on their behalf.

Facilitators attend team meetings and train operatives. They tend to distance themselves from team disputes and allow them to resolve their own problems. This encourages operatives to contribute to discussions more.

Suggestion Scheme
If workers have any ideas, they are written immediately onto the white-board at the end of the team. All these ideas are then discussed within team meetings. The company also keep an 'ideas database', where suggestions are classified under headings, such as health and safety. The company always try to quantify savings made through the suggestion scheme and measure how much teams have developed.

An example of a brian-storming session was that it was found that the trolleys to hold the castings were too low, and that workers were suffering from back ache. The trolleys were subsequently made higher and grids and trays were installed

underneath the trolleys to catch the waste as it dropped. The trays served two purposes - the waste could be re-cycled and the work area was kept clean. The higher trolleys eliminated the operatives problems with back-ache.

Absenteeism and Holidays
Absenteeism is currently at 6%, records of which are displayed graphically. Employees receive full sickness benefit from the company, though they have a policy to ensure that this is not exploited. It is emphasised to employees that they are cheating their colleagues and jeopardising the advantages of a sickness benefit if it is not used fairly.

PAYMENT

The operatives are paid a flat wage of £230 per week, on an annualized system, where they work for 6 days a week in winter months and 4 days a week in the summer. They also receive profit related bonuses which encourage operatives to hold an interest in the success of the organisation as a whole. This is considered to be very successful.

Some operatives suffered pay reductions of nearly £50 per week during the transfer from piecework, but pay the deal was accepted - 25% of the workforce had a pay reduction, 75% received a pay increase.

TRAINING

Training plays an important role within the company and takes place on a continuous basis. Each team has a display board indicating the level of training of each individual, and there is an additional board which displays the skills matrix of the whole factory. If an operative wishes to acquire new skills then they are encouraged to do so, as it is seen to benefit both the employee and the company. Each operator is allocated 5 training days a year, which includes a refresher team building day. The Investors in People initiative has been adopted.

Examples of training courses, displayed in press room:

Fork-lift truck driving	**Press tool safety*	*Problem solving*
**Why JIT*	*Quality Awareness*	**Steel Plant, Kanban & JIT*
Leading change	*Team Building*	*Personal Development*

(*most popular)

Information is always given to operatives stating why they are going on a particular course. It has been found that those who are less willing to go on courses because they feel they will be made to make presentations actually become very enthusiastic in discussing something they really know about. Allowances are made for those who are not used to a classroom culture - some people become physically ill. To try and combat this sort of fear the company runs a 'buddies' system where those who feel uncomfortable can be accompanied by a friend.

Skills Training
There are no set guidelines regarding the number of skills considered to be the optimum, though it was felt by the interviewees that the possession of detailed knowledge and ability of a small number of skills was better than that of a large number of skills which would be rarely used.

Machine Mechanics
The operators are able to detect faults in the machinery, but do not undertake any routine maintenance.

Team Building
Videos are used in the training sessions, but no books or games. They have developed a package to portray specifically what they want to within the training programme, and course material is always related to each individual's job.

Teams receive training in positive thinking, motivation and team building. Everyone within the factory takes part in these days which are held in the internal training school. Displayed within the school are messages such as 'don't let perfection be the enemy of good'.

One training method discussed was 'Force-field' analysis. This method helps in situations where two people of opposing views are dominating the meeting. This is achieved by listing on the left hand side of a flip chart the driving forces for change, i.e. why you would want to change, and on the right hand side, a list is made of the restraining forces for change, i.e. what would prevent it. These restraining forces are subsequently eliminated through group discussion.

BENEFITS

Benefits Anticipated
Through the changes the company made, it was expected that shorter runs could be produced more effectively and efficiently, as long production runs were no longer a realistic expectation. It was also felt that through making a number of small changes within the organisation that the overall effect would be a considerable reduction in their costs.

Benefits Realised
The company measures its success in terms of profit, cost savings, quality and delivery. They also have a 'communication audit' which indicates morale. The following are indicators of their success:

- They used to hold 25,000 boilers costing £1 million in the warehouse at any one time; they now hold 3,000. This has given them a saving of £25,000.
- It was estimated that savings made as a result of staff suggestions amounted to approximately £40,000 in one year. (Staff are given non pecuniary rewards for effective suggestions).
- Productivity has increased by 15%
- RTMs have reduced by 18% and minor faults have reduced by 52%
- The time taken to audit inventory had reduced from 2-3 days to 7 hours.
- Recruitment is no longer a problem and labour turnover is very low. Previously the work in the factory was so notorious that unemployed people would not apply for jobs there, or if they did they would only stay for one day.
- They have a much better relationship with their customers and shipment notices have increased

QUALITY

The company have been operating under a Total Quality Management (TQM) philosophy for "only 5-6 years". Part of the TQM process is to create 'process maps'. This helps clarify the work and allows external examination of the system. Shortly before the visit an external audit was carried out on all their processes and it was reported that the company were only just outside being graded as *'World Class'*.

There has been a noticeable increase in fault recognition in the casting department. On the day visited, a fault had been detected within only 6 castings being produced. The faults are recorded and attributed to each department within the team. Internal audits are undertaken on the team annually.

REACTIONS TO TEAMWORKING

By the operatives	The operatives spoken to appeared to have gelled well as a team. It was said that teams now like coming to work. Expectations of shopfloor workers have increased as their roles have developed. However, there is still a certain nervousness, through fear that they will be reprimanded if mistakes are made.
By the production engineers	Production Engineers now spend 90% of their time working along side others. They do not design products without thorough consultation with the teams.
By the supervisors	The supervisors were asked to give the teams as much support as they needed - if for example they required engineering assistance or more materials. The management have had problems convincing the supervisors of the need to change. "The supervisors attended a training course on appraisal, which lasted for 3 hours - previously they would not have been permitted to leave the factory floor."
By senior & middle management	Initially some members of senior and middle management left the firm because they could not relinquish their power. It was felt by the rest of the management team that the company "can't afford to have people like that at the top".
By the customer / supplier	The company has undertaken certain supply chain initiatives; there are teams to deal specifically with suppliers and customers. Production is considered to be 'customer driven' where smaller deliveries are being made to their customers more often. Their suppliers now offer better components if they exist, whereas previously the company would just receive what they ordered. Also some supplier now allow the company to schedule deliveries when it is suits them. Communication between them is thus much improved.

FURTHER EXPANSION

They now want to introduce more localised skills matrices, for ownership of the sub-processes. This will be their next step forward. they intend to progress step by step -they need to keep meeting the expectations of the workforce.

PROBLEMS

With the changes which were made initially, some of the senior managers left the company immediately, followed closely by some middle managers who did not believe in the concept. They feared the loss of control and did not want to give empowerment to shopfloor workers.

They currently still have some difficulty in eliminating the fear culture which has been instilled in some of the operatives over a log period of time.

CASE STUDY COMPANY FI

AUTOMOTIVE HOSE ASSEMBLY PLANT, FRANCE

Interviewees	Plant Manager Personnel Manager (responsible for groupworking project) Unions Facilitator Group Leaders Groups
Interviewers	Peter Friedrich, Swedish Institute for Work Life Research (on temporary leave) Henriette Hansen, DTI, Denmark Annika Lantz, Swedish Institute for Work Life Research (on temporary leave) Jessica McLellan, Work and Technology, UK Evelyne Polzhuber, ANACT, France Peter Totterdill, Work and Technology, UK Michel Vallée, ANACT, France
Translator	Nathalie Mathise, ANACT, France
Date of visit	March 15th 1996

BACKGROUND

The holding group of this company currently has three major subsidiaries: the hose assembly and mechanical division, the car interior and industry division and an air conditioning division. However, their customers are now requiring suppliers to have an excess of 1 billion francs turn-over, so the company (with a turn-over of 500 million francs) is being forced to restructure. All the divisions are to be sold to a large international group in order to gain competitive synergy. In addition, during April 1996, they will integrate marketing and research and development in an attempt to become financially more secure. Competitively they feel they need to become more independent from French car manufacturers by opening up their markets. At the moment they are under great pressure to reduce prices.

The Hose Assembly and Mechanical Division

The subsidiary visited manufactures fuel, water and hydraulic hoses, with a staff of 350, of which 45% are female. The plant is new, and production started in 1991. The company's turn-over fluctuates according the introduction of new models of car and the economy as a whole, though a dramatic rise is forecast in 1997-8 through increased export to a German manufacturer. Geographically it is in a central location for subsidiaries all over Europe - UK, Germany, Spain, Italy.

There are 3 main technologies, required to produce the hoses: extrusion, injection and thermoforming. Group based production has been established in the thermoforming section and the intention is to extend it throughout the plant. Fifty five percent of production costs are in raw material, and the remaining 45% is 'value added'.

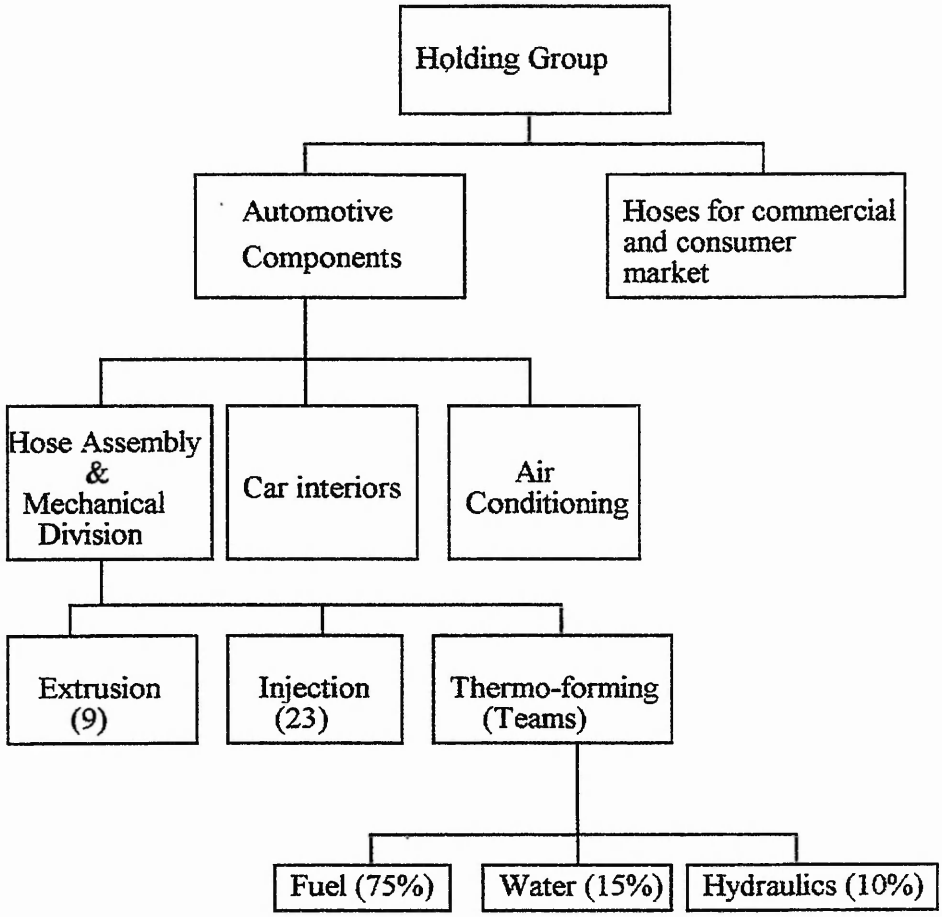


Figure 1. Organisational Structure

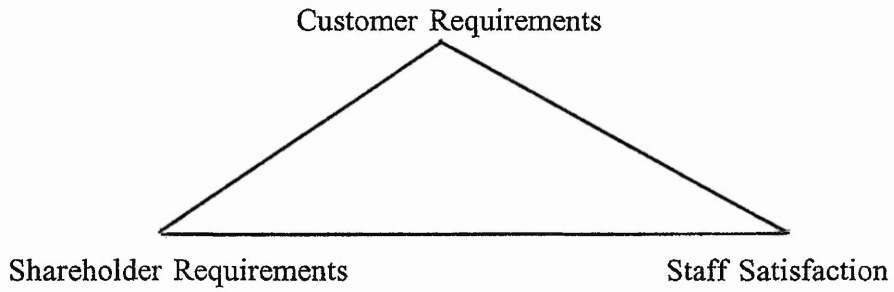
In order to remain competitive, they must increase their turn-over but they must also be a good supplier and be innovative. They therefore invest heavily into research and development, designing products which they anticipate will be needed and running trials on new materials. Research is also carried out into the manufacturing process itself, but in a way that ensures changes will not have an adverse effect on the working environment itself.

As part of their 'total quality approach' the company has implemented quality standards for different suppliers. For example, in 1994 they were ISO 9001 certified for one of their French car manufacturers for which they have annual 'check-ups'. These standards are necessary to continue to work with car manufacturers, but they require many different procedures. One of their goals is to break down these barriers and reduce the quantity of paperwork whilst maintaining the necessary standards. They hope to achieve this through greater involvement from shopfloor workers. Changes must therefore be made to simplify the procedures. At the moment car manufacturers themselves are also having to pass similar standards, so they appreciate the problems of their suppliers.

RATIONALE FOR CHANGE TO GROUPWORK

The company's vision is to be the European leader, with a 25% market share. In order to achieve this they have two strategies: 1) a *production strategy*, based on their three principle

products: fuel, water and hydraulic hoses and 2) an *industrial strategy* based on the optimisation of customer and shareholder requirements and staff satisfaction. This is represented by the following triangle, in which it is not possible to change one element, without affecting the others.:



Management believe that staff satisfaction is excluded from the strategic requirements of many other companies, they on the other hand see human potential as a very important component and recognise the need to involve all levels of the organisation in the implementation of change. However, as the project is still in its early stages this commitment has not yet been fully demonstrated.

The quality improvement plan focuses on:

> ***"Improving our results through staff involvement to remain competitive in a harsh environment"***

The company is also working with its suppliers to try and reduce prices in parallel with these organisational changes.

CHANGES IN WORK ORGANISATION

The Previous Situation

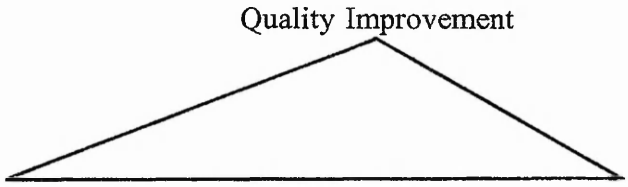
Before commencing the change process, the working conditions in the company were described as poor, principally due to the repetitive nature of the work, as operator were single-skilled, and the physically stressing nature of the tasks. Moreover, communication was almost impossible because of the physical layout of the factory - long assembly lines with operators working back-to-back, gaining a minimum of social contact.

Management was described as being autocratic and the planning function of the company was very poor. The shopfloor was seen as one big team with 80 members, resulting in ineffective communication between management and shopfloor workers. Managers were too busy organising people to have time to discuss issues such as quality.

The combination of theses factors resulted in low quality products, thus threatening the continued existence of the company.

The Implementation Process

As the main problem was perceived to be related to quality, the change process had its origins in the wish to create a quality oriented organisation. One of the aims of the Total Quality Project was to make better use of the knowledge and potential of the workforce. They followed the structure of an 'Improvement Triangle':



By establishing the 'QTC Triangle', quality, cost and responsiveness could be improved, but at the same time a social dimension could be introduced. The three factors depended on one another, so that costs or productivity could not be improved at the expense of quality. The means of improving quality was through the better use of knowledge and potential of the workforce. To achieve this, the changes in the company were not only of a quantitative character, such as reducing time and direct costs, but also qualitative; introducing better communication, improved work organisation, job enrichment, training and the identification of the meaning of work.

The change process itself is best described by the following table (see page 5). The entire change process ran for just over a year, starting with an analysis of the organisation of the company by an external agency. The company received external assistance from the very beginning and the workforce now perceived them as the instigators of the change and assistants in the process. The company initially found the external report difficult to cope with as it was somewhat critical of the working conditions.

Though the process appears to take a 'top down' approach, in which management had already decided how to change, the workforce participated in discussions. Following the initial analysis, four project groups were established, with 10 members from all levels of the company. The four groups prepared proposals in four main subjects: indicators of quality; how to organise work; how to create and manage a pilot group; and indicators of the working conditions.

The next step was to install a pilot group, composed of 10 operators, 1 team leader and 1 supervisor. The group attempted to work under the conditions suggested in the proposal from the four project groups, with conventional production running concurrently. In parallel the whole workforce was trained in basic skills, logical thinking and technical skills. It was very important for the company to bring all employees to the same level to ensure effective functioning of the groups. This meant that some employees had to undertake all three courses, whilst other only attended some of them. During the training period, the company hired 16 unemployed people as substitutes, 60% of whom are now working with the company on a permanent basis.

When the pilot group had been functioning for 3-4 months, a final report was produced by the external consultants, which indicated the improvements made by the company. On the basis of this report, the decision was made to expand the groupworking to the whole of the thermoforming section. The company was closed throughout August for the holiday period, during which time the shopfloor was rearranged to ensure the physical layout was ready for groupwork. When all employees returned in September, the implementation was in its advanced stages and the change process occurred very quickly. The first three months of groupworking were very difficult, as the workforce had problems adjusting as fast as was

necessary, which had an adverse effect on quality. The company was advised by the external consultants to implement the changes more slowly, thus causing less tension within the workforce. The situation has however stabilised now, and production and quality have improved, although quality has still not reached the required level.

The Organisational Changes				**Training**
Time	***Aim***	***Means***	***Participants***	***Arrangements***
Step 0 (July 1994)	Statement Report	Analysis by external consultants	Operators Social partners Different associations of leaders and employees	First contact with training organisations. Arrangement with a public aid organisation.
Step 1 (Sept 94 - Feb 95)	Proposals	4 project groups: organisation /quality/ working conditions / pilot group	Operators Social partners Different associations of leaders and employees	Evaluation of all shop-floor employees. Job descriptions.
Step 2 (March 95)	Pilot Group	Experiment	Operators Group Leaders Facilitator	Bringing all employees to the same level of knowledge. Training in reading and writing (first group).
Step 3 (July 1995)	Evaluation	Second analysis by consultants	Operators Social Partners Different associations of leaders and employees	First group finished. Negotiations with the second group of applicants (unemployed).
Step 4 (From Sept 95)	Extension	Creation of 6 more groups	Operator Group Leaders Facilitator	Arrange technical training. Continuing training in reading and writing. Second group of applicants.

Table 1. Implementation Process

The groups were created in four main steps, the first of which took place during the period of proposals, in which the four project groups formulated the criteria for being a team leader. This meant that representatives from all levels decided upon the qualifications and skills needed by a team leader.

The second step involved employees volunteering to become leaders, which became a gender issue as almost all volunteers were male. This was explained as being a cultural trait of France in general, where men want more responsibilities and women are more humble and shy, hesitating to accept new responsibility. They did not choose all men though. There are 18 team leaders of which 12 are women and 6 are men. Leaders were selected using the

criteria established by the project groups, an interview and questionnaire results. This was not the only obstacle in the selection process. Most of the new team leaders were former operators, whilst other were leaders from the former production system. The wage system therefore caused difficulties. Former leaders were paid more than new leaders as management did not want to pay all new leaders the higher wage. Through discussions, persuasion and negotiation, it was agreed that the former leaders would be paid the same rate as before, but it would not increase during the next 2-3 year, so that eventually all payment will be brought into line. Similarly, former operators had the new responsibility of looking after other operators, which they found difficult to adjust to.

The third step in the creation of groups was the selection of group members. To achieve this, all employees chose who they wanted to work with. There had to be 10 members per group, and the process resulted in a small group of 4 operators being left, because nobody wanted to work with them. This was a big problem, and the 4 operators went through a personal crisis as a result. Ultimately they were put with an existing group of 6 members, and in the fourth and final step, a rather tough group leader chose to facilitate them. In summary the fourth step involved team leader choosing which teams they wanted to lead. The combination of management choosing leaders, leader choosing teams and teams choosing eachother has resulted in a good ambience in every group.

Roles in the change process

As mentioned above, the change process had an overall 'top-down' approach, which apparently caused no particular problems. Both the unions and the workforce showed confidence in management, knowing that the changes would benefit them, as the situation in the company could only improve. Despite the fact that the employees had no direct influence on the decision concerning the changes, they had indirect input via the unions, who met the external consultants in the beginning of the process to explain their view on the working conditions and other social questions.

THE GROUP IN ITS ORGANISATIONAL ENVIRONMENT

Communication within the company has been effected at two levels. Intra-team communication has improved, and operators find it much easier to discuss issues whilst they are working; hence the social contact at the workplace has improved. However, inter-team communication has deteriorated, as the single groups feel more isolated from the rest of the shop floor. Previously they had the feeling of working in one big group where everybody worked together - even though they did not -and there were no demarcations between friends. Now they have friends with their groups, but not outside them.

Despite this, the overall communication and information flow is better, as the workforce feel they know more about the whole organisation and communication between the shopfloor and the offices is improving , though there is still more 'top-down' than 'bottom-up' communication. The team leaders feel that this is because the situation is still rather new, and there is still much to be learnt about their new roles.

GROUP DYNAMICS AND COHESION

In considering the previous situation, the groups underwent many changes. One of the main points indicated by the employees was that the changes are good, particularly in relation to

the working environment and conditions. They now describe their work as being less stressful as the products are no longer 'running away in front of them' on a long assembly line, which was considered to be stressful in itself. Moreover, they no longer work at the same workstation all day. They have received training and are now considered to be 'multi-skilled', as they can operate all workstations, producing a product from start to finish. This again has had positive consequences, as absenteeism has reduced because operatives are less tired and thus accidents or illness are less frequent. The working atmosphere has become more caring as operators are more involved in one another's jobs and they think more about eachother's wellbeing, as demonstrated by the fact that the most difficult jobs are no longer the responsibility of just one person. Overall, the employees think that the job in itself is much the same as before, though they have more operations to do and have more responsibility in terms of problem solving and organisation of the work.

Another very positive outcome relates to the production flow. If machinery needs to be repaired, it previously had been difficult and time consuming to get help because communication was poor and the mechanic was not necessarily near by. Now, some operators have received training in repairing minor technical problems, but in addition, one mechanic is now connected to a particular team, so they no longer have to wait for help.

Investment in training / skills

The total training and development costs in 1995 accounted for 4.5% of the total wage bill. The facilitator has received a total of 6 years of training, including management of team leaders.

Group leaders are currently receiving training in the financial aspects of the company and the motivation of the teams, though no training in the 'management' of teams has been given yet.

For operators, cross-training has been the principle means of skills training. Operators also received in-house training on logistics, changing tools, preparing the production area and supplying their own components. At the moment they receive no training for problem solving techniques and 'softer' skills, though the intention is to do so. The next goal is to train operators in first level maintenance via cross training methods.

The social aspects required in the training are considered to be:

- Communication
- Work Organisation
- Job Enrichment
- Remuneration and qualifications
- Motivation - recognition and respect
- Meaning of work
- Identity at work
- Dialogue with social partners
- Relation with the unions
- Importance of cross training
- Cross training methods

Quality of working life
Group Leaders feel that there is less stress now and the atmosphere is much improved as people can change jobs much more easily than before. There is less absenteeism because the group members are able to change work stations, so they become less tired. Similarly, it was always the case that one person would get the most difficult work station and would have to stay there all the time. Now the hard jobs are shared equally. This used to cause a lot of conflict which the leaders could not manage. If one of the group members is unwell, they will help them. They care about eachother's wellbeing much more.

Management felt that there were many women in the thermoforming workshop, where work was very difficult and very physical and the management were forceful. The working conditions were particularly difficult. They wanted to improve working conditions without having an adverse effect on production output.

Group leadership
The team leaders were volunteers, who were then selected by managers. Some of them completed an evaluation test which indicated their abilities to do the job. Meetings were organised with each potential team leaders and from a combination of an interview and the evaluation results, leaders were selected. Group leaders then decided which groups they wanted to lead.

Despite being at a level between management and shopfloor workers, team leaders have no problem with their role and feel fully integrated with the groups. They tend to associate themselves with groups rather than management. They will accept criticism, but if they do not agree with what is being said they will try to defend the team. The main responsibilities of team leaders are: management of the group, motivation and the organisation of the work. Management of the group involves planning holidays, dealing with absenteeism and production programmes, monitoring quality and helping them take charge of quality control themselves, ensuring the team is happy in its work. They create the graphs for the board, the production programme, organise the orders and determine the urgent production. If they have enough free time they will go on the workstations to help the rest of the group.

The facilitator was previously a production manager, but feels his role has not changed substantially as a result of this new organisation. The team leaders are used to having such a line manager, even though the management was described to be authoritarian previously. The situation is more participative now.

Groups as a 'learning organisation'
The team were asked whether, if there were more people in the team, they would prefer to become more involved in planning and administration. There were two types of answer. For some if they receive the necessary training, they would be happy to. Others felt they need the leadership. If they took the place of the leader they will no longer be directly productive, which they did not want. Currently they do not have enough time to carry out administrative tasks themselves as they only just have enough time to do their own jobs.

An example given of how the team has worked well together to solve a problem was when there were team members working at different speeds, using different methods and they put together a proposal of how this could be addressed. This was given to the team leader and the changes were implemented.

Trust and empowerment
Groups feel that they are now given more consideration and there is now more communication between the rest of the plant and the offices. If the team has a problem with production, repairs, etc. the team leaders will meet the rest of the team to discuss the problem and assist them in solving it. The facilitator is there to give them advice. Groups can have meetings without management though ninety percent of the meetings are for communication down from management, whilst 10% is upward communication. However, this new organisation has only been in existence for 3 months and is rather new to everyone. It will take time for the team leaders to get used to this new means of communication.

Reward and remuneration
The groups are paid a fixed wage, with profit share scheme. All operators are paid the same, but male and female team leaders are paid differently. Male team leaders with the same qualifications as female team leaders are paid more, though it is not the company's intention for this to be the case, it is historically embedded in French culture. They are trying to equalise the wages, and now they are not so different. There is a difference in pay between team leaders and team members, because they have different qualifications. The former production managers had a higher payment level than the new team leaders.

Planning and goal setting
At the moment groups are given a weekly programme by the team leader, with a plan for the next 3 weeks and an obligation to achieve a daily plan. They are likely to move towards Just In Time production as it is believed that in two years time they will not work on a weekly programme - it is more likely to be daily. Goals are set by senior management. Targets are set in relation to the production programme.

Physical Layout
Quality and maintenance offices are in the centre of the factory floor (see diagram). The 6 groups of 10 operators are currently in the thermoforming area only (forming assembly), but they are planning to extend groups into the extrusion and injection sections and in the next few months they will be making the first evaluations of the changes. They are working shifts and Saturdays and Sundays. Some of the work stations are seated, though there are still some groups which are standing only.

A kanban system is operated on the shop floor, where a red card means production is urgent and takes priority over yellow card products, an orange card for work which is important and a yellow card for work which is 'under control'.

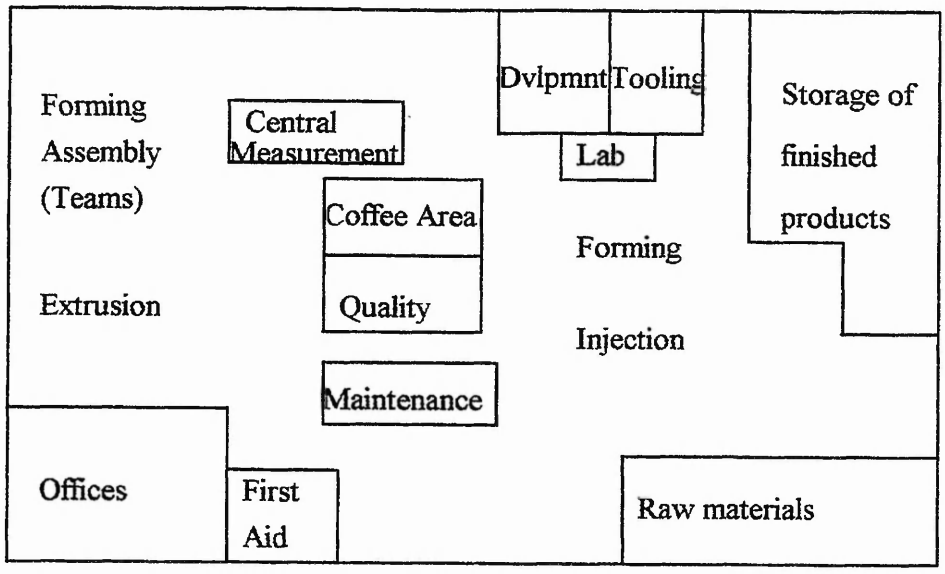


Figure 2. Shopfloor Layout

EXTERNAL INFLUENCES

The company has received external assistance from a government funded institution which specialises in work organisation. Their project related to the impact of the Japanese 'Hoschin' project on the workforce, monitoring the new recognition of the staff. It was concerned with giving meaning back to work and improving qualifications.

Unemployment in the area is high, with few alternatives available. Labour-turn-over figures are therefore virtually 0%. It is felt that operators need to stay within this sector because the skills they learn are only relevant to this factory. However, on a national level, the multi-skilling has led to new discussions about the classifications. This is seen as a positive effect as the whole system needs to be re-thought.

National policies of the unions are discussed at national level, but support is shown more at company level. The main issues for the unions at national level are employment levels, expulsion and the shape of work in 10 years time. The main questions concerning unions in this company are the staff levels, the company's survival, the restructuring in the next month and wages.

Unions did not all agree with all the proposed changes. Particularly regarding women working during the night shifts. At the national level one of the unions is against female night-shift workers, but this is common for the labour situation in this region, so the union did not object. However, many male shopfloor workers prefer to have women working in the night shift because it creates a different atmosphere. There is more conflict between men if women are not around - the atmosphere used to be unbearable, so a mixed workforce is considered to be much better.

Though there are many women in the groups, none of them wanted the greater responsibility of being union delegates, though they are actively encouraged to be so.

FUTURE PROSPECTS

For the operators, five years from now they expect to have the same form of work organisation, just with more groups. Group leaders believe the groups will become more polyvalent and autonomous, and will no longer need leaders: they will therefore return to being operators. The facilitator has a slightly different view, he sees the company developing business units where team leaders become managers of mini-plants. Work study, quality management and leadership will have to be integrated, with targets for each business unit.

CASE STUDY COMPANY AS

NURSING HOME FOR THE ELDERLY, SWEDEN

Interviewees	Head of care for the elderly Head of nursing care Group members
Interviewers	Peter Friedrich, Swedish Institute for Work Life Research (on temporary leave) Henriette Hansen, DTI, Denmark Annika Lantz, Swedish Institute for Work Life Research (on temporary leave) Jessica McLellan Work and Technology, UK Evelyne Polzhuber, ANACT, France Peter Totterdill, Work and Technology, UK
Date of visit	February 19th 1996

BACKGROUND

In Sweden, the medical and social care services are organised at the community level and are managed by the local authorities. The establishment visited undertakes *social* care, which is divided into three areas, each of which has one manager, with staff responsible for the different types of care. One is for care of the sick, elderly and handicapped, the second is for people with social, economic and alcohol or drug related problems and the third is for immigrants to the country. There are a total of 100 employees for each of the three areas, caring for 200 patients per month, in a community of 15,000 inhabitants. The communities are now facing the problem of a growing number of elderly people who need care, coupled with a lack of money and staff to fully cope with this situation. Five to ten years ago they had 250 patients, with fewer needs. Now they have 200. At the political level, the current trend is to develop home care and to adapt the services to cater for the growing demand in a satisfactory way.

RATIONALE FOR CHANGE TO GROUPWORK

The senior manager on the board of directors made the decision to change the organisational structure, with the aim of optimising the service's efficiency and quality, whilst giving the employees greater responsibility and autonomy. This was to be achieved through a simpler, 'leaner' structure in which more direct contact would result between managers and employees and employees and patients, via a reduction in the number of hierarchical levels. However, he did not indicate *how* the changes should be made and asked the group of managers to plan the implementation process themselves, with input from the groups.

CHANGES IN WORK ORGANISATION

The Previous Situation

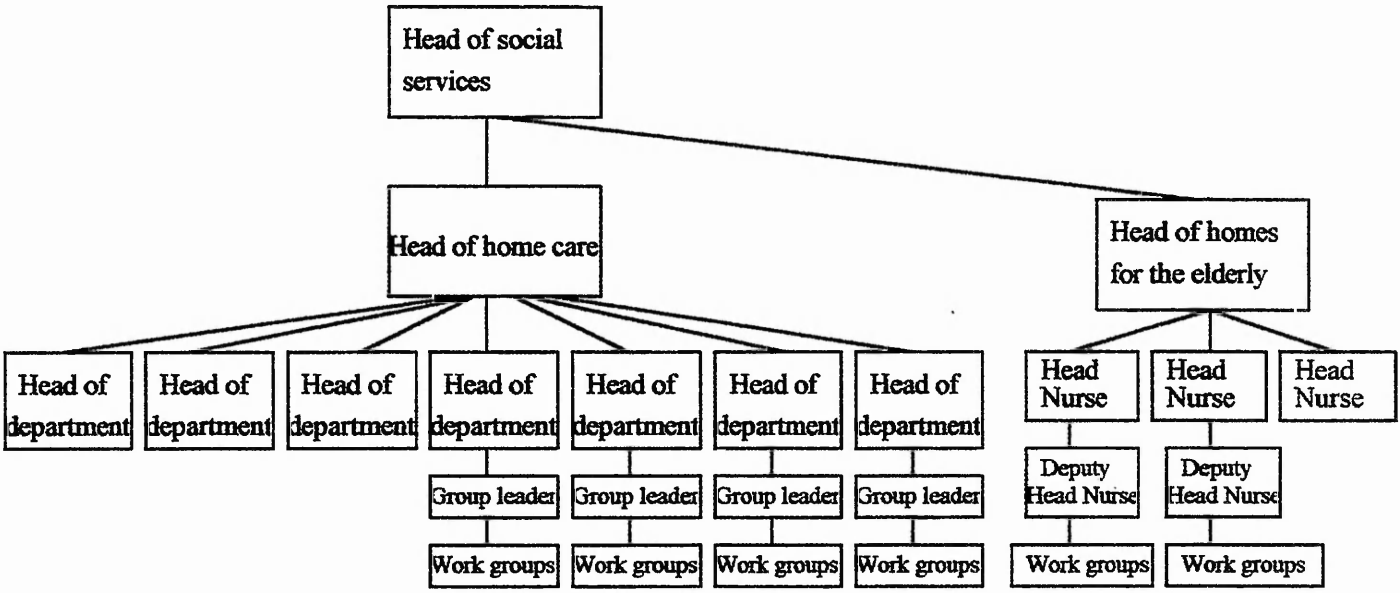
One year ago the organisation had several hierarchical levels. The heads of section were line managers to heads of department, under whom there were group leaders who were managers to small groups. The groups therefore had 5 levels up to the political leader, compared with the current 3 levels. The two layers which have been removed are the group leaders and heads of the different departments. The tasks of these people have shifted both upwards and downwards. Some of them are now specialist social workers who ensure that the law is being followed and the right help is being offered. No-one lost their job as a direct result of the restructuring.

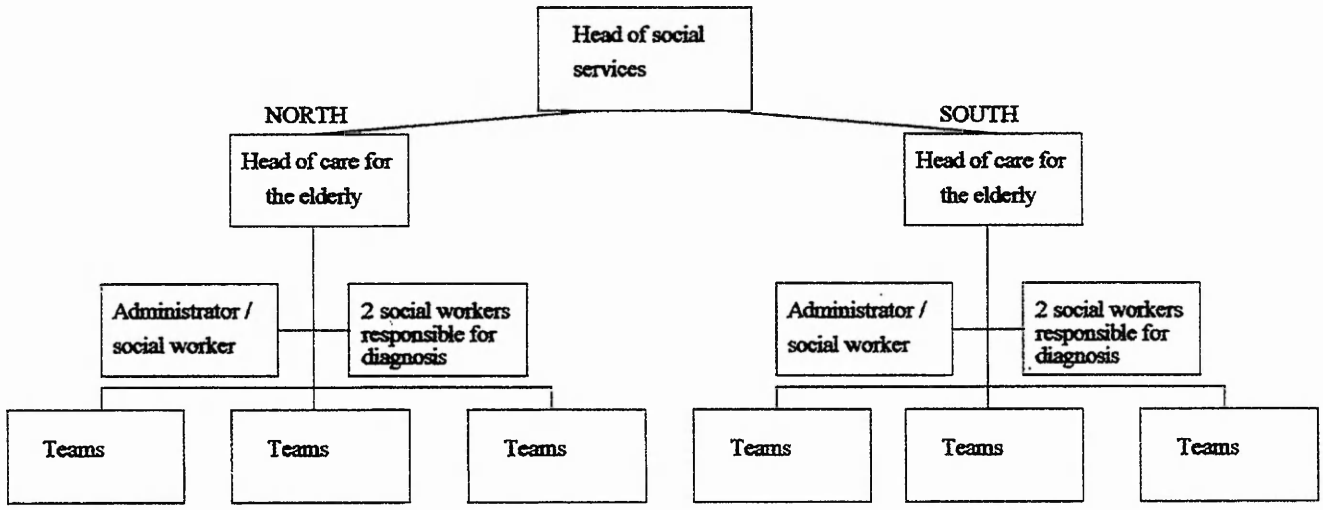
The Implementation Process

Despite a year of training, the initial changes were unsuccessful and it was suggested that to achieve greater responsibility for work, tasks needed to be further divided. However, the senior manager advised the management group to look at what was *best for the patients*, and proposed that *one* person should take the majority of responsible for each patient. He suggested they try another way and start again. They did. It took a further 6 months of planning and 6 months discussing alternatives, followed by the implementation in January 1995. They "talked and talked in groups" and then decided, from the 1st January 1995 they would stop talking and start implementing some changes. Though they had not seen any other examples, they knew they had many competent people in the organisation, and they could make better use of them. Once everyone was thinking in the same way and they had a shared vision, they began to change. Responsibility was redistributed at every level.

The current organisational structure

The two specialists, who are responsible for administration and adherence to the law, assist the head of care for the elderly but no longer have line management over the groups (see diagram 1 below).





(Total - approximately 100)

(Total - approximately 100)

THE GROUP IN ITS ORGANISATIONAL ENVIRONMENT

The head of care for the elderly is now directly responsible for the 12 groups under her, totalling 100 employees (previously she was directly responsible for 8 members of staff). Four of the groups are at the home for the elderly, four work throughout the community, giving help to people who are living full time in their own homes and the remaining four groups work in a residential home located outside the city centre. The group as a whole take care of everyone in the north of the city. The same structure exists in the south.

The head of care for the elderly is the groups' employer and looks after the finance, ensuring they are given what they need to work effectively. They also have a group of specialists as a 'resource', so if, for example, the patient is confused or frightened, the psychiatric specialist will be called upon. The manager's job is to support the group so they can give the patients the best care possible. Medical expertise can be gained from two groups at present, but this is not always enough so the groups need to be further educated in this area.

The geriatric neurology unit is run by a group of 8 staff, responsible for 8 patients. They work in shifts which run from 7am to 4.30pm and 1pm to 10pm, with special night shift staff. There is therefore overlap between shifts to allow for communication. Each patient is allocated to one person in the group, with whom they have most contact. Patients usually enter the home with senile dementia and after a while they become physically ill so the staff must organise their medical needs too.

It is a difficult environment for the groups to work in, especially as the patients are terminally ill. The group of patients can become very aggressive so it is important that they feel secure. The group dynamics of the *patients* is important, as a disturbance can upset them all. It is vital that the staff can trust each other to give the support when this happens. They need to have the same way of dealing with problems, otherwise the patients become very frustrated and stressed. The patients cannot express their opinions at all, so staff must be very sensitive to the patient's needs. They must remember that they are working with a *group* of patients, not just with individuals. Group members co-operate with the specialist functions to ensure the patients receive the best care possible. They decide on the allocation of the tasks themselves, without consultation with management.

The specialist groups (ex-middle management)

The decision to remove the intermediate levels of management was the most difficult to enforce as there was a conflict between the two tasks - personnel management and the control of conformity to the law. Previously, people in the middle management positions took care of the groups, arranging holidays, wages and other personnel issues and at the same time looked after the elderly people, making sure their treatment was correct and within the legal requirements. Now these tasks have been divided and they only take care of *what* is going to be done, while the head of care for the elderly takes care of *how* it will be done.

The specialists themselves are now part of a group directly under the head of nursing care. Although nursing staff are allocated to different areas of care, if someone from a different area becomes ill, the nurse will go there and lead the group in medical issues, even though she is not the in the same organisation 'grouping'. This is because the goal is to achieve a situation where the elderly people received as much good care as possible. It works well. Social workers make a 'social diagnosis and follow the person's care throughout. For

example, in the early stages of illness, the patient may have few needs, such as help with a shower. If they then become sick and need more help, they see the same social worker in the local hospital who will decide whether they need rehabilitation or to return to their home, and if so with what provision. The group member who will be helping them then accompanies the specialist to the first visit and the situation is reassessed after 3 months. It is the specialist's responsibility to ensure that the staff who are needed are there.

There are regular case conferences between members of the specialist group, the psycho-social workers and the members of the medical group. In every group there is one person who has the main responsibility for a patient.

Vocational training and education
The employees in the groups have different educational backgrounds. To train to become a nurse the first 3 years are spent at a secondary school ('gymnasium') and the next at a training centre which specialises in caring for the elderly.

The head of nursing care received special education in psychiatry and community work and administration and the head of care for the elderly is a qualified social worker who went to secondary school. The middle manager has just retired, so they are currently looking for a replacement, who will attend a University course on leadership and administration.

GROUP DYNAMICS AND COHESION

Competencies of the group
At first the groups were taught how they should plan to give good care, with a goal for every patient. The goal of the group is to provide the best care for the patient until they die. By looking at the goals and seeing how they could use eachother to achieve them, management tried to show the groups how they could work together. This was very difficult. Groups were trained in administration, finance, planning and the political systems. These were external training courses and were government financed. Two of the groups received full-time training before starting work in the new building. The training involved:

- Groupworking
- Communication
- Administration
- Presentation skills
- Finance
- Security systems
- Evaluation of patients' needs

There are also training groups within the unit, which deal with questions relevant to the whole organisation, not just individual departments, such as computing. Representatives from each group can attend these courses.
The middle managers needed the most support. They always complained of insufficient time, but were told that everything they were doing must still be done. They therefore had to decide which tasks they would continue with and which ones would be devolved to the groups. This took over a year of discussion and negotiation. The rest of the workforce then started to wonder what had happened because there was no evidence of change.

Group leaders
There are no leaders in the groups, but there are members with particular skills, for example, planning or organising the medication. Though specialisation is encouraged this is can cause problems. Group members are told that it is both possible to specialise and be a part of a group at the same time.

Group development
Groups decide on the distribution of tasks themselves according to the need, making a plan for every person under their care. A few years ago the nurse and the social worker made this plan, "and it was a plan which you kept in your drawer". Now the groups are being trained to make patient care plans themselves, in collaboration with the patient, the specialists and social workers. One person in the group interviewed is good at planning, so she does that and lets everyone else know. The plan is sent to the head of care for the elderly for her approval. They use 90% of their budget so that if someone is particularly ill, they then have spare money to bring in extra help. When someone is off sick they take in extra staff from within the community care structure, though this rarely happens. It is important that the patient knows the carer. The same is true of holidays. They divide some of the work between the group so there is not only one new members of staff for the patient.

Previously, one manager was responsible for the administration, planning, holiday entitlement etc. The group members therefore did not have any input into these issues and often complained about the manager's decision. Now they decide amongst themselves how many staff are needed to give good care to the patients and allocate their holidays accordingly. The criteria is up to them. Also, to ensure the staff themselves are fit and healthy they are planning staff activities such as going to the gym together.

Group meetings
Management have meetings with 2-3 groups every month, where they discuss the function of the group and future work. Emphasis is on developing individual skills to assist the group as a whole, even though group members have trouble accepting that specialising in one skill and not *all* skills is beneficial. If they want someone from outside to come into their meetings for a specific issue they ask. Group members write a note and put it on the board when they think of an issue, and it is then brought up for discussion in the meeting.
There can be conflict between groups. If they can't solve their own problems they turn to the head of care for the elderly, who then tries to suggest alternatives and put the decision back with the group to sort out. She can't make decisions for them because it goes against everything she has been working for during the last 4 years.

Wages and performance evaluation
There has been no change in the payment system of the groups and the evaluation of the individual performance is not always structured. Once a week, there is an hour long discussion between managers and 3 or 4 of the group members, also homes and centres are regularly visited. Overall performance can be measured according to the plans for each patient, for each group and for each employee.

EXTERNAL INFLUENCES

Government funding for the initial restructuring project was received, with the aim of giving employees more responsibility, and thus a better working environment. The union agreed to

the changes and were involved in discussions from the start. No external consultancy was used until much later in the development of the process.

OUTCOMES

Benefits

Before the changes, when a patient living in their own home needed medical help during a period when there was a shortage of staff (at night, during busy periods etc.) the patient would have been moved into a residential home or given the medication another time. Now medication / care is arranged to be given *when it is needed.* This is possible because the head of care for the elderly is now responsible for a much bigger area, with 12 groups instead of the previous 4, so she can interchange the staff. Nursing staff from other areas of care now help the groups directly under the head of care for the elderly when a patient becomes ill.

Management feel that previously the groups "took good care of the old people when they met them, but didn't looked up and look at the world around". There was always someone else to resolve problems, for example, if they had too much to do they would ask for more staff. Now it is there responsibility. Some also had difficult patients and did not take proper care of them because they were able to pass on the responsibility. Now they are more responsible for them and must solve difficulties with the help of the social worker.

Problems

For management, the biggest problem is a political one. If a patient needs *different levels* of social and medical care, then problems arise. Even though technically they can administer medication and give injections, they do not because it is not their responsibility and their budget does not cover this. They feel that if they did, the problem would escalate and they would need more staff. The budget stays with the organisation, it does not follow the patient.

For the group, the most difficult thing about working in the group is when somebody does not speak openly about problems. Sometimes they have a group meeting in which they discuss an issue and make a decision, only to find that afterwards someone who said nothing in the meeting complained about the decision. The only lack of autonomy felt by the group members was that they were not entitled to sign for expenses themselves.

The social workers on the whole are very satisfied with the changes, although management are having some trouble persuading one of the social workers that she is not the line manager for the groups and the groups should report directly to the head of care for the elderly. They see her as a service - she helps them if they need help with holidays etc. They now find themselves as assistants and have trouble accepting this.

Feedback / Attitude Survey

The changes have now been made for over a year, and "it works very well". In September 1995 they asked their 330 employees (management, specialists and groups) what they thought about the new organisation. The questionnaire results were put in a graph with like questions grouped together. Everything under 3 was negative and everything over 3 was positive:

Salary	2.0
Competence levels	2.8
Work load	3.0

Information	3.3
Democratic dialogue	3.6
Job enrichment	3.6
Harmony	3.7
Commitment	3.7
Job Satisfaction	3.7
Empowerment	3.7
Inspiration	3.8
Group dynamics	4.2

These figures indicate that the groups are not happy with their salaries - the salary has remained unchanged as a result of the new organisation, but groups are being asked to do more with no extra financial reward. They think they ought to have more money because they have more responsibility. This could be a problem in the future if they are asked to do more. However, groups have said that they cannot imagine going back to the previous structure. When asked if they want the old manager back, they say 'no', because she would have nothing to do.

The level and type of information given to staff was considered to be good because of the difficulties in communicating within a new organisational structure. Satisfaction with competence levels is poor because staff felt unable to develop and use the education they were given. Similarly, it was felt that promotion prospects are poor because of the flattened hierarchy. They feel they should be getting a more highly qualified job through their training to make the best use of it. There are very few ways to progress, so they need to progress within the groups.

The groups feel that this form of work organisation is good in itself, but it is also difficult because they need more time. It is difficult to prioritise, because some things are important to do but may not fit the patient's needs. The worst part of the job for the group members is the psychological pressure and the pay structure. When the patients become more ill it is important that the group sticks together more, giving the necessary support as they are now they are more dependant upon eachother. Trust is therefore very important.

Hindsight

With hindsight, management would have started the change process earlier and worked harder with the middle management level. They found that nothing happened until they physically change the organisation and started giving more responsibility to the workforce.

Vision

In five years time the group believes there will be no need for a manager at the head of care for the elderly level, and they would report directly to the manager/politician to negotiate their own budget. There are already some organisations in Sweden where they have no management.