NEW TECHNOLOGY AND

CHANGES IN INDUSTRIAL RELATIONS :

AN ANGLO-SAXON COMPARISON

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By :

Jim Conway Memorial Foundation

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For :

The Commission of the
European Communities

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1. RESEARCH PROJECT

1.1 Introduction

The effects of new information technology upon work and society has attracted considerable coverage both in the media and in the forums of public debate. This coverage reflects a wider concern with the ability of Western nations to adapt to changing economic circumstances without serious social dislocation. In a period of rising unemployment technological progress appears simultaneously as an opportunity and a threat. Aspirations and fears are heightened by the major characteristics of information technology - the rapidity of change it presages and its ubiquitous nature. This research project was not designed to indulge in 'futurology' but to examine one particular aspect of the new technology-its known impact upon industrial relations procedures and practices. The study seeks to analyse actual changes in industrial relations arising from the advent of information technology in two countries - the United Kingdom and the Federal Republic of Germany - and the potential changes which may be extrapolated from that analysis.

The comparative study of industrial relations does not appear as exciting as prophesying the shape of society in the year 2001, but it is nonetheless a subject worthy of attention. The way in which information technology is introduced and handled at work will play a significant role in determining the pace, process and nature of change for society in general. The world we live in is, for better or worse, largely the product of human decisions and the workplace remains an important variable in most decision-making processes. The impact of information technology upon industrial relations might signify only another round in the perennial struggle between man and machine, but that struggle has in the past been witness to many a pitched battle and battles which can be avoided are battles won.

This study does not provide answers to the questions of acceptance or rejection of technological change or adaption to it. These are matters for better brains or a more efficient crystal ball. What the study does is to examine the perceivable impact of information technology upon industrial relations in certain economic sectors to date (a very early date it must be said) and to explore the apparent and likely consequences of that impact. It is an examination of the evidence from which, it is hoped, future building blocks might be constructed; although it is more analogous to an inspection of the site's drainage than the laying of firm foundations. However, it is always prudent to know something of the state of the soil before building commences.

1.2 The new technology debate

It is argued that technology always advances, never retreats. A clear historical case can be made for the veracity of the statement and, short of the nuclear holocaust, its continuance as a truism. Nevertheless the pace of change is probably more important than the mere fact of change. It took a long time from the Samarian invention of the wheel to the mass production of automobiles. Twentieth century man has been witness to a pace of change unknown to his predecessors. Information technology promises a pace of unparallelled rapidity. Those subject to change are necessarily fearful of the displacement and dislocation to be caused.

In societies where the Protestant Ethic predominates, and where work remains the major source of income and status, the fear of job loss and the actuality of unemployment can prove powerful determinants of attitudes and behaviour. Joe Hill's preacher promised "pie in the sky", to be eaten "bye and bye". Evidence would suggest that late twentieth century man (and woman) takes a more agnostic view towards earthly rewards.

The inter-face between technological change and the human response provides the fulcrum of the industrial relations debate. The impact of technological change upon industrial relations is not predictable and nor is it likely to be uniform, but it is a significant factor. Whether information technology is pushing the heavy stone of industrial relations uphill or downhill still remains to be seen. The debate in most Western societies is in its early stages. Common themes have emerged but beyond the absence of panaceas collective agreement is hard to find. The state and level of disagreement, however, is central to the argument and to this study.

Technological advancement has traditionally been welcomed by organized labour. Trade unions post-date Luddism and, whilst remaining primarily defensive organisations, they have sought to control technology and its benefits in the interests of their membership rather than seeking to prevent change. Where trade unions have placed obstacles in the way of technological change, they have invariably done so to influence that change not to oppose it. Certainly in the post-war period the trade union movements in the two countries under study – Britain and West Germany – have consistantly linked their political demands with general economic growth and have stood in the forefront of those seeking greater public and private investment in industry. Technology and capital expenditure have been viewed as essential weapons in the fight for economic development, growth and better living standards. If Britain's advance in "the white-hot heat of the technological revolution" did not quite match that of the German "economic miracle", then this was not a consequence of differing attitudes to technological change by their respective trade union movements (whether it can be at all attributed to differing trade union practices is a more contentious issue). It is important to note at the outset that almost the entire post-war generation of trade union leaders in both Britain and West Germany have viewed technological advancement not only as necessary but as fundamental to both the short and long-term interests of their members.

New information technology has given trade unions food for thought. Its application at a time of high unemployment and deep recession in the Western economies has seen the caution customary of organised labour supplemented by a heightened level of concern. This concern has not changed the post-war consensus on the desirability of technological advancement, but it has posed new questions as to the pace of change and the end-product of change. In so doing the industrial relations' framework, which seeks to handle change, has also been called into question. The way in which changing attitudes are reflected in negotiations, bargaining and agreements are central to this study. Questions of particular concern will be new elements in bargaining, and in 'productivity bargaining', and their implications for industrial relations.

Although it is a generalisation, trade union attitudes to information technology at present may be likened to a patient being prescribed a painful course of treatment for an illness; there is a belief that the final result will prove beneficial but the medicine to be taken, and the uncertain length of the prescription, are viewed with some trepidation. It is against such a background that the research was undertaken and within that context that the findings must be appraised. Industrial relations can be viewed as a product of past practice, present experience and perceptions of the future. Past practice depends on the length and quality of memory, whilst present experience and future perceptions are constantly changing. The new technology debate is an ongoing one. Experiences and perceptions are mixed. These preliminary remarks on the nature of the past and present debate seek to outline, and underline, the uncertainty which surrounds it. The study seeks to cast light on a subject which is both fluid and potentially volatile.

1.3 Research objectives

The study started from broad terms of reference - to examine the impact on industrial relations of 'new information technologies' in specific sectors of the British and West German economies. The terms of reference were expressed by means of five major objectives:

1/ To provide data regarding formal and informal, theoretical and actual, procedures for introducing and handling technological change and their impact on industrial relations at both an organisational and national level, and to assess the effectiveness of industrial relations procedures in handling new technology issues.

2/ To examine attitudes towards technological change from the point of view of those introducing it (organisation/management), those negotiating its introduction (trade unions) and those directly involved in handling it (employees).

3/ To analyse the bearing of organisational structures and collective agreements on the capacity of managers to generate methods and mechanisms for the introduction and control of new technology, and to study the development of trade union strategies towards new technology.

4/ To study the impact of technological changes upon the internal processes and dynamics of the organisation/enterprise concerned, with particular emphasis being placed on work organisation, disclosure of information, employee participation and manpower planning.

5/ To provide a more accurate and coherent knowledge base in regard to the impact of new technology on industrial relations' procedures and systems in order to guide decisions taken by policy-makers and industrial relations practitioners. To do this by the provision of cross-national data from two countries with different industrial relations' frameworks: West Germany - 'legalistic' and Britain - 'voluntaristic'.

To fully meet the requirements of these objectives would have required a much longer and more detailed study than time and resources allowed. However, the study does claim to cast some light on all the areas under examination but it is limited both by its sectoral approach and the range of its enquiries.

1.4 Research sectors and study refinement

The research study proposed examining the impact of information technology in three economic sectors – engineering, office work and telecommunications. The sectors were left deliberately broad and it was intended that a mix of blue-collar/white-collar, skilled/semi-skilled, and male/female occupations would be embraced. Time and the requirements of case study work demanded a sharper focus and the three sectors were modified to read :

1. Office work – with particular reference to word processors (WPs)

2. Communications – with particular reference to the banking sector

3. Manufacturing – with particular reference to design and development, computer aided design (CAD) and computer aided manufacture (CAM); and new machinery, numerical control (NC) and computer numerical control (CNC) machines.

Although the focus of the study was narrowed, it was deliberately not narrowed to the point of examining specific technologies in particular industries and concerns e.g. automatic telling in banking, word processors in insurance or computer aided design in the aerospace industry. The case studies would possess such limitations but the study was designed to generate data of a more widespread application. The emphasis was placed on an overview of industrial relations changes as a result of new information technology and the generation of comparative data which would be relevant both inside and outside the immediate study sector. The case studies were seen to provide supportive evidence to the overall enquiry.

1.5 Methodology

It was clear that to meet the objectives of the study a number of research tools would have to be utilised. Case studies would be carried out in all three sectors but they were to be illustrative analyses rather than definitive in-depth research studies. A literature survey was clearly required and supplementary evidence obtained from key personnel both inside and outside the research sectors – managers, trade union representatives, government experts, academics etc. The comparative element was vital and the following joint methodology was agreed :

1.5.1 Literature survey – to be linked and inter-woven with the primary data rather than forming a separate entity. (A select German and British bibliography is appended to this report).

1.5.2   <u>Case studies</u> - a minimum of one case study in each of the
        three sectors. The case studies to be viewed as
        illustrative rather than typical and compared and contrasted
        with the findings from other studies and further detailed
        primary and secondary research.

        The case studies to be based on semi-structured interviews
        with managers, supervisors, technicians, trade union
        representatives and, where possible, employees in the
        companies/organisations concerned.

        The semi-structured interview schedule utilised is
        reproduced in the Appendix and the main areas of enquiry can
        be listed as follows :

        1. the introduction of new information technology
        2. the process of change - information, communications,
           consultation, involvement and participation
        3. procedures and agreements
        4. new technology bargaining and the handling of change
        5. operation, supervision and control
        6. work organisation
        7. manpower planning and industrial relations
        8. industrial relations' frameworks and systems.

1.5.3   <u>Key personnel interviews</u> - to be carried out with a wide
        range of representatives from both sides of industry,
        government and government agencies, academics, experts and
        other interested parties. Interviews to be both formal and
        informal. Formal interviews to utilise a similar format as
        that adopted in the individual case studies.

1.5.4   <u>Confidentiality</u> - it was considered important to the nature
        of the enquiries and study that total confidentiality should
        be provided in order that full and frank opinions and
        discussions could take place. All individuals, companies
        and organisations associated with the case studies and key
        interviews have been kept anonymous (even though in certain
        cases this was neither required or requested).

1.5.5   <u>Hypotheses</u> - it was debated whether certain hypotheses ought
        to be posited and tested.   A number of models - "co-
        operative/conflict" and "positive/protective" being the most
        widely quoted - concerning technology and industrial
        relations have been formulated. Their inadequacy and
        generality were such that both research teams eschewed their
        utilisation. The nature of this particular study was felt
        to be more conducive to the offering of opinions rather than
        the testing and exposition of theories.

1.6 Outline of report

The report is divided into five sections: the first, this section, has outlined the nature of the subject and the research study; the second section will briefly examine the comparative national industrial relations' frameworks and perspectives on new technology; the third section will explore information tecnology at the workplace and will summarise the findings from the case studies; the fourth section will focus particularly on trade union response, policy and strategy; and the fifth section will make a comparative assessment of the industrial relations implications and draw conclusions from the study.

2. NATIONAL PERSPECTIVES

2.1 Industrial relations' systems in Britain and West Germany

The concept of an industrial relations' "system" is an academic idea
of relatively recent origin. It can probably be traced to the
Webbs' (1897) definition of the relationship between employers and
trade unions as "industrial democracy", but its development as a
concept of academic discourse and analysis is largely a product of
the post-World War II period. It is a concept not without
theoretical and practical complexity. Its validity as a tool of
analysis may be open to question where more detailed assessments are
required but for broad comparisons, with which this study is
concerned, it has its uses.

Clegg (1972) argued that industrial relations could be defined as
the study of job-regulation. The rules which regulated jobs could
be made and adminstered in three ways: employer regulation,
collective bargaining and statutory regulation. For most large
workforces in Britain and West Germany the days of absolute employer
regulation are long gone. What we are left with, the network of
rules which constitute the output of an industrial relations system
(Dunlop 1958), is a mixture of rules defined firstly by collective
bargaining and agreement and secondly by state regulation and state
intervention. No Western nation's system of industrial relations
can be defined solely by means of one of these forms of regulation –
each has its own particular 'mix'. The British 'mix' was
sufficiently complicated for Donovan (1968) to describe it in terms
of two industrial relations' systems – the 'formal' and 'informal'
system. Without delving too deeply into the intricacies of British
industrial relations, it can be argued that the predominant form of
regulation is through collective bargaining and that the system is
largely 'voluntaristic'. In West Germany the opposite is the case.
Collective bargaining exists and flourishes but it does so within a
framework of state regulation – regulation which applies strict
rules throughout the system. The West German system can be
characterised as 'legalistic'.

Those that would read too much into the differences between
'voluntarism' and 'legalism' are liable to get their theories burned
along with their fingers. However, that is not to say that the
distinction between the two is unimportant or that the differing
rules 'mix' do not lead to contrasting practices and behaviour.
Some major points of departure may be noted.

In Britain there exists a wide range of bargaining levels. The
predominant form of bargaining is single-employer – only 27% of
manual workers in manufacturing industry have multi-employer
agreements (industry-wide and regional) as their most important
source of wage increase (Brown 1981, p.17). Industry-wide
agreements are common but they usually provide no more than a
'safety net' support for wages. In West Germany the most common
form of pay bargaining is regional industry-wide agreements.

The German system is facilitated by their regional (federal) political structure and their system of industrial unionism (17 trade unions in all). The British system is based on voluntary collective agreements, which are not legally binding, and the German system on legally binding contracts. Step-by-step bargaining regulations operate in West Germany, which restrict although not entirely remove recourse to industrial action. In Britain exhaustive procedures exist, sometimes backed up by arbitration, but the absence of legal regulations ensures a higher breakdown rate of negotiations and hence more widespread use of industrial action (as a cursory glance at comparative West German and British strike figures will show). These generalisations conceal a web of different bargaining practices but the voluntaristic/legalistic dichotomy remains valid. In West Germany pay bargaining is regulated by the legal framework of the industrial relations' system, and it can be argued that agreements are reached which reflect prevailing national attitudes towards and conditions for economic stability and growth (Hotz 1981, p.389). In Britain the perceived and actual unpredictability of 'free collective bargaining' has led successive governments, of both major political parties, to pursue incomes policies – often statutory intervention – to control the economy, or rather seek to control it. Voluntarism is not necessarily more flexible than legalism.

In Britain the 'formal' system of industrial relations revolves around the state, employers and full-time trade union officials – a network of company, organisation and industry-wide institutions supports and constitutes the system. In addition, as Donovan correctly observed, there is an 'informal' system based on lay trade union officials – shop stewards or trade union representatives – whose input into the industrial relations' system is both large and influential. Although both systems are based on largely recognised and approved trade union channels, the 'formal' or 'official' system can clash with the 'informal' or 'unofficial'. The multiplicity of British trade unions and the nature of shopfloor bargaining can lead to conflict within the 'informal' system which could not arise in West Germany.

In West Germany there is a form of dual representation at plant level but it has no comparison in Britain. The duality is caused by the legal system of works councils, which by law have to represent the interests of all employees although they are predominantly trade union institutions, and shopfloor trade union representatives. In practice it is the works councils who make and administer works agreements and it is they who are responsible for bargaining at shopfloor level (apart from pay bargaining). The law prevents them from being a party to industrial action but in all other non-wage matters they have considerable powers of intervention.
The characterisation of the West German system as 'legalistic' and the British system as 'voluntaristic' is accurate to a degree in regard to wage bargaining; although incomes policies, cash limits and public sector pay 'norms' do tend to dent the concept of free market 'voluntarism'.

The distinction between British shop-floor bargaining, in which lay shop stewards were influential figures, and West German regional and industry-wide bargaining, over which the shop-floor had little influence, was always a generalisation. As the recession has deepened and shop-floor bargaining power been eroded, it has become even less meaningful. British 'voluntarism' has usually operated within a framework of state regulation or a concept of the 'going rate' established by certain national settlements: the concept of diffuse, decentalised pay bargaining has always required considerable qualification. Equally in West Germany the establishment of industry-wide agreements has always required their practical implementation at company and shopfloor levels. German works councillors are no less 'bargainers' than their British shopfloor colleagues. In terms of the introduction of new technology it is more important to stress the similarity of their roles than the apparent differences.

Where the two systems can be distinguished is in the area of conflict resolution. The alegal aspect of British collective agreements and the largely voluntary role of arbitration and conciliation services, makes settlements more difficult to obtain than in the heavily procedural German system. Recourse to industrial action is an established bargaining 'tool' in Britain; in West Germany it is a rarity.

The legal framework and institutional structures of conflict resolution which are built into the German system, are reinforced by participation at all levels of the enterprise. The system of "co-determination", enshrined in the Works Constitution Act, is a major characteristic of the German system of industrial relations. It provides works councils with statutory rights of participation and ensures an element of workers' participation at board level; only in coal, iron and steel does this amount to 50/50 representation, true 'co-determination', but in all other industries and organisations the workforce elect one-third of the members of the top supervisory board (there is a two-tier board structure with a lower management board). This statutory right to participation exemplifies the German system's legal and practical emphasis on a co-operative approach to management and industrial relations. It accepts the inevitability of conflict but institutionalises it to ensure peaceful resolution. The interests of the workforce are represented throughout. In Britain workers' participation has made little formal headway. Proposals to extend industrial democracy on a national scale (Bullock 1977) have been mooted but the worker director remains a British industrial relations' oddity (steel and shipbuilding have them, as did the Post Office). Many British trade unions have a deep-seated distrust of participation, although a major development in industrial relations over the last decade has been the rise of "joint consultation" - 77% of British companies with over 1,000 employees now have some form of joint consultation, the majority of these joint consultative committees (61%) being established since 1972 (Brown 1981, pp.75-79).

As the law is increasingly invoked to settle disputes and labour
legislation multiplies, the emphasis on regulation by collective
bargaining rather than state intervention is changed and the
description of the system of job regulation as 'voluntaristic' as
opposed to 'legalistic' becomes less valid. However, for the
purposes of this study the distinction will be made and two key
elements highlighted as they impinge upon the introduction and
handling of new technology i.e. firstly, the German legal
participative structure as opposed to the British consultative
framework and, secondly, the different legal status of collective
agreements in the two countries. Despite its over-simplification,
the German system of industrial relations will be termed
'co-operative' and the British system 'adversarial'. This is not to
construct a model of job regulation in the two countries but simply
to underline the clear difference of approach.

2 Boundaries of the debate

In the introductory section (see 1.2) observations were made on the
wider debate. Describing the German system of industrial relations
as 'legalistic' and 'co-operative' compared to Britain's
'voluntaristic' and 'adversarial' system, does not mean to imply
that national perspectives on the subject will be governed by any
such structural differences. The impact of structure upon practice
is a concern of this study but the wider debate operates above that
level in the realms of theory. It is worth re-emphasising, before
the actual practice is studied, that the theoretical premises,
which could be said to form the boundaries of the debate, are
shared. The two countries may differ in practice and approach but,
on this issue, assumptions are common.

National perspectives generally reflect a widespread acceptance of
information technology as being necessary for economic and social
progress. How this is reflected in the strategies and practices of
the various parties - the state, employers and trade unions - will
be examined later. However, it is important to note that the debate
is confined to the manner of acceptance and does not juxtapose
alternative strategies of acceptance or opposition. The debate
revolves around optimisitic and pessimistic predictions and whether
'efficiency' or 'employment' should represent the primary objective,
but it does not - as far as the parties in the respective industrial
relations' systems are concerned - involve any element of rejection
of the technology itself. The most critical party, the trade
unions, are concerned to debate the manner and conditions of
acceptance - there is not a "no new technology" strategy. The
shared assumptions of trade unions in Western Europe on this
question (see ETUI 1979 and Chamot and Dymmel 1981) are not
necessarily reflected in shared practice. The study will now turn
to examine some facets of that practice.

INFORMATION TECHNOLOGY AND INDUSTRIAL RELATIONS AT THE WORKPLACE

1 Shopfloor industrial relations

British industrial relations has historically been based upon collective bargaining and agreements between employers and trade unions. Collective agreements, apart from the brief interlude afforded by Ted Heath's ill-fated Industrial Relations Act of 1970 (rescinded in 1974), have since 1871 been unenforceable in law. The 1906 Trade Disputes Act protected trade unions from legal actions on the grounds of civil conspiracy and induced breach of contract as long as their action was "in contemplation or furtherance of a trade dispute".

Until the 1970s legal intervention in shopfloor industrial relations concerned only matters relating to the working environment (Factory Acts and Office and Shop Acts), wages councils (in low-paid industries) and contracts of employment (the legal relationship between the individual employee and employer). Collective agreements and 'custom and practice' defined the role and operation of trade unions at shop-floor level. Economic difficulties and perceptions of the trade union contribution to those problems has resulted in increasing state intervention in industrial relations.

Labour legislation in the mid-1970s (notably the Trade Union and Labour Relations Act and the Employment Protection Act) firstly undid the interventionist Industrial Relations Act and secondly stipulated basic individual and collective rights at work. Although certain of these rights have been amended by the Employment Act (1980), particularly in regard to picketing and the closed shop, and certain further legislation is proposed, the framework of individual and collective rights enacted in the mid-1970s largely remains. In relation to this subject rights of disclosure of information for collective bargaining purposes and time-off for trade union duties are particularly relevant.

British industrial relations at shop-floor level has become more formalised with legislative intervention, one result being a growth in disputes procedures (Brown 1981, p.44), but practice remains far more dependant upon agreements based upon bargaining power than legal rights. On a range of issues - wages, hours, humanisation of work, workers' participation etc. - there is no legal 'safety net'; trade unions get what they can bargain. Thus, when it comes to new technology there is very little legislative support that the trade unions at shopfloor level in Britain can call upon. This is, of course, largely a matter of choice; trade unions have traditionally rejected minimum wages legislation, hours legislation, overtime legislation and other legal interventions, such as on humanisation of work or industrial democracy (the latter being a divided issue) as they were seen to encroach upon the ability of unions to improve their members lot by means of 'free collective bargaining'. In reacting to new technology, therefore, British trade unions have had to rely on their traditional weapons of bargaining skill and power.

In West Germany trade unions operate within a well-defined
legislative framework. The main plank of this framework is the 1952
Works Constitution Act (WCA). The WCA instituted a national system
of works councils which have become the pivotal point in the whole
system of German industrial relations (Sturmthal 1964, pp.53-85).
Works councils do not reach independent agreements on pay and
conditions, which are settled by regional industry-wide agreements
(legally binding and prohibiting industrial action during the course
of the agreement), but they do perform many shop-floor bargaining
functions. Their role is not the same as that of the British shop
stewards' committee as they are legally bound to pursue a policy of
·trustful co-operation with the employer. However, their right to
negotiate piecework rates and incentive payment systems, plus other
rights and duties in regard to enforcing collective agreements,
applying factory legislation, making plant regulations and work
rules, handling grievances, operating social welfare services, and
regulating recruitment and dismissal procedures, provides works
councils with considerable authority at shop-floor level. The works
councils are the main vehicle of trade union bargaining power at
shopfloor level.

The main distinction to be made between the two systems in respect
of new technology is that German trade unions at plant level have
had specified legal rights of disclosure of information for the past
thirty years, British trade unions have only recently acquired (EPA
1975) some form of legal obligation on the part of employers to
disclose information for bargaining purposes. In West Germany the
WCA stipulates that the employer must give the works council
sufficient notice about the planning:

> "1. of the building of (or alterations or extensions to)
>   manufacturing, administrative and other premises
> 2. of technical plant equipment
> 3. of work methods or processes
> 4. of jobs.
> The employer is also obliged to consult with the works council
> over the possible effects of the above on the employees' jobs.
> Both the employer and the works council should at the same time
> pay regard to the body of scientific knowledge that exists with
> reference to the humanisation of work." (WCA Section 90)

The 1975 Employment Protection Act in Britain did not go so far as
to provide statutory rights of a comparable nature. Under the EPA
an employer is obliged to disclose certain information for
collective bargaining purposes but the Act does not specify whether
a trade union has a right to information regarding management's
future plans. Thus the questions of investment, new products, work
organisation and manpower planning, all crucial to the introduction
of new technology, are not covered by the EPA. The ACAS Code of
Practice (ACAS - 2 - 1977) designed to clarify the Act does mention
"planned changes in work methods, materials, equipment or
organisation; available manpower plans; investment plans", but it
does so in extremely ambiguous terms - "examples of information re-
lating to the undertaking which could be relevant in certain
collective bargaining situations" (p.3 - author's emphasis).

At shop-floor level the German system provides certain statutory rights and responsibilities and places them in the hands of the employer and works council. In addition it provides information and consultation rights in regard to changing work methods and processes - if humanisation or work is affected, and new technology would appear to fit that category, then there is a further right of co-determination. There are joint responsibilities throughout and the system is designed to handle change at the workplace through what has been termed "co-operative conflict resolution". In Britain, on the other hand, there are not statutory rights in this respect and only mild legal obligations. The idea of joint responsbility for technological change does not exist. British trade unions seek to control the introduction of new technology at shopfloor level through collective bargaining with the occasional support of joint consultation; there are few rights to be invoked and no formal machinery to be followed. British trade unions rely on precedent (custom and practice), shopfloor bargaining power and the ability to take industrial action. German works councils do not have the ability to take industrial action and rely on giving practical effect to the employer's legal obligations.

In Britain shopfloor industrial relations are 'adversarial'. This does not imply a continuous running battle or constant conflict - the majority of manufacturing establishments do not experience any industrial action during a given year (see Brown 1981, pp.80-101). It means that participative structures, where they exist, are very much secondary to bargaining mechanisms. At shop-floor level trade unions retain an 'independence' of action whatever the degree of co-operation with management which exists within the enterprise. In Germany there is a far greater degree of 'inter-dependence' between works council and management. Both sets of trade unions are autonomous but, by the nature of the systems in which they operate, they exercise that autonomy in different ways and by different means.

3.2 Employers' strategies

Since the mid-1970s both Britain and West Germany have been faced with changing trading conditions, a slowing of economic growth, declining manufacturing investment and rising unemployment. The reasons for these events are many and varied - domestic and international fiscal policy, increases in the prices of raw materials and energy, increasing competition from developing nations and between industrialised countries, and structural changes in products, processes and the balance of trade. The response to change, in both countries, has been to seek ways and means of adapting to it - neither country has sought to radically alter the basic system of production and distribution. This adaptation has occurred, and is occurring, in both the manufacturing and service sectors of the economy - new technology is a common and key element across the spectrum.

In adapting to change three important variables can be isolated and new information technology has a key role to play in each:

(1) Structure of the product/service

For new markets to be won product innovation is required. For greater cost-efficiency and cost-effectiveness there are imperatives to restructure services. Speed of innovation is a vital factor. Products and services are becoming increasingly complex and sophisticated and at the same time there are demands for product/service standardisation to be met. Information technology in many instances provides the only developmental road to follow.

(2) Structure of the enterprise/organisation

The pressures to automate and modernise products and services often generates demands to reduce the scale of operations, lower fixed costs and decentralise. In production this often means smaller units and more nationally and internationally dispersed units. The nature of the technology often facilitates international decentralisation. With regard to services, terminals and data banks can be structured in any way to suit the need for centralisation or decentralisation. Flexibility of production, operation and administration is made possible.

(3) Structure of work organisation

Production and service efficiency demands flexibility from both the technology and its users. New systems of production and service provision are required. There are demands for lower costs and higher quality. Work has to be restructured and reorganised to meet these demands. Information technology provides the means to do it.

These are not the only three variables at work in the production and manufacture of goods and services but, given the economic situation in the two countries outlined earlier, increasing importance is being placed upon them. The 'technology route' is seen by many employers in both the manufacturing and service sectors of the economy to be the only way out.

The contingencies involved with the production and distribution of goods and services make any reference to "employers' strategies" a matter of generalisation. different firms, organisations, sectors and industries will operate under a variety of circumstances which will necessarily be reflected in the kind of economic decisions made and strategies pursued. However, the major characteristics of information technology - its cheapness, reliability, flexibility, speed and control - provide it with a wealth of applications and thereby constitutes an option, or rather a range of options, for employers in most sectors of the economy. The study will concentrate on the take-up and pursuit of those options, and their consequences for industrial relations, in a number of limited sectors - sectors where information technology can already be seen to have had an impact. However, the implications of information technology is being and will be felt in almost all areas where trade unions are organised.

Within a broad framework of adaptation to change and specific
objectives, a number of particular employers' strategies in regard
to the introduction and handling of new technology can be
delineated. Essentially four strategies or approaches may be
adopted :

1/ Unilateral imposition

The introduction and handling of new technology by managerial
dictat: a 'zero option' approach based on ultimatums - accept
change or endanger the whole operation. Trade unions are
offered the 'option' of acceptance or rejection but consultation
and negotiation plays no part in the strategy.

2/ Bargained imposition

Technical change is imposed rather than negotiated (either
piecemeal or wholesale) but, following its introduction,
bargaining takes place over manning, wages, work reorganisation
etc.

3/ Negotiated solution

The trade unions are to be consulted and new technology is to be
introduced and handled by means of jointly negotiated agreement.

4/ Participative solution

The employer and trade unions will share joint responsibility
for the introduction and handling of new technology by means of
full disclosure of information prior to introduction and
negotiated agreements on the basis of full participation and
joint control.

These four strategies run the gamut from 'unilateral control'
to 'joint control'. Employers might not consciously adopt any one
of the four but an examination of practice will document the
utilisation of at least one of these approaches. The strategies
pursued will inevitably affect workplace industrial relations as new
technology, almost inevitably, has an impact upon job regulation.
The changes in industrial relations brought about by the
introduction and handling of information technology will now be
examined with reference to the sectors analysed and the case studies
conducted.*

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* In addition to the primary work carried out the findings of other
  researchers, conducting case studies in similar areas, have been
  incorporated into the text. Of particular note are the German
  studies of Bechmann et al 1978 and 1979, Brandt et al 1978, ISI
  1981, and Weltz et al 1978, and the British studies of Forester
  (ed) 1980, JCF 1982, SPRU WTS 1982, and Swords-Isherwood and
  Senker 1980.

3.3 The introduction of information technology

There is nothing new about technological change. Many industries and organisations, particularly in the manufacturing sector, are accustomed to the introduction and handling of technological change. However, because information technology is perceived as a radical, if not revolutionary, leap forward and its large-scale introduction coincides with the deepest economic recession in fifty years (i.e. the worse recession ever experienced by the vast majority of the workforce), the context is new.

Before new information technology, or any technology for that matter, is brought into operation, there is usually a planning and introduction process lasting several years. It is extremely difficult to distinguish between 'planning' and 'introduction' as there is no fine dividing line between where one starts and the other ends. Broadly speaking 'planning' refers to the process of defining aims, information collation, organisational analysis, developing strategies and final decision-making over the degree of technological change required, time-scale involved and the changes to work oganisation and manpower planning necessitated. The term 'introduction' refers to the period immediately prior to the installation of the machinery and equipment, the actual installation itself and the reorganisation of the workplace and workforce necessitated. The distinction between 'planning' and 'introduction' is central to the process of job regulation, i.e. industrial relations, and consequently is seen as of prime importance to this study.

3.3.1 Planning

To the firm/organisation involved, planning is based on an assessment of the technology currently in use and analysis of the potential applications of the new information technology. Research and development will exploit the technical possibilities and management will assess cost, efficiency, output etc. New information technology tends to be characterised by low production costs but high development costs.

All the case studies, both British and German, pointed to an intensive period of information search and analysis. This was largely as a result of company/organisation policy or directive. Occasionally it was the result of an individual manager's initiative, but all the major changes studied resulted from company planning policy. Sources of information varied - the press and media, universities, hardware/software suppliers, seminars, consultants, short courses, exhibitions and trade fairs, specialist periodicals and trade and research organisations - and in all the studies more than one source was quoted. Awareness was high but this was to be expected as the studies focused on areas where information technology was in use.

In manufacturing the educational element of seminars and courses was seen to be particularly important, and in relation to CAD/CAM internal (R and D) and external (universities/polytechnics) research organisations were prominent. Internal research and development, aided by consultants and suppliers, figured highly in banking; whilst studies in the office sector placed little emphasis on internal development but strongly emphasised the role of the suppliers.

In the planning process, in both British and German studies, there was a distinct lack of trade union involvement. Managers had their sources of information, as did the trade unions. However, joint educational courses were a rarity and joint assessment and analysis of information was entirely absent. Trade unions were excluded from the planning process until they became aware that information technology planning was being undertaken i.e. usually up to the point when feasibility studies were being conducted or consultants employed. Consultation with the trade unions came at the tail-end of the planning process and, in some cases, after the planning process had been completed.

Managers (and many trade unionists) interviewed believed planning to be a managerial function. Trade union involvement came after decisions to go ahead with particlar forms of new technology had been made or, at best, when they were imminent. Trade unions were officially excluded from the planning process in the British studies, informal joint consultation being the only direct input. In Germany, despite co-determination, trade union involvement in the planning process did not appear to amount to a great deal more than in Britain. Specific case studies will be examined later.

3.3.2 Introduction

Following the decision or decisions to install information technology a process of introduction ensues. It is at this stage, in all the cases studied, that the trade unions were involved at some level. In Britain this usually involved consultations with the shop stewards or trade union representatives at workplace level. National trade union officials or even full-time officials were not involved in the introductory phase and nor was there any attempt to seek national, company or organisational agreement on new technology prior to introduction. Technology was introduced at workplace level and it was the trade union representatives at that level who had to make the initial response to its introduction. This was also the case in West Germany where initial involvement came through the works councils.

It ought to be emphasised that all the British and German data pointed to trade union involvement only in the latter stages of the planning and introduction process. It appeared that investment decisions had been taken and work re-organisation plans were well-advanced if not determined. The trade union representatives and shop stewards in the British studies and the works councils in the German studies, did not appear to have any influence over investment and planning decisions. In both countries the workplace trade union representatives were in a position of reacting to decisions which had been made - decisions they were not privy to.

A number of strategies and methods employed for the introduction of new technology can be identified from the case studies and they add substance to the general classification outlined in 3.2 :

1. Unilateral imposition

Secondary sources point to instances of 'take it or leave it' situations. In Britain there are a number of examples in the printing industry and in Germany, contrary to legal stipulations, there are examples of "surpise installations" (I.G. Chemie 1981, p.55).

2. Bargained imposition

The process of introducing new technology and then proceeding to bargain its operation was exemplified in both British and German studies. Two particular strategies were identified :

(a) Trial introduction - new technology is introduced as an 'experiment' or on the basis that it can be withdrawn at any time. If the trial is successful, and there were no cases of 'unsuccessful' trials, then acceptance is assumed and only the details of operation need to be finalised. The 'trial' manning arrangements invariably become practice and work reorganisation and payment was usually discussed during the 'trial' period (there being an in-built assumption that the 'trial' would become practice). The 'trial' came to an end with the signing of a formal agreement. Although the trade unions were said to be involved in the introduction, the situation was best described as a fait accompli. Trial introductions could not from these studies be seen as jointly "negotiated solutions".

(b) Piecemeal introduction - new technology introduced in
one part of the workplace, affecting only a few jobs,
and then gradually introduced into other areas.
The process continues until the technology is
sufficiently common for the trade unions to seek
agreement on it, but tacit acceptance will have been
achieved and manning and payment arrangements will be
partly or wholly established. The trade unions are
not bargaining over the introduction of new
technology but are left seeking arrangements as to
how best it might be handled in the future; they are
consequently in a much weaker position.

3. Negotiated solution

Consultation at the latter-end of the planning and
introduction process, followed by a jointly negotiated
agreement, was the most common approach in both sets of
case studies (although permission to conduct case study
work inevitably meant that the case studies could not be
said to be representative: those that have 'something to
hide' do not generally welcome research from social
scientists, particularly when they are attached to
organisations with strong trade union connections). This
approach was particularly prominent in the case studies
in manufacturing industry. A consultation/negotiation
formula can be seen as (a) a product of normal practice
(in Britain the Engineering Employers' Federation
recommends the approach) and (b) a result of a marked
lack of trade union opposition to the introduction of new
technology (survey reports suggest that less than 10% of
manufacturing establishments see trade union opposition
as a major problem in the introduction of new technology
- see Bessant 1982, pp.61-3 and Northcott and Rogers
1982, pp.78-81).

Within the process of a "negotiated solution" two
separate techniques were discerned which, without
knowledge as to how widespread the practices are, ought
to be noted :

1/ Information starvation - in one of the British
studies information technology was introduced in one
plant of a large multi-plant company in a manner and
in a form which had been rejected elsewhere in the
company. Managers introducing it were aware of this
but did not inform the workforce. Lack of
information and lack of opportunities to acquire
information were common trade union complaints: the
'mushroom' treatment as one shop steward put it -
"kept in the dark and fed on manure".

2/ Information bombardment - the German studies pointed
to a number of cases where works councils were
bombarded with information on ergonomic aspects of
new technology (humanisation of work assuming great
importance in the Federal Republic and being a matter
for co-determination) and were ostensibly "buried in
work". An illusion of participation is fostered in a
process in which there has largely not been any
participaton. The attention of works councils is
diverted from the key questions of manning,
qualifications and working conditions (Briefs et al
1979 and I.G. Chemie 1981).

4. Participative solution

Examples of "participative solutions" as defined (see
3.2) could not be found in either the British or German
studies. There were, however, examples of trade
union/shop-floor involvement in job design i.e.
participation in matters of machine manning, operation,
organisation and lay-out. It could not be argued that
there was 'joint control' over either the introduction of
the technology or the consequent manpower planning, but
aspects of the introductory process did have
participative elements which went beyond mere
consultation and negotiation.

The 'planning' and 'introduction' processes of new
technology largely exclude trade unions to the point where
they are reacting to change rather than being involved in
it. No control can be discerned being exercised over the
planning phase, whilst the best that can be said for trade
union involvement in the introductory phase is that it
affords opportunities for partial conrol. The ramifications
for industrial relations of information technology
introduction and handling in the sectors under study will
now be examined more closely with regard to the case study
and secondary source evidence.

3.4 Workforce implications - quantitative

The impact of new information technology upon employment and
unemployment is, certainly as far as the trade unions are concerned,
the major issue in the new technology debate. The take-up of new
information technology, however, is not at a sufficiently high level
in either Britain or Germany from which to make reliable
predictions; although this has not deterred conjecture and
speculation. This study was not designed to add fuel to these
arguments but as industrial relations' strategies and policies are
often based on subjective perceptions, and employment prospects does
form a key element in bargaining, it is necessary to outline
attitudes and assumptions in this area both generally and in the
sectors examined.

Those who make forecasts as to the employment implications of information technology can be divided into "optimists" and "pessimists". In Britain the "optimists" are largely government-sponsored or government-oriented (see ACARD 1980a, CPRS 1978, DoI 1979, NEDC 1980 and Sleigh et al 1979). A gloomier view is taken by a wide range of commentators who nonetheless give information technology their stamp of approval (e.g. Barron and Curnow 1979, Jenkins and Sherman 1979 and Stonier 1979). The degree of pessimism involved is often dependent upon the degree of social change which it is believed is required in order to avoid the worse ravages of 'technological unemployment'. Those who believe that the capitalist system is beyond any sort of reform in the first place tend, short of the revolution, to make the gloomiest forecasts (CIS 1979, Harman 1979 and Hines and Searle 1979). The debate is, of course, highly speculative. It is possible to examine employment trends and collate figures for sectoral job loss but extrapolating from them to predict employment trends is a high-risk venture.

The major point to be made in this study is that trade unions in both countries are operating on the assumption that information technology will lead to a loss of jobs. In Britain there are predictions of 5 million lost jobs over the next 25 years (Jenkins and Sherman 1979, pp.116-123) and in Germany the loss of 2.4 million jobs over 10 years (Janssen 1980, p.251). The accuracy of these predictions is largely irrelevant - their authors share the view that job loss is not a 'zero sum' game and argue for radical redistributive policies to offset sectoral unemployment. What is important, however, is the fear that sectoral job loss will not be absorbed by expansion in other areas. The impact on industrial relations of a shared perception that employment opportunities are limited and will continue to be limited in the foreseeable future, is a concern that this study will seek to explore. The level of concern differs between sectors and underlying assumptions in the sectors studied require clarification.

3.4.1 Word processing

In both the short and long-term it is widely held that word processing equipment will have a negative effect on office jobs (see SPRU WTS 1982, pp.55-6). It is an assumption shared by both British and German trade unions. Secretarial, typing and clerical jobs are seen to be most at risk (APEX 1979 and 1980, Bird and Connell 1980 and Siemens 1976). Both the British and German studies point to considerable fears of short-term job loss and those fears having industrial relations' consequences, although actual job loss as a result of information technology was more difficult to pinpoint (see 3.6).

3.4.2 Banking

The degree of job loss in the banking and insurance sectors
in the short-term, i.e. over the next ten years, is
problematic. Studies point to a 30% reduction of staff
(Nora and Minc 1978), whilst others vary between 10% (Pactel
quoted in BIFU 1981a, p.4) and zero (Sleigh et al 1979).
Despite predictions of a growth in services, no studies
point to a growth of staff. Evidence points to female job
loss in the banking sector (Hummel 1980, p.446 and SPRU WTS
1982, p.89). It is widely recognised that new technology
provides opportunities for the extension of banking business
(Projektgemeinschaft 1979 and BIFU 1981b), but in changing
the nature of banking the studies demonstrate trade union
concern with job loss and career prospects (see 3.7).

3.4.3 Manufacturing

The impact of NC/CNC machines and the development of CAD/CAM
upon job loss in the manufacturing sector is a cause of much
debate. Reliable data is at a premium. Pesssimistic
estimates have pointed to a 50% job loss over the next 10 to
20 years (Remmerswaal quoted in CSE 1980, p.61) but these
forecasts need to be treated with a considerable degree of
scepticism. Similar forecasts of high job loss resulting
from the use of NC machines in the 1960s proved unfounded.
Employment in the manufacturing sector has proved far more
dependent upon the overall state of the economy than that of
new technology. The rate of diffusion of labour-saving
equipment, notably DNC and CAM, is expected to be slow
(Green et al 1980, p.40). Job loss will occur in areas of
the shop-floor where major technological changes are made
(see Bessant 1982, p.58), but the overall impact on
employment will be governed by speed of take-up and the
state of domestic and world markets (see-Swords-Isherwood
and Senker 1980, p.22). The overriding cause of job loss
in the past has been lack of competitiveness not new
technology (Rothwell and Zegveld 1979, p.118). This fact
is widely recognised by both sides of industry. Job loss
has occurred as a result of CNC machies and CAD/CAM
(Bechmann et al 1979, p.235 and ISI 1981, p.250) and
their widespread diffusion would result in even greater
job loss. However, the case studies point to a
widespread opinion that job losses will be even greater
if new technology is not fully embraced (see 3.8).

3.5 Workforce implications - qualitative

Information technology places new demands on the workforce and on
the organisation of work. In a number of areas these have important
industrial relations' consequences. Certain key issues can be
highlighted:

1/ Work organisation

The interface bewteen man and machine has long been an area of social concern. The organisation of work in the office, in banking and on the shop-floor has been directly affected by information technology and will continue to be so in the future. Work reorganisation can have a major impact on job control (Cooley 1980), participation (Mumford and Sackman 1975) and supervision (JCF 1982): all of which affect job regulation.

2/ Skills

New technology results in changing skill requirements across most sectors (Swords-Isherwood and Senker 1980). It has been argued that the overall impact is that of de-skilling (Braverman 1974) but with most forms of information technology it is a question of swings and roundabouts (CSS 1981). Changing skills affect knowledge requirements, which have implications for apprenticeships and training, and they can affect trade union composition and structure – demarcation being a particular problem in Britain.

3/ Humanisation of work

Work reorganisation and skill changes necessitate an analysis of ergonomic factors (see Cooley 1980, CSS 1981 and Grunewald et al 1981). Questions of autonomy, team-work, co-operation, polarisation and alienation need to be examined in the light of technological change. The problem of job satisfaction has not assumed a high priority in terms of potential industrial relations' conflict in the past, but evidence suggests, as the manual element in many occupations decreases, that it could prove increasingly important in the future. Certainly in both British and German case studies emphasis was placed on ways of increasing job satisfaction where de-skilling had occurred and on the potential of the technology itself for providing more interesting and rewarding work. Trade union awareness of ergonomic factors was high and this, at least in Britain, was in contrast with earlier shop-floor studies of humanisation of work (see Rathkey, 1977).

4/ Health and safety

Allied to humanisation are matters of health and safety at work. With the exception of potential health hazards involved with VDUs (see APEX 1980), it was largely felt that information technology would improve health and safety at the workplace. Provided manual drudgery was not replaced by mental drudgery, it was hoped that working conditions – particularly in manufacturing industry – would improve.

5/ Women

The impact of information technology upon areas of female employment and consequently upon the whole question of women at work, is a matter for concern (see Bird and Connell 1980, Marth 1980 and SPRU WTS 1982). It is not clear from the work that has been done in this area or from the case studies reported here what impact the effect of information technology on the nature of women at work will have on industrial relations.

The quantitative and qualitative effects of information technology upon the workforce and the workplace are difficult to gauge both industrially and nationally, but particularly in regard to specfic sectors of economic activity. However, what is cerain is that they will produce changes. Awareness of the inevitability of change and uncertainty as to how that change will manifest itself at workplace level, lies behind many of the attitudes struck in regard to information technology. The study will now focus on attitudes and experiences in regard to information technology in the specific sectors which were examined.

3.6 Word processing and office work

Studies were conducted in both private and public sectors - insurance and finance and public administration. They examined the introduction of stand-alone word processors (WPs). Shared work-station and printing facilities were involved but the major studies did not involve fully-developed shared logic systems. Central computer and microcomputer systems were also present, the latter on a relatively small scale. Neither system was fully-integrated - the computing systems very much pre-dated the introduction of WPs. Interword processor communication, electronic mail or other advanced forms of data transmission were not present. The utilisation of information technology in the office was in its early stages. It was widely accepted that more sophisticated equipment could and would be introduced over the next ten years.

3.6.1 Attitudes to new technology

The studies point to an acceptance of the need for the application of information technology in office work. Typists were up-graded to "word processor operators", job contents were extended in scope and job satisfaction was said to have increased: all of which resulted in "positive" attitudes. In neither case were there job losses as a consequence of the introduction of WPs, although there was some redeployment. The use of information technology was very much in its early stages. Trade union representatives expressed fears concerning the long-term impact on jobs of a more widespread application, but these were coupled with fears of job loss due to business changes and in the services provided. No anti-technology views were expressed. WPs and other forms of office information technology were largely welcomed, considered inevitable and viewed as necessary for organisational efficiency and growth. Organisational growth and development through information technology was particularly stressed in the private sector study. With very little qualification, management, user and trade union representatives' attitudes at work-place level were positive towards the introduction of the technology and future developmental applications.

3.6.2 Planning technological change

Neither of the major studies nor primary work conducted in the office sectors of the manufacturing studies pointed to any meaningful involvement by trade union representatives in the planning process.

In both British and German cases the trade union representatives were informed about the imminent arrival of WPs in the office, but there was no involvement in data collation on word processor technology, information assessment, organisational analysis or potential applications. Discussions as to the implications of the introduction of WPs into the office began when the trade union representatives were informed that the equipment was to be introduced. In the British study the planning process was considered to be a managerial function and an area unsuitable for trade union involvement. The trade union representatives utilised consultative procedures to probe present and prospective plans in regard to information technology, but they were excluded from such deliberations and considered that they had little influence, if any, in the planning process.

In Germany, although there are legal stipulations concerning disclosure of information on matters such as new technology, experience at work-place level did not appear to be any different from that in Britain. Works councillors passively accepted their exclusion from the planning process and did not seek involvement in matters of organisational analysis, nor in discussions with the manufacturers of the technology and systems' consultants.

Evidence from other studies has pointed to the down-playing by trade union representatives of the de-skilling, job loss and stress implications of the introduction of WPs because it is largely "women's work" (IFO 1980). The problems associated with WPs were considered to be unimportant and therefore involvement in the planning process was largely irrelevant. These conclusions could not be drawn from the primary work associated with this project. There was a definite awareness of potential problems with WPs but the handling of these problems was seen to occur at the introduction rather than the planning stage. Trade union representatives in both Britain and Germany did not expect to be involved in the planning process but they did expect to have a say in how the technology was introduced and the conditions of its use.

3.6.3 Introduction of information technology

In both studies the trade unions played an active role in the introduction of information technology. In the British case this was through joint consultation and the bargaining of a 'new technology agreement', in Germany through the works council. In neither case was there a radical installation of new equipment. New technology was introduced step by step. If this was as a direct result of an organisational policy decision, it was not admitted. WPs were introduced "as and when required" or "when the budget permitted". The strategies pursued could be characterised as "piecemeal introduction" as a form of "bargained imposition" (see 3.3.2).

The agreement reached by the German works council with management and the 'new technology agreement' signed in the British case did not differ to any marked degree. They both contained the following key elements :

* no compulsory redundancies arising from new technology; the impact of new technology on jobs to be a matter for discussion and negotiation (job loss was not ruled out in either case nor was 'natural wastage')

* redeployment and retraining of staff where necessary (in the British case this included pay protection)

* disclosure of information regarding the operation of the equipment (this did not appear to include information concerning future plans, although in Germany this was covered - theoretically at least - by law)

* no change without consultation (not no change without agreement)

* health and safety protection and ergonomic consideration e.g. efforts being made to avoid unnecessarily routine work or repetitive jobs and emphasis to be placed on job satisfaction.

Neither agreement offered shorter hours (although the British case resulted in more flexible hours) or guaranteed no job loss. They both represented frameworks for future behaviour and the institutionalisation of the subject into work-place industrial relations' procedures; they did not represent a radical departure from existing arrangements. As collective agreements they did not so much lay down.hard and fast rules as signify a co-operative approach to the subject. Both fell short of the safeguards and conditions advocated by the national white-collar unions.

Both studies emphasised a spirit of co-operation on the part of management and trade union representatives. There was no conflict involved and neither was it envisaged.

3.6.4   Handling new technology

In both studies the workforce had previous experience of the introduction of computerisation, which had led to more rather than fewer jobs. There was little or no fear of new technology and hence the lack of emphasis on formal job security provisions. The technological change was neither rapid nor radical (unlike some of the changes in the printing industry which have engendered considerable conflict).

The workforces had been seen to gain from the introduction of WPs - up-grading, flexible hours and job satisfaction - and principles of consultation and bargaining had been established. The introduction and operation had in both cases worked smoothly - undoubtedly assisted by the fact that good industrial relations were hallmarks of both organisations prior to WPs being introduced.

3.6.5   Office technology and industrial relations

The case studies illustrate an important facet of the new
technology debate. Predictions and fears of job loss at
national and sectoral levels may not be duplicated at work-
place level. The absence of such concerns undoubtedly
influences practices and procedures. There are undoubtedly
cases where the introduction of WPs adversely affects
employment (see APEX 1980, pp.33-34), but equally cases can
be cited where job growth has resulted - in fact it has been
claimed that the overall United States experience of WPs has
been one of job growth (see SPRU WTS 1982, p.66). As far as
industrial relations is concerned, changes arising from
office technology will almost certainly be dependent upon
the specific nature of the proposed introduction. Where
radical changes are proposed, with resultant job loss,
conflict can be expected e.g. in the printing industry (see
Cockburn 1982 and Martin 1980) where technology transformed
blue-collar work into white-collar work. Where information
technology is introduced into the office through a step-by-
step approach, without job loss and no discernible negative
consequences for job content, co-operation is likely. The
wider debate will impinge upon the particular case to the
extent that it is perceived to represent the reality of the
specific situation.

The case studies are not representative. However, other
studies in Britain and Germany point to a wide variety of
behaviour and agreements concerning office technology.
Office technology has engendered conflict and is a cause of
potential conflict - the long-running saga of an agreement,
or rather the lack of one, on new technology for the British
Civil Service is a particularly apposite case. 'New
technology agreements' show considerable variation in both
countries (see Manwaring 1981, IFO 1980 and Sedeno-Andre et
al 1981) and their evolution demonstrates a variety of
processes at work - mostly within the range of what has been
referred to as "bargained imposition" and "negotiated
solution". It is not clear from the gamut of work examined
that the "legalism" of the German industrial relations'
system proved a more effective mechanism for introducing and
handling technological change in the office than Britsh
"voluntarism". In theory the German system should have
provided more information, consultation and participation
but in practice it did not appear to do so. More striking
was the similarity betweeen the constraints under which both
British trade union representatives and German works
councillors oprated and the uneven nature of organisational
experiences with new technology. Work-place organisational
factors clearly outweighed external influences.

3.7 New technology in banking

Banking in both Britain and the Federal Republic has been one of the
least affected sectors by cyclical fluctuations (see Brandt et al
1978, p.317 and Sleigh et al 1979, p.63). Transactions and services
have increased and employment growth has been checked by the
widespread application of computerisation and, more recently, of
information technology. In-depth case studies were unable to be
conducted in this sector but through key interviews with
representatives from both sides of industry a variety of primary
data was obtained. A wide range of secondary evidence was also
utilised.

3.7.1 Automation and employment

The handling of a large amount of standardised information,
particularly numerical data, makes banking ripe for the
application of computerisation and information technology.
Most banking services can be automated; it is more a
question of the degree of automation possible and the degree
desired. Banking services have expanded as a result of
automation and the relationship between service growth, and
consequent job growth, and the application of new technology
is widely recognised. The benefits of information
technology to the customerrs and the industry is undisputed
by the trade unions concerned. However, the initial
positive benefits to staff - flexible hours, less routine
work and easier data access - are now being over-shadowed,
at national level, by fears of job loss. New technological
developments - "supermarket banking", "satellite banking",
automatic telling, counter terminals, electronic funds
transfer and new methods of data transmission - are seen to
be moving at a pace which threatens to check employment
growth and bring about job losses (see BIFU 1982). These
national concerns have had an impact at work-place level.

Throughout the British and German banking sectors there is a
high awareness of new information technology, both at work-
place and supra-work-place levels. The banks have proved
highly profitable even in recession and much of that
profit is being ploughed into information technology.
Diffusion is high because the banks can aford it (unlike
parts of the manufacturing sector). Rapid technological
advance has been experienced, changing the nature of many
staff jobs, and is expected. Trade union attitudes in both
Britain and Germany were consistantly "positive", whilst
seeking to exert influence over the introduction and
handling of the technology. Competition, customer demands
and the need for service growth, all conspired to promote
the acceptance of the need for technological change. Trade
union attitudes at national level reflected a major concern
with job loss; at work-place level the changing nature of
jobs and, particularly, consequent effects on career
prospects were the major problems associated with the new
technology.

3.7.2   Planning technological change

The evidence gathered pointed to the introduction of
computer and information technology into banking by both
co-ordinated and unco-ordinated means. Main-frame central
computing equipment and terminals were bought in pursuit of
a clearly defined strategy, but a wide range of other
equipment was bought to improve immediate services without
any planned integration appearing to be present. It was not
possible to elucidate what was the precise role of non-
integrated equipment in long-term planning; whether it
resulted from short-term decision-making or whether it
fitted into an overall development strategy. However, the
nature and scale of much of the technology introduced, being
introduced and proposed was such that lengthy and detailed
organisational planning and analysis was entailed. The
planning process was not confined solely to individual banks
but also involved cross-bank co-operation e.g. CHAPS I and
CHAPS II (see BIFU 1982, pp.12-13), EFT (ELectronics Fund
Transfer) and SWIFT (Society for Worldwide Interbanks
Financial Telecommunications).

In Britain a number of the major clearing banks have already
taken steps to rationalise and reorganise their branch
structures as a consequence of the new technology (Midland,
National Westminster and Co-operative). Experiments with
increasingly sophisticated automatic telling machines
(ATMs), counter terminals, viewdata systems and "lobby
banking", all point to well-advanced plans for the extension
of information technology. The major banking trade unions
in Britain and West Germany (BIFU and HBV) are being
excluded from the planning process.

Banking is changing rapidly - automatic telling, credit
cards and point of sale terminals in retail outlets all
bring the 'cashless society' closer. Barclays has developed
a system of corporate self-service banking though Prestel
and a number of the German banks - Verbrauchen Bank and
Deutsche Bank - have developed "home banking" systems. The
extension and development of these services throughout the
banking system is bound to effect staffing and job content.
Trade union in-put into the planning process in Britain and
West Germany was negligible.

3.7.3   Introduction of information technology

There is very little evidence of banks in either Britain or
West Germany signing formal agreements with the trade unions
concerning the introduction of new technology. The
acquisition of formal agreements is the clear policy of both
BIFU and HBV. The absence of such agreements has meant that
the unions have had little or no control over the
introduction of new technology.

Consultation has occurred but the lack of stipulated
procedures and agreements has meant that cases of
"unilateral imposition" of new technology were not
uncommon (e.g. the NIXDORF system in the Midland Bank -
see BIFU 'Report', June 1982, p.8). At best introduction
has been by "bargained imposition" but this has not resulted
in formal new technology agreements being signed.

An examination of trade union demands in Britain and West
Germany points to the lack of participation in the
introduction and handling of technological change in the
banking sector. In Germany, the union has sought
'rationalisation protection agreements' at work-place and
national levels. These constitute some of the most far-
reaching demands in regard to new technology put forward by
any union in the Federal Republic. Effectively the unions
want co-determination at all stages :

*   all employers' actions in the planning and
    reorganisation phases to be regarded as
    'rationalisation' measures; including oganisational
    analysis, consultancy, organisational changes and new
    techniques·

*   works councils to be provided with far greater
    disclosure of information and the right to co-
    determine 'rationalisation' measures; the works
    council should receive monthly reports from the
    employer on new technology, they should have access
    to the technology manufacturers for information
    purposes and should be allowed the use of outside
    experts

*   provisions to be made for redeployment (no
    dismissals), retraining and raising of skill levels.

The trade union has made these demands at national level
and, through a particularly active works council in Berlin,
at work-place level. Negotiations at national level have
broken down but the work-place demands have gone to
arbitration. If successful at work-place level it could
have imporant implications throughout the banking sector.
However, the generally low level of trade union activity
would suggest that, even if a precedent were to be
established, 'rationalisation protection agreements' would
not become common.

In Britain the major banking union, BIFU, is also at the
stage of making demands. It wants to see full consultation
and negotiaton prior to change, the signing of Technology
Agreements, planned work sharing, a 28-hour week and
provisions for redeployment and retraining. The lack of
response from the employers has forced the union to adopt a
more aggressive approach, even to the point of threatening
to refuse to operate the new technology until agreement was
reached (see CSE 1980, p.108). The desire of the trade
union to be more closely involved in the introduction of new
technology has fallen on largely deaf ears. The union's
present position is as follows: "In the event of any
employer refusing a worthwhile New Technology Agreement,
BIFU will have to assess the implications of the technology
being introduced by the employer and whether to advise
members to obstruct its introduction" (BIFU 1982, p.28).

3.7.4 Handling new technology

The failure of the banking unions to exercise any control over the introduction of new technology has reduced their effectiveness at the point of handling and operating the equipment. Agreements on wage structures, hours, health and safety and job content, have been concluded but they relate to work rules and general terms and conditions of employment rather than to new technology. The ability to question and control technological change at the work-place is largely absent. This is often a result of low levels of unionisation and trade union involvement (Streeck 1981, p.96). Where unionisation is strong, such as BIFU's closed shop agreement with the Co-operative Bank, far greater success with information, consultation and participation has obtained. In Britain BIFU has more than doubled its membership over the past decade. As trade union membership rises, and proceeds to include key workers such as central computer staff, so trade union bargaining power is strengthened. It has also been argued that as new technology begins to affect executive and senior personnel so managerial awareness of the negative effects of new technology will be raised (Brandt et al 1978, p.424). It is certainly true that bank managers are no longer exempt from using VDUs and other information technology equipment (see "NatWest first with 'electronic bank managers'", Financial Times, 6.5.82).

Bank recruitment is falling and unionisation is rising. New technology in banking will particularly affect female employment as women form a majority of the lower grades. The ability of bank employees to influence the decisions on new technology which will affect their working lives will be largely determined by their own levels of concern and powers of motivation. At present both studies point to high levels of national concern but problems of organisation and mobilisation at work-place level.

3.7.5 Banking technology and industrial relations

The banking sectors of both countries are not historically known for high levels of trade union organisation or militancy. The attitude of the unions in both countries can be summarised by BIFU's statement that : "The Banking Insurance and Finance Union is not opposed to new technology; we wish to co-operate with the Employers but this can only take place if the Employers are prepared to talk, consult and negotiate" (BIFU 1981a, p.8). The employers, in their turn, take the view that the trade unions' position on new technology is pessimistic and that the concession of formal agreements will extend unionisation. Whilst industrial action over new technology has so far been avoided, there are definte signs that the trade unions are beginning to adopt a more aggressive approach. If the employers continue to thwart meaningful consultations and negotiations on the subject and at the same time seek to make staff cuts, as is likely, then the issue could well have a serious effect on industrial relations in the banking sectors of both countries.

Certainly in Britain the unions have used industrial action and the threat of industrial action by key computer staff to secure better wage settlements in the past.

In banking little difference could be discerned between the introduction and handling of new technology in Britain and Germany. Legal regulations to ensure "co-operative conflict resolution" proved little help in securing formal agreements on new technology between employer and employee. The British unions had more flexibility in terms of taking industrial action and the German system allowed arbitration at work-place level. However, these were largely cosmetic differences. The ability of British unions to take industrial action on the issue had yet to be put to the test and it was not clear whether the German arbitration process could secure a new technology agreement. The actual practice in both countries suggested that the overall industrial relations' framework had had little influence in facilitating the introduction and handling of new technology to the satisfaction of employer and employee alike. Both sets of trade unionists lacked information and consultation rights and involvement in planning, introduction and operation: neither could effect a satisfactory agreement through existing channels. Both believed in co-operation, but co-operation is generally regarded as a two-way process and most of the traffic in banking appears to flow one-way.

3.8   Information technology and manufacturing industry

The case studies and secondary research in the manufacturing sector were concentrated on the introduction and implications of computer aided design/computer aided manufacture and numerical control/computer numerical control machines.

3.8.(a)   CAD/CAM

Computer aided design and manufacture directly affects the work of designers and draughtsmen but in narrowing the gap between blue-collar and white-collar work it could ultimately affect the whole of the manufacturing workforce (see CSS 1981, pp.28-30). The integration of CAD/CAM with CNC machines, data information systems and robotics form the basis of fully-automated manufacturing systems - the 'unmanned factory'. The British study combined CAD/CAM with a large range of CNC machines plus a management data information system. It was by no means fully-integrated but the foundations of an integrated system had been laid. The German study was not as advanced technologically as CAD/CAM was in its early stages. However, the potential for advanced integration was present.

3.8.(a).1 Attitudes to new technology

In both studies designers and draughtsmen accepted the inevitability of computer aided design but attitudes towards it were mixed. In the British study jobs had been lost but as the company had cut its overall workforce by one-third over the past three years, due to economic recession, it was difficult to directly attribute this to technological change. However, the employment uncertainties undoubtedly affected attitudes. The major bone of contention was the skill changes which were required and the decline of traditional draughting skills. CAD did away with the need for many routine drawings and produced higher quality and more consistent drawings in a shorter period of time than through the old manual methods. Productivity was raised and the design team shared more information. It was difficult to objectively assess the de-skilling involved but many of the designers felt that their role in the engineering process was affected in a negative manner. The autonomy of the design draughtsman was said to be affected and the translation into a CAD operator was seen as a step in the direction of becoming a 'machine minder'. It appeared that the internal status of the designers and draughtsmen – white-collar members of 'staff' operating above the shop-floor – was under threat. In the British study the CAD operators prepared the tapes for the CNC machines.

The work of the design 'programmers' and the CNC 'operators' was closely linked but the functions were separate. Other studies (see JCF 1982) have pointed to cases where the CNC operators produce their own control tapes. The latter is in fact AUEW(ES) policy and is a potential source of conflict with AUEW (TASS) members who are at present largely responsible for tape programming. The studies did not point to conflicts over 'who does what' but they did demonstrate that CAD technology can affect the attitudes of individuals to their role in the work process. In the multi-union, role conscious situation which pertains in much of British manufacturing a failure to change attitudes could be a cause of industrial relations' problems

3.8.(a).2 Planning technological change

The introduction of CAD/CAM and other forms of computerisation in attendant areas (in the British study this involved the computerisation of quality control, stock control, work scheduling and work performance) were not preceded by employee or trade union involvement in the planning process in either the British or the German studies. Information regarding the planning stages was not made available to workforce representatives. Both cases were conducted in branch plants of multi-plant, multi-national companies. Any information which was distributed at national level on the subject did not percolate down to plant-level. Information was only disseminated when 'training' programmes were introduced to familiarise the design and drawing staff with the new technology.

In the light of the disgruntlement which was expressed with certain elements of the new work requirements, it is of interest to note that at the stages where standardisation and consequent work reorganisation were decided there was no trade union or 'user' input. In the British study joint consultation did not extend to these levels and in Germany the works council had no legal influence over the planning phase. The opportunity to influence decisions at an early enough stage to exercise a degree of control over the introduction and operation of the new technology was denied. Lack of information and involvement meant that the workforces and their representatives were not participating in the process of technological change, they were reacting to it.

3.8.(a).3 Introduction of CAD/CAM

In both cases elements of CAD/CAM were introduced in a "piecemeal" fashion - there was no sudden switch from manual to computerised technology.

This process in fact reflected the nature of changes on the shop-floor and in other areas of work where CNC machines and computerised systems were brought in on a step-by-step basis. The technology was in before the trade union representatives began to fully react to it.

In the British study formal agreement was sought on new working arrangements, productivity, re-grading and pay structures. There was no challenge mounted to the technology itself and nor was a "new technology agreement" sought, although that was the trade union's policy at national level. After bargaining, described as 'amicable', an agreement was signed covering all design and drawing staff. It essentially took the form of a productivity agreement; it made minor changes to the grading structure (and hence pay), built certain safeguards into the operation of the equipment (mainly concerning the use of VDUs) and made provisions for retraining. There were no job security provisions or reductions to working hours. Any such changes would have had to have formed part of a company-wide agreement.

The German study also resulted in a formal agreement being signed to cover CAD/CAM but, unlike the British case, this was after considerable employer opposition.

The works agreement was only signed following arbitration. Also its coverage was limited to visual display units, microfilm readers and other computer-supported optical equipment. The computers and the programmes which drove them were not covered by the agreement. The works council had no rights concerning the basis of CAD/CAM technology, its rights only extended to certain external manifestations of the hardware. Its ability to influence technological planning and introduction was as limited in scope as its British counterparts. The works council was granted information and consultation rights under the agreement, but this was restricted to data equipment. The major elements of existing CAD/CAM and, perhaps more importantly, future developments of integration were excluded. The agreement referred to the specific conditions under which the technology was to be operated - multi-task jobs, breaks when using VDUs, safety, training, and performance and behaviour monitoring (no data collection on these latter two areas).. It made little reference to the process of introducing new technology and did not provide for job security, shorter working hours or joint monitoring/ assessment of technological change.

In neither the British or the German cases was anything approaching a 'new technology agreement' struck. The bargaining and consultative procedures proved inadequate to the task. There was a lack of information and trade union policy was either ignored or was not raised. In the German case the works council had difficulty in involving the designers and planning engineers in discussing the role of new technology. In the British case the designers did not believe that their interests and problems in regard to new technology were identical to those of the shop-floor. Whether further integration of the manufacturing process will break down these barriers or merely erect new ones is problematic.

3.8.(a).4   Handling new technology

In the British case there were no major problems with the handling of the equipment. Industrial relations were good and once the agreement was signed there were no operational problems. There was a high awareness of the company's problems in selling its products and the delicate position of the plant. Fears of total plant closure meant little or no opposition to job loss. The 'technology route' was seen as the only path for the company, and particularly the plant, to follow. Operating as it did in a high technology industry there was widespread trade union support for its application. A "new technology agreement" was not being sought.

In the German case the works council had discovered that they had little legal protection when it came to the introduction and handling of CAD/CAM. In fact the employer was pursuing his opposition of the agreement through the courts. The employer did not recognise the even limited rights of information and consultation which the works agreement had, after arbitration, given to workforce representatives. Until the matter was legally resolved the arbitrators' ruling stood. However, should the courts rule in favour of the employer the agreement would fall.

3.8.(a).5 CAD/CAM and industrial relations

CAD/CAM brought new technology to a section of the workforce not noted for militant trade unionism. It affected jobs and raised the prospect, certainly in large companies, of more radical future developments (see CSS 1981, pp.28-30). It presaged a more integrated and controlled workforce. Its impact upon industrial relations, however, proved more difficult to gauge: it was a potential source of conflict but there was little evidence to suggest that it would lead to conflict. The two studies did not suggest prospective conflict, regardless of the extent of integration or concerning the validity of the German works agreement, and other work has pointed to a lack of trade union resistance to innovaticn in this sector (see Francis et al 1981, p.8). At the level of the individual opposition was equally unlikely (Bechmann et al 1978, p.80). Conflict, if it was to arise, was more likely to be between unions (demarcation) or occupations (status).
In terms of introducing and handling new technology, the comparative data pointed to similar problems. The German works council had achieved through the law what (generally) the British trade union representatives had negotiated on a voluntary basis. The German agreement was under threat; the British agreement appeared to be operating well. Neither agreement gave the workforce much control over or participation in the introduction and operation of the new technology. A lack of information and involvement in the planning process was evident in both studies.

3.8.(b) NC/CNC

Numerically-controlled (NC) machines have been introduced into manufacturing industry since the 1940s. It is their more sophisticated version, computer numerically-controlled (CNC) machines, which represent the 'new technology'. Allied to CAD/CAM computer aided production (CAP) is possible. The end-product of a "flexible manufacturing system" (FMS), incorporating robotics, would eliminate a large amount of the human element in the manufacturing process. The case studies did not examine such sophisticated flexible systems, but in both CNC equipment was part of the computerisation of a wide range of manufacturing elements. Further use of information technology and its integration was probable.

3.8.(b).1 Attitudes to new technology

Both studies provided evidence of a "positive" attitude
on behalf of the workforce to new technology. Similar
findings in regard to NC/CNC machines has been produced
elsewhere (Francis et al 1981, JCF 1982 and ISI 1981).
The British shop stewards and German works councillors
identified with the company's aim to strengthen its
position in the market and felt that they could not hold
back "technical progress". CNC machines were generally
regarded as another version of NC machines with which
they were familiar. Both companies had been adversely
affected by the economic recession and there was clear
evidence of a desire to "pull together" to raise the
company's fortunes. The "technology route" as a means of
organisational growth and competitiveness was not
questioned by the workforce. The need to protect jobs
was a constant theme and one which obviously underlay
much of the considerations of the trade union
representatives in both countries. However, both
companies had recently undergone large voluntary
redundancy exercises. A view of "shedding jobs to
protect jobs" could be said to prevail. In the
British study, conducted in an area of high unemployment,
the shop stewards had long urged the company to invest in
the plant. Investment had taken place but much of that
capital equipment now lay idle due to lack of orders.
The shop stewards did not believe that rejection of new
technology was an option; in fact, despite job losses,
they believed that the future of the plant rested on
efficiency born of high technology. Jobs were to be
protected wherever possible and status should be
retained, plus negotiations on earnings and bonuses. New
technology was, like the annual pay round, a matter for
collective bargaining.

3.8.(b).2 Planning technological change

The introduction of NC and CNC machines had, in both
studies, been a staged process. However, both had
witnessed a large influx of CNC machines which had
precipitated new agreements. In terms of organisational
analysis in the planning process participation had been
minimal. Both studies were in branch plants of multi-
national companies and effective trade union involvement
stopped at plant level. Consultation at company level
did not provide information as to the detailed planning
of technologcial change. In the British study a form of
prior involvement was experienced when workforce
representatives were taken to Italy to examine the
performance of the CNC machines which the company
(British-owned) was proposing to buy. This exercise was
solely designed to prevent conflict of the patriotic "buy
British" variety. It could hardly be described as an
input into the planning process.

In stating that the workforce were not involved in the planning process, both studies pointed to the fact that generally the shop stewards and works councillors did not desire this kind of involvement. They wanted to be made aware of prospective changes but more by way of information than involvement. The British shop stewards particularly did not view company level participation as a desirable goal. However, at plant level the opposite view prevailed and they sought a far greater say in decision-making than that which they possessed. At plant level they wanted participation in order to extend their control over job regulation. Above that level they did not see it as part of their function to take responsibility for, or be a party to, decisions that were taken. There was a definite 'plant' mentality or solidarity which invoked far greater allegiance than did the company as a whole.

3.8.(b).3 Introduction of new technology

The arrival of major instalments of CNC machines was preceded by widespread consultations and information. Co-operation and involvement was actively sought to a far greater degree than in any of the other studies. The companies operated from a position where they had workforce acceptance of the technology in principle but had not obtained agreement as to how and under what conditions the technology would be operated. Both companies went beyond their formal systems of joint consultation and regular meetings with the joint shop stewards and works council to ensure a smooth introductory process. As there was no question of a "take it or leave it" situation, the introduction of CNC machines in both cases could be said to be characteristic of a "negotiated solution".

The key problem areas were earnings, status and jobs (probably in that order). In the British study the question of earnings was overcome not by re-grading but by the movement from a 'payment by results' system to 'measured day work'. Removal of the vagaries of the PBR system consolidated and improved earnings. In Germany a new productivity agreement was signed.

Status was a particular problem. In the British study an agreement was reached whereby the skill level of the operator would be a reflection of the skill level required for the operation that the new machine had replaced. That is, where an operation had been the responsbility of a craftsman (most cases) the CNC machine was operated by a craftsman but where, as in drilling and milling, a non-time-served man had done the job he could continue to perform that function with the aid of CNC equipment. In Germany the demarcation problems were not so sensitive. Agreement was reached that no workers would be down-graded as a result of CNC machines, even though redeployment would be required.

The thorny problem of jobs was solved by time and a general contraction of the two workforces. There were no immediate redundancies, although a certain amount of redeployment was necessitated in both firms. A process of natural wastage and voluntary redundancies as a consequence of overall workforce contraction solved any problems of required job loss.

Workforce representatives did not seek a "new technology agreement", neither did they see the need for one. The CNC machines were introduced through the traditional means of collective bargaining in Britain and collective agreement in Germany. The economic determinants of pay and conditions (the German works council securing bonus and productivity payments) were paramount. Ergonomic considerations did not surface in either case.

3.8.(b).4 Handling new technology

CNC machines undoubtedly affect traditional skills. Automatic tool-setting and in-process gauging de-skill traditional grinding and machining operations. Through logged repetition the skills and expertise of the operator are transferred to the control tape or may be transferred from the operator to the programmer. It is possible for the programming and operating functions to be merged, but this was not done in either of the main studies. At present CNC operators who programme their own machines are rare (see JCF 1982, p.97 and Weidemann et al 1981, p.89) but there are moves through official trade union channels to make this practice more prevalent and increase the skill content involved. If operators do take-over programing this will upset the traditional white-collar/blue-collar balance of the workforce. Information technology operates to erode such distinctions.

The low priority which is given to ergonomic considerations, exemplified in both studies, has allowed management largely to dictate work organisation. Lack of information has resulted in companies or the manufacturers drawing up training programmes which exclude programming skills (ISI 1981, p.241). Programming and operating functions are separated out, often in order not to upset existing arrangements. However, the more integrated the manufacturing system becomes so flexibility as well as specialisation becomes an essential requirement. As data is linked and transferred so are skills. Although the studies do not provide an answer, it may well be that the German industrial union system (one union per industry) is better equipped to cope with the changing nature of work and work organisation.

One interesting difference between the two cases was that the German works agreement forbade the collection of data on the monitoring of performance and behaviour. In the British study the change of payment system meant that control over operator performance was lessened.   To ensure that operator performance did not drop the management introduced a system of computerised data collection which monitored the performances of individual machines and their operators - even to the point of naming the operators on the print-out. Operator performance rose. This system was introduced without consultation and, in fact, was contrary to practice elsewhere in the company. It certainly conflicted with official trade union policy.

CNC machines do offer the prospect of multi-machine manning. This idea was rejected in the British study due to adverse effects on jobs. It was considered to be a matter for national rather than local negotiation.

In both cases the new technology was introduced and handled at plant level. It was the joint shop stewards committee and the works council which made the major decisions, in conjunction with management, as to how the technology was to be operated. External trade union influences were minimal: it was essentially a matter of shop-floor bargaining.

3.8.(b).5 Computer numerical control and industrial relations

The trade unions in manufacturing industry in both Britain and West Germany have traditionally been strong compared to their counterparts in other sectors of the economy. Their strength has been based on shopfloor organisation and bargaining power. A system of job regulation - industrial relations - has arisen which reflects those characteristics and the way in which they are distributed among the various sections of the workforce. CNC machines form part of a trend in manufacturing which alters traditional job distinctions and affects job control. The trend is towards the integration of many if not all the major elements of the production process i.e. planning, organisation, design, communciations, supervision, control, maintenance, production and distribution. Although not necessarily immediately apparent, this trend will undoubtedly affect the future course of industrial relations in the manufacturing sector.

The case studies point to the changing nature of skills
and their implications for work organisation. De-
skilling occurs and attempts to redress the balance by
the incorporation of programming skills could result
in demarcation, status, blue-collar/white-collar
conflict. Job loss has also resulted but changing
markets and economic recession have prevented any
potential conflict regarding 'technological
unemployment'. The high degree of acceptance of new
technology in the manufacturing sector casts doubt on the
view of trade unions as a major barrier to innovation.
Decreasing individual job control and increasing
managerial control (performance monitoring) are potential
problem areas. The ability of trade unions to
"bargain away" such problems at shopfloor level has
to be doubted, although the desire to seek solutions
through other means, such as participation, has, at
least in Britain, to be questioned. The superiority
of one industrial relations' framework over another
in introducing and handling new technology has also
to be questioned. The case studies point more to
common weaknesses and shared problems.

Case studies of other companies in the manufacturing
sector provide examples of different approaches and
solutions (see IRRR 1982 No.266 and Bamber 1980).
However, the common denominators outweigh the
differences:

* little or no workforce involvement in the planning
  process

* new technology introduced by means of traditional
  collective bargaining and agreements - largely un-
  suitable for the purpose

* new technology handled at plant level with few
  external influences - producing both positive and
  negative effects

* consultation and information largely inadequate
  for the task

* official union policy often ignored in favour of
  'local' solutions

* high acceptance of new technology and few
  industrial relations problems associated with it.

The latter statement may appear paradoxical when related
to the others but, evidence suggest, it is nonetheless
true. This is because the dominating factor in terms of
industrial relations in the manufacturing sector is the
impact of the economic recession. New technology is not
.so much viewed as a problem as it is the answer to a
problem. Whether opinions will change in the light of
economic recovery is a matter for speculation. The case
studies do, however, indicate a diversity of practices
and responses in different sectors of the economy.
These owe little to the overall industrial reations'
framework in which they operate, be it 'legalistic' or
'voluntaristic', and a lot to the particular
characteristics of job regulation in those sectors.

4. INFORMATION TECHNOLOGY : THE TRADE UNION RESPONSE

4.1 Organisational limitations

The study has already noted the different industrial relations' frameworks and obligations under which British and German trade unions operate (see 2.1 and 3.1). In moving from workplace level to wider aspects of the trade union response, it is pertinent to underline some of the differences observed; particularly as they relate to the impact of new technology.

4.4.1 Structure

Unlike other countries, trade unions in the Federal Republic are unitary i.e. they represent all the workers in one sector of the economy. In Britain industrial unionism is the exception rather than the rule - most large trade unions have an occupational basis but growth and amalgamations have served to broaden the membership. The main structural difference between the two countries is that in West Germany one union will represent all the workforce in a particular company or organisation, whilst in Britain most large companies will recognise a number of unions as representing different sections of the workforce. Different unions representing different occupations within the same company or organisation is common in both blue-collar and white-collar sectors of the British economy. Thus whilst the German system endeavours to emphasise the solidarity and commonality of employees, the British trade union system projects sectional interests. These sectional interests are invariably based on occupation and reflect a national obsession with class, rank and status (aptly illustrated by five different unions for different grades of white collar workers within the civil service or manufacturing industry where different unions can represent general workers, craftsmen, supervisors, cerical workers, technicians and management within the same company).

The different trade union structures have affected attitudes to new information technology, as we will examine more closely later. Generally-speaking German trade unions have to devise policies which reflect the interests of their diverse membership within a particular industry (cf. Streeck 1979, p.242). They have to seek to overcome the occupational and sectional interests of their membership to arrive at a common approach. In Britain trade unions often highlight sectional interests for organisational purposes. British trade unions may see the wider perspective but the nature of their membership may lead to a sectional approach. The tendency of information technology to break down occupational barriers has, and will increasingly have, an undoubted impact of intra-union developments and inter-union relations.

4.1.2 Agreements

The separate legal status of British and German collective agreements has been referred to earlier. It has been argued that German collective agreements serve three functions (see Recht auf Arbeit 1981, p.220):

1. protective function – employers and unions negotiating provisions which protect workers' interests

2. stabilising function – a collective agreement defining certain aspcts of the employer–employee relationship over a period of time

3. peace function – industrial action illegal by either side in order to change the status quo during the currency of an agreement.

British collective agreements can be said to serve the first two functions but not the last; they neither guarantee the agreement against it being broken nor do they incorporate legal sanctions if it is. In Britain the lack of a "peace function" reflects the adversarial approach: in Germany it is a reflection of the legal co-operative approach. The nature and level of collective agreements in the two countries has meant the establishment in Germany of a strong 'formal system' and in Britain of a strong 'informal system' (see Donovan 1968). The bargaining framework is therefore somewhat different and susceptible to different pressures. A number of other factors besides trade union structure and organisation have helped to determine approaches to new technology.

4.2 Key determinants of union behaviour

Trade unions do not operate in a vacuum. Their behaviour is governed by a mixture of internal and external forces. In terms of strategies towards new technology a number of key influences are worth highlighting: the state of the economy, changes in collective bargaining, the nature of trade union power and the growth of white-collar trade unionism.

4.2.1 The economy

The 1970s saw a decline in both the British and West German economies: in Britain this represented a fall from a modest growth rate to zero growth and in the 1980s to an actual contraction of the economy; in West Germany the fall was less dramatic from high growth during the 'economic miracle' to modest growth. Both economies have been characterised by rising unemployment. Living standards, which rose throughout the 1950s, 1960s and early 1970s, are levelling off where not actually falling. The deepening of economic recession in the West (which perhaps can be dated from the five-fold oil price rise of 1973) has caused trade unions to re-think, if not actually change, bargaining

strategy. The dark clouds of economic recession hang over all trade union discussions of new technology and influence behaviour.

4.2.2 Bargaining issues

The 1960s and early 1970s in Britain were characterised by a period of 'productivity bargaining' - obtaining the right "price" for changing technology and working practices. Collective bargaining devolved to the shop-floor (see Clegg 1972, pp.442-445). The 1970s has witnessed the institutionalisation of the 'informal system'. Shop stewards have been absorbed into formal negotiating arrangements with the growth of single-employer bargaining. The growth of closed shop agreements, check-off, full-time stewards and consultative committees has pointed to a formalisation of industrial relations and an increased management involvement (see Brown 1981, pp.51-79). As collective bargaining has changed so has its scope. Bargaining has developed beyond the fixing of wage rates, often as a result of management wishing to 'sell' a particular package of payment system and working practices (see Roeber 1975). The widening scope of collective bargaining, the institutionalisation of job regulation at plant level and the growth of joint consultation, all have implications for the strategic approach to new information technology.

The German system of industrial relations and bargaining has also undergone changes in the 1970s which affect its present strategy and behaviour. Whilst in Britain the process can be described as a movement from the informal to the formal, in Germany it has been the reverse. The inflexibility of formal arrangements has seen a growth in the influence of the shop-floor and an expansion in the role of works councils. In Britain the shop stewards committee has become legitimised; in Germany works councils have become less formal and their role has developed from that of 'arbitrators' to 'bargainers'. In many respects the roles played by shop stewards committees and works councils are comparable; there has been a distinct convergence in recent years.

The broadening of collective bargaining from purely quantitative demands to increasing concern with qualitative matters, a trend discernible in both countries over the past decade, has come about largely as a direct result of changing technology. Changes in the labour market, partcularly wholesale job loss, have undoubtedly influenced the trend but the catalyst has invariably been changing technology. In shifting the emphasis from the quantitative to the qualitative the underlying concern has been that of job protection. Attempts to bargain job protection emerged, naturally enough, in those industries directly affected by either new technology or economic recession; of particular importance in both countries were negotiations in the printing industry and engineering (metalworking) industry.

In printing radical technological change was not adopted
without conflict, particularly in Britain (see Martin
1981), with job protection the key issue. Agreements in
the printing industry have emphasised protection of grades
and traditional areas of work (even though the technology
has changed), security of earnings, retraining,
redeployment and joint monitoring (see Riehle et al 1979,
Martin 1981, IRRR No.271 1982 and JCF 1982).
Job protection was also a key element in the 1978
agreements in the British engineering and German metal
working industries. In Britain "status quo" clauses were
established - no change without agreement; whilst in
Germany emphasis was placed on protection of grading and
earnings (see Muller-Jentsch 1979 and Clegg 1979). The
quality of work became a focus of bargaining as well as its
rewards. As technology changed skills management sought to
introduce new working practices providing greater
flexibility among the workforce. The negative effects of
de-skilling had, as far as the trade unions were concerned,
to be offset by opportunities to enhance other skills and
competence over a range of jobs - job content became a key
issue (two interesting cases are the new agreements at
Volkswagen - see Hildebrandt 1981 - and Cadbury Bourneville
- see IRRR No.266 1982). Technology was providing the
fulcrum for changing working practices and bargaining
priorities. The need to safeguard jobs and job content
were assuming increasing importance prior to the
introduction of more sophisticated information technology
equipment.

4.2.3   Trade union power

Trade union power is a nebulous concept. However, at a
certain level the unions in both Britain and Germany made
advances in the 1970s - a process under threat, if not
being reversed, in the 1980s. In both countries the 1970s
witnessed an increase in strike activity, albeit operating
from different base levels. There was a growth of
'unofficial' disputes in the early 1970s and in Britain the
miners' strike of 1974 precipitated a change of government
(although contrary to popular myth it could not be said to
bring down the government - the government brought itself
down by choosing to fight an election on the issue).

Allied to a growing militancy was a rise in union
membership and density. Union density in Germany grew from
30.0% in 1969 to 34.4% in 1974 and has expanded steadily
since; whilst in Britain density has risen from 44% in 1968
to 56% in 1979. The British growth has been aided by the
extension of the closed shop - closed shop agreements are
illegal in West Germany. The recession has caused the
growth of union membership to be reversed in the 1980s and
anti-closed shop legislation in Britain could well
accelerate that process. As a generalisation trade union
strength and bargaining power is considerably less in both
Britain and West Germany in the 1980s than it was in the
1970s. Perhaps more important is the fact that trade
unions recognise this to be so.

4.2.4   White-collar unionism

Both countries have seen a marked growth in white-collar
trade unionism over the past decade. One of the
consequences of this has been a rise in female trade
unionists (in Germany there was a rise from 16.7% in 1971
to 20.3% in 1980, and in Britain female trade unionists
grew from 22% in 1966 to 29% in 1976). White collar unions
are playing an increasingly influential role in national
trade union federations (the TUC and DGB) and in many cases
represent the 'front line' in negotiating and handling
technological change. Office technology is at the
forefront of the information technology revolution and
whilst technological change may well assist union growth,
as the largely non-unionised white-collar sector seeks
greater job protection, it will also provide a major test
for the white-collar unions. Precedents set in the white-
collar sector could well influence bargaining in
manufacturing industry, whereas hitherto the white collar
unions have largely developed under the wing of their
bigger and stronger manual counterparts.

Declining economic fortunes, the extension of bargaining in
the face of technological change, perceptions of trade
union power and the growth of white-collar trade unionism,
have all played important roles in the development of a
trade union approach to new information technology; they
have both moulded the strategy and had an important
influence on trade union behaviour. The report will now
turn to an examination of the strategies pursued by the
British and German trade union movements in regard to this
issue.

Trade union strategies

Trade union strategies will be examined with reference to four
areas: the overall approach (policy); perceived priorities
(propaganda); the nature of the strategy (protection); and the
development of the strategy by individual unions (practice). The
approach can be characterised as being based on "5 Ps" – the
missing 'P' is prayer, "pray for the return of a friendly
government".

4.3.1   Policy

The overall strategies pursued by the TUC and the DGB are
strikingly similar. The TUC developed its appraoch in the
1970s. By the time it came to fruition in the form of an
Interim Report in April 1979 the Labour Party was in
government and the stragey envisaged a close co-operation
between trade unions and government in tackling new
technology as part of an overall 'industrial strategy' – an
essential element of which was an extension of "industrial
democracy". The following month the Labour Government was
defeated at the polls and was replaced by a Conservative
administration elected on a platform of limiting the power
of trade unions. The TUC's final report on new technology,
which appeared in September 1979 (TUC 1979), therefore,
placed considerebly more emphasis on collective bargaining.
However, the basic trade union approach to new technology
was not altered. As TUC General Secetary, Len Murray, put
it:

"The impact of the new technology on employment in the
1980s is one of the greatest challenges facing us. It
is a challenge facing not only trade unions, but our
industry and society as a whole. The issues involved
are complex. But in some respects our message is a
simple one. It is not just a question of accepting the
new technology or fighting it. The issue is how we can
maximise its benefits and minimise its costs, and
ensure that its benefits are equitably shared." (TUC
1979, p.5).

The TUC laid emphasis on the trade union movement adopting
a "positive policy" on the question and argued the case for
a "range of policies to help workers adapt in order to
benefit from the new opportunities for improved living
standards and increased leisure offered by the new
technology" (TUC 1979, p.9). At work-place level the TUC
recommended the signing of "new technology agreements"
(NTAs) and provided a 10-point 'checklist' of suggested
practice:

1. basic principles - agreements following consultation
   and negotiations, and the use of 'status quo'
   provisions

2. union organisation - joint machinery embracing all
   unions in the company

3. information - regular disclosure of information,
   monitoring by experts and time-off for training

4. employment and output - use technology to increase
   production and not to reduce manning, seek
   guaranteed job security and redeployment rather than
   redundancies

5. retraining - mutually agreed training and retraining
   schemes

6. hours of work - negotiate shorter hours and
   eliminate systematic overtime

7. distribution of benefits - rewards for new skills
   but fair distribution of benefits to all the
   workforce

8. control over work - monitor job design and work
   organisation to enhance rather than decrease job
   satisfaction

9. health and safety - monitor hazards from new
   processes, machines and equipment

10. review progress - joint trade union/management teams
    to study the effects of introducing and operating
    new technology.

The emphasis on work-place bargaining and the signing of
NTAs did not deter the TUC from continuing to argue the
case for co-operation with government. In its 1980
Economic Review (TUC 1980d, p.37) it urged the
establishment of a tripartite (government/employers (CBI)/
trade unions (TUC)) national agreement on new technology
(see also TUC 1980c), which was essentially to be a 'code
of practice' for companies introducing new technology. The
joint trade union/management approach favoured by the TUC
at work-place level was extended to cover all levels of the
enterprise. The TUC firmly believed that an extension of
'industrial democracy' was essential to the successful
introduction and operation of new technology, despite the
inter and intra-union problems caused by the publication of
the Bullock Report a few years earlier which argued for a
legislative approach to place workers onto the main boards
of all large companies. The TUC stated that : "..agreement
on the introduction of new technology can extend the area
of joint decision-taking within industry..Management of
change must be on the basis of the full participation of
those being affected in the formulation and implementation
of decisions...at all levels of an organisation" (TUC
1980d, p.37).

Since 1980 as unemployment has dramatically increased, the
TUC has become increasingly cautious about the role of
government and worker participation in technological
change. The CBI's refusal to endorse a joint statement
about new technology agreements and increasingly strained
relations with the Government no doubt contributed to this
mood. Nevertheless, however remote tripartite agreements
at national level and joint decision-making at company
level appear in the present climate, they remain integral
parts of long-term strategic planning (see TUC/LP 1982).

In Germany the DGB has adopted a similar strategic
approach. It has also viewed existing collective
agreements as inadequate to the task of coping with new
technology (Janssen 1980, p.251) and has argued the case
for the signing of "rationalisation protection agreements"
(RPAs) along similar lines to British NTAs. The basic aim
of RPAs would be the protection of jobs and job content
(see HBV 1981; Scheibe-Lange 1980, p.483 and Volkmar 1980,
p.423). Legal rights of information disclosure would be
extended - one idea being a compulsory six-month report
from management to the works council concerning long-term
plans to introduce technological change (cf. HBV 1981), an
idea (cf. the 'Vredeling' proposals) also being given
serious consideration at European Community level as far as
multi-national corporations are concerned. The German
unions have placed strong emphasis on the need for further
education and training and workforce influence over job
content. It has been argued that "minimum operation times"
and "minimum job content" agreements should be signed to
prevent work intensification and de-skilling arising from
information technology (Janssen 1980, p.255). This is a
particular concern in regard to office work where, as there
is little or no piecework or bonus payment systems, the
bargaining role of works council has been minimal or non-
existent (HBV 1978a). Information technology should be
used to broaden skills and provide more meaningful work
(OTV 1978).

The German unions are aware, as are their British counterparts, that they have had little influence over the planning and introduction of new technology. Co-determination at company level does not appear to have enabled works councils at shopfloor level to be any the better informed about company long-term plans for the introduction and operation of new technology than their British counterparts who do not have trade union representation at board level. The largest German union, the Metalworkers' Union, IG Metall, has become increasingly concerned about the lack of information from the top and the establishment of an "information gap" between employers and trade union representatives at work-place level. IG Metall has argued that :

"Without sufficient knowledge of the systems used and without the same access to the data stored, the works council will be unable to carry out their legal duties or take advantage of their legal rights. The information gap which has widened enormously and the communications facilities that have been installed make it impossible for the works council to check whether the employer is adhering to the law or to collective agreements. In our experience the employer often does not do the latter. In future IG Metall must do more than investigate the effects of new information and communications technologies on the workforce. Beyond the level of the workplace any further widening of the information gap will bring serious disadvantage to IG Metall :

- it will become increasingly difficult to verify the employers' arguments

- employers' srategies which are drawn up by their central co-ordinating bodies and which are put into effect at the level of the workplace will remain increasingly concealed

- by further developing such strategies employers find it easier to undermine union action by transferring production overseas." (IG Metall 1980a)

The centralised formal bargaining system in West Germany does not appear to get over the problem of the implementation at workplace level of strategic decisions which have been taken elsewhere any better than the decentralised informal system operating in Britain. Due to the different structures the German trade union solution is to seek industry-wide RPAs and the British to seek company-wide NTAs, but the strategy and its constituent parts remain very similar.

4.3.2 Propaganda

NTAs and RPAs represent 'ideal' solutions. Neither trade union movement expects the granting of every one of the stipulated provisions. In defining its strategy,

therefore, priorities have to be accorded. Both the TUC
and the DGB appear to have placed priority on the reduction
of working hours through the shorter working week (the 35-
hour week being the immediate target of both federations),
longer holidays, sabbaticals and early retirement. The TUC
has conducted a major educational campaign on shortening
hours and reducing overtime (the latter being a
particularly 'British disease') and a number of industry-
wide and company-wide successes have been recorded in terms
of the shorter workig week. However, despite a massive
rise in unemployment levels over the past three years,
overtime levels among manual workers in manufacturing
industry remain inordinately high. The TUC remains an
educational and propaganda organisation with little or no
control over the practices of its affiliated unions and,
equally, its affiliated unions have often very little
control over the bargains struck and practices condoned by
their representatives at shopfloor level. The inability of
meaningful progress to be made on shortening the actual
number of hours worked through free collective bargaining
has forced the TUC to give serious consideration to the
legislative alternative both in regard to the working week
and maximum overtime. However, the tendency at shopfloor
level for lengthening the working day in order to produce a
four-day week and longer blocks of leisure time has
officially been discouraged – needless to say the practice
is spreading.

The priority given to the shorter working week as a
response to new technology appears perverse. It is very
difficult to negotiate in times of economic recession, its
impact on jobs in knocking one or two hours off the working
week is minimal, it does not tackle overtime and does
little to address itself to new technology. It has assumed
symbolic importance at national level while the real issues
– job replacement, job substitution and job content – have
been left largely to be sorted out by work-place bargaining
units whose position in regard to these matters is
invariably weak.

4.3.3   Protection

The national trade union federations have established
guidelines on 'best practice', addressed themselves to
immediate priorities and sought to influence government,
employers and their own affiliated organisations on policy
changes necessitated by information technology. In so
doing they have been aware of their limitations in putting
policy into practice and have assumed a largely educational
role. In formulating a strategy aimed at job protection
both have come to recognise the inadequacy of their own
bargaining and industiral relations' systems in dealing
with technological change. However, it is easier to
recognise a fault than to remedy it. What is interesting,
given the criticisms levelled at their respective systems,
is that there is a shared belief that new technology can
only be adequately handled at the workplace by means of
some form of joint control. In Britain, operating from

an 'adversarial' base, this has meant strengthening joint trade union committees (or JUCs as they are referred to - see TUC/LP 1982), building on joint consultation and joint trade union/management arrangements, seeking greater participation in company decision-making processes (up to and including board level) and generally expanding information, consultation and representation rights. These workplace provisions to be supported by a tripartite planning framework and changes to company law. The key element is increasing trade union involvement and participation by means of legislation. It is a clear recognition that 'voluntarism' does not provide the answers to technological change. In Germany, operating from a 'co-operative' base, the strategy has not been a retreat from legalism but one of strengthening its provisions. It is a strategy of pursuing joint control by building on what exists, increasing the powers of works councils and obtaining further information rights to exercise greater control through co-determination.

In both Britain and Germany the trade unions have recognised that to effectively pursue a policy of job protection greater partcipation is required in strategic decision-making. Workplace bargaining units, however strong on certain issues, are largely inadequate to the task of bargaining technological change. The British and German solutions are not identical but they do point to a desire to strengthen bargaining power through an increasing institutionalisation of trade unions into decision-making processes with employers and the state, to win new 'rights' and to take on new 'responsibilities'.

4.3.4 Practice

Although the national strategies developed by the TUC and DGB are approved without dissent by their affiliated organisations, this does not mean that individual unions have adopted similar approaches to the introduction and handling of new technology. A number of differences of approach and emphasis can be identified and require elaboration.

Differences of approach are more noticeable in Britain due to its diverse trade union structure. Most trade unions have taken their lead from the TUC and have devised their own "checklists for negotiators" (TUC 1979, pp.64-71 and NUJ 1980, pp.62-65) or new technology "model agreements" (APEX 1980, pp. 56-60; AUEW (TASS) 1978, pp.15-16; BIFU 1982, pp.26-27; EEPTU 1981, pp.9-11; GMWU 1980, pp.46-52 and NALGO 1980, pp.31-35). There is no dissension from TUC policy of accepting new technology or from the major components of new technology bargaining - consultation, information, no compulsory redundancies, no loss of earnings, training and retraining, shorter hours, health and safety provisions and joint monitoring. However, within these broad guidelines there does exist perceptible differences of approach and attitude which have undoubted industrial relations consequences. It has been argued that there are four potential shopfloor approaches to new technology - total opposition, concerted opposition,

bargained acceptance and total acceptance (Francis and
Willman 1980, p.18). At national level there has only been
one approach - 'bargained acceptance' - but within it the
emphasis has differed to a considerable degree. The study
distinguishes between three varieties of 'bargained
acceptance' - hard-line, flexible and positive
encouragement.

Hard-line

The unions most directly affected by new technology have
tended to adopt this approach in negotiating change.
Typical examples are the NGA's emphasis on "job property
rights" in the printing industry, ACTT's emphasis on job
security provisions in regard to electronic news gathering
equipment, and formal agreements over a range of issues
sought by BIFU and the Civil Service unions prior to the
approval of new technology. Trade unions have either
threatened or taken industrial action to block the
introduction of new technology until satifactory agreement
is reached. Trade unions have not rejected the technology
outright only the manner and terms of its operation.
Where agreement has not been reached they have been
prepared to take industrial action to obtain a satisfactory
agreement.

Flexible

A flexible approach is one where new technology has been
negotiated and introduced without the threat of industrial
action. This is by far and away the most typical approach
and experience. Most unions have been prepared to
compromise on their 'best practice' when negotiating
technological change, particularly after an agreement on no
compulsory redundancies has been obtained. The white-
collar union APEX perhaps best typifies this approach.
APEX have been in the forefront of new technology
bargaining but have seldom had cause to adopt a 'hard-line
approach'. This has also generally been the experience of
other white collar unions such as ASTMS, NALGO and the
CPSA.

Positive encouragement

Trade unions caught in the front line of new information
technology have either put up temporary resistance ('hard-
line approach') or tried to sway with the wind ('flexible
approach'). Those largely unaffected to date (such as
major general unions - TGWU and GMWU) have tended to
prepare their defences and await developments. Certain
unions, however, have positively welcomed the introduction
of new technology and have pursued a policy of active
encouragement. A clear example of this approach is that
pursued by the EEPTU - the POEU has pursued it to a lesser
degree. The EEPTU is not merely wishing to react to change
but sees itself as having "no option other than actively to
foster and support the introduction of new microelectronic
technology" (EEPTU 1981, p.1). It believes that
"maintenance electricians have a heaven-sent opportunity to
improve their position considerably in comparison with the

more traditional crafts" (EEPTU 1981, p.5) and that this will "mean breaking away from the common craft rate" (p.7). The EEPTU undoubtedly sees information technology as a means of pursuing the relative interests of its own membership in comparison with other sections of the workforce.

The EEPTU's policy of up-grading its members as a consequence of new technology has been termed a "bridgehead" approach in contrast with the "broadfront" strategy, no new grades, recommended by the TUC (Bamber 1980, p.14). However, whilst the TUC is aware of workforce 'polarisation' as a consequence of new technology, it also believes in the rewarding of additional skills and that these additional skills "should be taken into account in assessing..pay grades" and, further, that where "job evaluation systems exist they may need to be redesigned to reflect changes in skill requirements" (TUC 1979, p.69). The EEPTU may be more forceful in pursuit of re-grading than other unions but it is difficult to argue that in doing so it is in breach of any accepted strategy let alone policy. Some general unions would not wish small groups of craftsmen to extravagantly exploit new technology for their own ends, but there is little evidence - and none this study could find - of trade union objections in principle to higher rewards for new skills. In fact, all the evidence among craft and non-craft unions alike points to an acceptance of re-grading consequent upon a major introduction of new technology.

Trade union strategies appear to differ, as one might expect, in proportion to the degree of effect which the new technology has upon the membership. Unions which see their membership being radically affected, like the NGA, seek to drive a hard bargain; whilst those who see opportunities for advancement, like the EEPTU, seek to exploit it. The white collar unions, which foresee a major long-term impact, are eager to lay down the ground rules for future negotiations as well as to safeguard the short-term interests of their membership. For most unions the serious business of new technology bargaining is yet to begin.

In Germany the industrial union structure has operated to prevent the pursuit of sectional interests. The pursuit of craft interests, whether it be the preservation of the NGA or the elevation of the EEPTU, has been largely subsumed within the union structure. What has happened, and this has also been largely true of Britain, is that the pace of trade union strategies has been set by the white-collar unions. To a considerable degree the white-collar unions have defined the overall trade union strategy on new technology: on most matters this would be rare. In Germany it has been the public service, transport and communication workers (OTV) and the commerce, bank and insurance workers (HBV) who have been in the forefront of new technology bargaining. It is these strategies -

'bargained acceptance' through RPAs and NTAs - which will
be the first to be tested and on their success or the lack
of it much will depend. If the OTV and HBV in Germany, and
BIFU and the Civil Service unions in Britain, fail to get
the kind of industry-wide agreements they are seeking on
new technology then tactics may be changed and different
precedents established. At the moment it would appear that
there is still quite a bit of mileage left within the
present approach, in both countries, before a change of
direction is likely to be called for.

4.4   Trade union handling of technological change

The report has described how awareness of the radical
nature of information technology has led to the development
of specific trade union responses and strategies. Detailed
work in these areas, even for those unions with the
greatest degree of awareness, has largely been the product
of the last five years. The attempt to translate policy
into practice, through bargaining and the establishment of
NTAs and RPAs, has had a shorter life-span. Trade union
assessments of these policies are, therefore, in their
infancy. Most trade unions are too busy trying to
establish the ground rules for technology bargaining to
attempt an analysis of the lessons to be drawn from current
practice. The evidence on which an assessment of
technology bargaining could be based is limited and,
because it is limited, any conclusions drawn would
necessarily be partial. However, from the evidence which
is available certain tentative conclusions may be drawn.
Experience of new technology bargaining is insufficient for
definite conclusions as to its impact on industrial
relations to be made but sufficient for describing possible
developments. Changes or potential changes to industrial
relations can be analysed in a number of areas.

4.4.1   Bargaining

As part of the British study a detailed analysis was
made of 30 'new technology agreements'. The trade
unions involved were APEX (9), ASTMS (6), NUJ (4),
NALGO (3), CPSA (1), GMWU (1), TGWU (1) and there
were five agreements covering a number of unions
(three of which involved APEX and two of which
involved ASTMS). The sample does not claim to be
representative and it has also to be borne in mind
that a lot of new technology bargaining involves
manpower and productivity agreements not packaged as
a NTA. It also needs stating that a written
agreement can in practice hide more than it reveals.
Nevertheless from an analysis of the 30 agreements
the following observations can be made:

* new technology agreements are few in number and
  are predominantly the concern of white-collar
  unions

*   the NTAs were very limited in coverage -
    usually applying to a specific piece or pieces
    of equipment (mainly WPs and VDUs) : an
    exception was an agreement which defined new
    technology as "the introduction of new equipment
    or new systems of working which may
    significantly change the way in which tasks are
    performed"

*   most of the agreements were concerned with four
    main issues :

    1. procedures - either 'status quo' (no change
        without agreement) or agreement to
        consult
        information
        joint review and /or monitoring

    2. health and safety

    3. training and retraining

    4. job protection - usually amounting to an
        agreement for no involuntary redundancy as a
        consequence of new technology (although a
        number of agreements did assume job loss)

*   other concerns to figure in the agreements were:

        regrading where new skills were acquired

        not to use new technology to monitor or
        regulate work performance

        redeployment provisions

        'trial periods' for using the equipment prior
        to agreement

*   the NTAs did not cover, as a rule, benefits
    accruing from new technology in terms of wages,
    bonuses or hours; these matters were left to
    other bargaining arrangements and procedures

*   most NTAs endeavoured to cover the ground laid
    down by the TUC's 10-point 'checklist' but this
    usually resulted in generalised statements of
    intent rather than specific provisions

*   most NTAs were worded in such a way that their
    value depended a great deal on interpretation

*   the NTAs were mainly sectoral - referring to a
    particular site or to particular elements of the
    workforce.

The new technology agreements studied represented significant steps for a small number of workers in protecting themselves against 'technological unemployment' and provided their unions with certain levers to use in the bargaining process. They did not represent a systematic approach to employment, output and rewards. They were an adjunct to the consultation and bargaining process rather than a major constitutent part. Their true merit could only be judged from a study of how the agreement operated in practice and what changes, if any, it had inaugurated. The signing of an NTA represented an approach to a problem rather than its solution.

The lack of up-take of NTAs by non-white-collar unions and the inability to extend coverage to company-wide, industry-wide or national agreements, casts serious doubts on their relevance to the trade union movement as a whole. Undoubtedly the white-collar unions will continue to pursue the tactic as NTAs.not only benefit the membership but they benefit the union as well. They provide status and recognition for the union in areas where this has often proved difficult to achieve. Blue-collar adoption of NTAs is less certain.

Whether NTAs make a significant impact on job regulation is less important than the issues they raise. Both in Britain and in Germany there is a clear movement towards bargaining job protection and job security (and in other countries as well - witness the growth of "concession bargaining" in the United States). This trend is apparent whether it is linked to new technology or not. The question basically revolves around whether it is best to attempt to use new technology bargaining to obtain job protection or whether this approach is too restrictive and job protection is better secured by other more conventional means. To date experience would suggest that neither method is particularly successful. The true impact of new technology on bargaining will only be judged when more detailed work is carried out into those few areas where it has so far intruded and, more importantly, when major new technology agreements - such as those proposed by BIFU, the Civil Service unions, HBV and OTV - have been introduced, monitored and their operation assessed.

4.4.2 Information

Obtaining adequate information on company investment
policies and manpower planning is seen as a serious problem
by the trade union movements in both countries. There is
widespread criticism of existing consultation and
informatic-- provisions not for what they are but for what
they are not i.e. they exclude major planning and invesment
decisions. There are arguments which favour a legislative
approach such as the recent 'Vredeling proposals' before
the European Commission or the Swedish Joint Regulation in
Working Life Act which places a responsibility on employers
to negotiate with a trade union before deciding on
important changes at the workplace. There are also
arguments in favour of a voluntary approach such as the
TUC-CBI joint 'code of practice', which failed to be
ratified, or the Norwegian agreement between the employers'
and trade union federation which seeks to regulate new
technology on a voluntary basis. The Norwegian agreement
specifies adéquate disclosure of information, the training
of trade union representatives (including paid time-off and
the appointment of 'data stewards') and encourages the
parties to make local agreements.

It is clear that both in Britain and Germany existing
voluntary agreements and legislative provisions do not
measure up to those in Scandinavia. The search for better
provisions will undoubtedly continue and could have
industrial relations' consequences.

4.4.3 Participation

The trade union response to new technology has served to
reinforce trends which were already discernible in the
British and German trade union movements and their
respective industrial relations' systems :

a) In Germany there is a desire to strengthen co-
determination and the legislative rights which go with
it. Due to the lack of movement at national level and
trade union dissatisfaction with the workings of the
labour courts, there has been a movement to strengthen
the 'informal' system. Works councils are assuming more
responsibility in regard to wage bargaining, including
the benefits of new technology, and seeking to use their
statutory rights to exercise more control over the
introduction and operation of new technology.
Bargaining is becoming more decentralised and greater
authority is being vested in bargaining units at company
and plant level.

b) In Britain there has been a growth in joint consultation
and, whilst falling short of joint decision-making, new
technology has fostered this development. The rise of
single-employer bargaining has also assisted the
development of consultative machinery. Movement towards
a more formal participative framework is encouraged by
the trade unions and has met with a certain positive
response in some companies - in other areas,

particularly the nationalised industries (BL, British
Steel and British Rail), the process has been reversed.
Short of legislation no clear pattern is likely to
emerge. However, where new technology does lead to the
establishment of joint management and trade union
machinery, it may well lead to the encouragement of
wider terms of reference. The future of joint
consultation may well rest on its ability to activate
'joint problem solving' in meaningful decision-making
areas.

4.4.4   Demarcation and skills

In Britain new technology nas caused and will cause
demarcation problems. As skills change and technology
narrows the gap and blurs the differences between white-
collar and blue-collar work so problems arise. The
printing and manufacturing sectors have already experienced
demarcation problems arising from the introduction of new
technology. Only the rationalisation of trade union
structures or the establishment of joint negotiating
machinery can effectively minimise this area of potential
conflict. The evidence would suggest that both are
proceeding very slowly.

4.4.5   Benefits

The extraction of benefits from new technology and their
distribution are areas of vital concern to the trade
unions. At present, due to the comparative newness of
technology bargaining and slowness of information
technology take-up (particularly in Britain), little firm
evidence is available. However, what evidence there is
suggest that both the British and German trade unions have
so far been singularly unsuccessful in reducing working
hours as a consequence of new technology. In Britain,
despite a near tripling of unemployment over the past three
years, there has been no movement at all in reducing the
amount of overtime being worked. The trade unions' ability
to 'deliver' on hours has been called into question and the
consequence has been a rise in support for a legislative
approach.

The exclusion of pay and hours from most NTAs and
discussions on new technology raises the question of
whether traditonal collective bargaining and new technology
bargaining can be successfully divorced. The evidence
suggests that they can, but only at the cost of under-
playing the importance of new information technology to the
production process. New technology is primarily linked to
jobs rather than rewards. However, trade unions like the
EEPTU have correctly perceived that rewards are a major.
issue. The pressure to create stronger links between
technology and rewards will increase as the diffusion of
new technology becomes more rapid. The impact this will
have on the respective industrial relations' systems is
impossible to predict.

4.4.6   Job security

The evidence to date regarding the bargaining and handling of new information technology suggests that the trade unions main concern has been with job security. The primary purpose behind NTAs and RPAs has been the establishment of job protection; all other considerations have been secondary. The demand for job security led to the abandonment of the Council of Civil Service Unions' two-year 'interim agreement' on new technology signed with the government (the employers) in March 1982 - the agreement did not guarantee 'no job loss'. Equally the major stumbling block to industry-wide new technology agreements in both Britain and Germany has been trade union insistance on strong job protection guarantees. It is unlikely that the demand for greater job security will have radical structural effects on industrial relations in the two countries but it will undoubtedly influence the nature of the job regulation debate.

4.4.7   Trade union organisation

It is claer from the study that the German trade unions ought organisationally to be better equipped to handle technological change than their British counterparts; it is less than clear that they are.

The German trade union movement has infinitely superior research and education resources than the British trade union movement (a) because of the state-supported legal structure of rights and responsibilities and (b) because German trade unions allocate a far greater proportion of their financial resources, which are in turn based on significantly higher membership subscriptions, on education than British unions see fit. In the training of its full-time and lay officials and in the services it provides to the trade union movement in general, these resources can only be of undoubted benefit. However, in handling technological change, the problems presented were common and not ones which could be solved by means of a greater allocation of resources.

The major problem facing trade unions in both countries was adapting bargaining mechanisms to cope with new information technology. It was apparent that the "front-line" trade unions (such as APEX, AUEW (TASS), ASTMS and BIFU in Britain, and HBV and OTV in West Germany) had studied the subject in depth and built up considerable expertise on asects of information technology which directly affected them. Having devised a strategy to cope with technological change, the difficulty was in implementing it through existing bargaining structures. In Germany centralised bargaining provided an opportunity to secure wide-ranging agreements but employer opposition at regional and industry levels meant that bargaining over technological change was pushed down to work-place level. In Britain more decentralised bargaining mechanisms meant that new

technology was from the outset being primarily tackled by company or plant bargaining units. In both countries the brunt of new technology bargaining was being tackled at shopfloor level through units ill-equipped to deal with the wider ramifications of the subject.

Common organisational problems at the workplace were multi-plant companies through which it was difficult for lay trade union representatives to develop a co-ordinated strategy, the fact that new technology usually initially only affected a section of the workforce (which often resulted in a fragmented approach in Britain with attendant demarcation and sectional problems and in Germany led to the problem being under-played as it only affected a minority of the workforce), the piecemeal nature of the introduction of new technology, lack of involvement in the planning process, inadequate information, limitations on the scope of bargaining (the need for a company-wide, industry-wide or national agreement prior to local agreements), and insufficient trade union back-up (research, training and education) for lay representatives (a far greater problem in Britain).

New technology undoubtedly exposed the inadequacy of existing bargaining structures. Because at this stage new technology bargaining was centred on the workplace, the overall industrial relations frameworks ('legalistic' and 'voluntaristic') had little influence on developments. Until satisfactory national or major agreements are concluded, the onus of new technology bargaining will continue to fall on workplace trade union representatives and will suffer from the weaknesses which that implies. Collective bargaining stuctures combine in both countries to push new technology to the peripheries of job regulation.

The structural problems facing trade unionists with new technology are recognised by those unions who are intimately involved with the subject. The need for national agreements, guidelines or even codes of practice has been recognised by both the TUC and the DGB and a number of their constitutent unions are trying to obtain such agreements in their own sectors (e.g. BIFU and the Civil Service unions in Britain and HBV and OTV in Germany), so far without success. Significant breakthroughs at a higher level might well change the character of new technology bargaining, although many of the workplace problems will remain.

The German participative structure, with trade union representatives sitting on all major company boards, should provide a better framework for handling technological change. However, the evidence from this study points to the fact that in regard to new technology the average works council is just as removed from company strategic decision-making as is the average shop stewards committee. The problem is that works councils and shop stewards committees are having to cope with the introduction and operation of new technology when they were not designed for that purpose and hence are ill-equipped for the job. As Eric Jacobs observed in a wider industrial relations context :

"But however they have been reformed and improved, works
councils and shop steward committees still have a
severely limited scope. No matter how powerful,
management still proposes and the workers'
representatives still do no more than oppose, or at any
rate argue. At best, they may have some limited rights
of veto over management actions that prejudice workers'
standards or employment. But works councils and shop
stewards' committees do not influence policy at the
formative stage; they merely react to policy when it
has been made." (Jacobs 1973, p.67)

If trade unions are to exercise real influence over the
introduction and handling of new information technology,
then they will have to obtain an in-put into policy at the
'formative stages'. To do this would require changes in
structure and practice which, in turn, would have a major
impact on the prevailing state of industrial relations in
the two countries. There are few signs of this being
achieved. Far more likely is that the onus will continue
to fall on works councils, shop stewards' committees and
other small bargaining units which are largely inadequate
to the task. Trade union influence over the process of
technological change will remain small.

5. CONCLUSIONS

The following provisional conclusions can be drawn from the study :

5.1 Attitudes to information technology

There was a high acceptance on the part of the workforce and trade union representatives of new technology and overwhelming evidence of "positive" attitudes towards its introduction in all sectors which were studied. There was shared agreement on the relevance of the "technology route" as a means for company, organisational and national economic growth. Employment prospects were linked to taking that route not to its rejection or by-pass. Acceptance of the relevance of new technology was tempered by concerns over jobs, job content and job prospects; but these concerns were viewed in the context of a process of adjustment not conflict.

5.2 Information technology and industrial relations' frameworks

5.2.1   It could not be stated with any certainty that the overall industrial relations' frameworks, 'legalistic' and 'voluntaristic', under which German and British trade union representatives operated, affected either positively or negatively the way in which new information technology was introduced and handled. Trade union representatives in both countries were faced with similar problems and their success in coping with those problems had little to do with the wider industrial relations' framework.

5.2.2.   Equally it could not be stated that national industrial relations' practices and procedures differentially affected employers' strategies in introducing new technology or the way in which it was handled. Both frameworks appeared to provide the employers with flexibility as to how new technology was to be introduced and handled.

5.2.3   The case studies and supplementary evidence pointed to a wide varity of practices and experiences with new technology over which the industrial relations' framework had little control. The introduction and handling of new technology owed more to the particulars of job regulation in the sectors examined than to external factors such as the law or freedom to take industrial action.

5.3 Planning

5.3.1   Workforce or trade union participation in the planning process was as little in evidence in West Germany as it was in Britain. This was not always the consequence of deliberate exclusion, in come cases it was a matter of choice. Important factors were the piecemeal nature of much of the introduction, with co-ordinated planning policy difficult to perceive or locate, employer opposition, lack of information and the weakness of bargaining positions and structures.

5.3.2   The legal regulations concerning disclosure of information in West Germany appeared, in regard to information technology, to be as weak in practice at workplace level as the British codes of practice. The studies show heightened trade union concern in both countries to strengthen disclosure of information rights directly as a consequence of new technology.

(6)

5.4   Introduction of new technology

The introduction of new technology could be characterised in a
number of ways, the most common being "bargained imposition" and
the attainment of a "negotiated solution". The studies show the
latter to be more prevalent in the manufacturing sector and the
former more typical of the service sector. The process of
introduction did not appear to be any the more participative in the
German studies than in the British. Specific sectoral and job
regulation factors were of greater importance.

5.5   Agreements

5.5.1   Agreements over new technology proved far more difficult to
obtain in the service sector than in the manufacturing
sector in both countries.

5.5.2   The impetus to obtain "new technology agreements" was weak
in blue-collar areas, where more traditional bargaining
methods were preferred, and strong in white-collar areas.
The white collar unions' success in negotiating specific
"new technology agreements" appeared to be limited both in
scale and content.

5.5.3   The technology agreements and other agreements which
resulted from the introduction of new technology could be
characterised as strong on basic instrumental matters (pay,
grading, productivity, bonus etc.), mixed in regard to
ergonomics (strong on training and health and safety but
weak on humanisation of work and job satisfaction) and weak
as rule on questions of job security and shorter working
hours. Provisions for 'no job loss as a result of new
technology' did, even where signed, not appear to have much
teeth as 'technological unemployment' was difficult to
define in a recessionary climate.

5.5.4   Work-place bargaining over new technology proved difficult
in a period of economic recession. Prevailing bargaining
structures in both Britain and West Germany appeared ill-
equipped to handle new technology bargaining. At the
higher levels - company, industry, regional and national -
the trade unions found it extremely difficult to exert any
influence in regard to new technology; whilst at the lower
levels - work-place and shopfloor - influence could be
exerted but it was limited to reacting to already well-
advanced technological changes.

5.5.5   At work-place level trade unions often sought their own
salvations rather than strict adherence to national trade
union and trade union federation policy. This was
manifested in agreements signed and unsigned (practice).

5.6   Handling technological change

5.6.1   Information technology was seldom isolated as a problem but
was viewed as one element in a changing economic and
working environment. Even where it was treated as an issue
separate from others, it was invariably placed in the
context of wider organisational factors e.g. markets,
competitiveness, investment, growth, efficiency and job
prospects. It was placed and handled in an organisational

context. Different organisational pressures and contingencies affected the way in which the subject, both general and specific, was dealt with cf. experiences in banking and manufacturing.

5.6.2 The handling of technological change largely affected job regulation at the margins. Neither pay, hours or jobs - perhaps surprisingly - appeared as major issues or problems at work-place level. The main debates were over work reorganisation, demarcation, status, supervision, training and working conditions. As a consequence the likelihood of new technology being the sole cause of industrial relations conflict would appear to be small (unless a whole section of the workforce was to be eliminated such as in printing where the above issues ceased to be relevant).

5.7 Conflict

The studies identified new technology as a potential rather than an actual cause of conflict. The slow take-up and piecemeal introduction of new technology undoubtedly facilitates co-operative resolution if not the production process itself. In all areas of study the potential for radical change was present. The pace at which that change is achieved, if it is fully realised, will effect the ease of transition. At present alterations to the sum and nature of work and work organisation as a direct consequence of information technology (as opposed to government policy and market forces) are of insufficient size and pace to generate substantial industrial relations conflict. The "information society" is still in its infancy and the long-term effect on industrial relations is beyond prediction.

5.8 Trade union strategies

5.8.1 Legislation

The trade unions in Britain and Germany have followed similar strategies in trying to mitigate the possible adverse effects of information technology. They have placed reliance on education, propoganda (pressure on government and employers) and bargaining. They have sought through the medium of new technology agreements to prevent job loss, control the inroduction of new technology and distribute its benefits; particular emphasis has been placed on shorter working hours. The strategies could not be described as successful either in what they set out to achieve or in the means by which they hoped to achieve it. In Britain the recognised failure of the 'bargaining' approach has led not to its abandonment altogether but to a wider approach. The role of government and legislation is now central to that approach. British trade unions, long-time champions of 'voluntarism' and 'free collective bargaining', are now seeking legislative intervention to cut overtime, put limits on maximum hours and reduce the working week. This and other legislative proposals conspire to achieve far greater control over job regulation through the law than at one time would have been thought possible. It does not amount to a fully-integrated legislative system as in West Germany, but it is a long way from 'voluntarism'. If it is anywhere near achieved present distinctions between British 'voluntarism' and German 'legalism' will be even less meaningful than they are today.

5.8.2 Amalgamations

One response to new technology is to consolidate trade union structures. The German system of industrial unionism has obvious strengths but is an unlikely prospect in Britain. Far more likely, and there is evidence of it already (see IRRR 1981 No.259), is the spread of trade union amlgamations as a direct or partial consequence of technological change - printing and banking being cases in point.

5.9 Future developments - participation and joint control

By far and away the most significant potential impact of new information technology upon changes in industrial relations which this study points to concerns the development of participation and joint control. The impulse of new technology is to push trade unions from the "adversarial" and "voluntaristic" towards the "co-operative" and "legalistic". This does not mean that British trade unions will seek wholesale adoption of the German system but they will seek, and are seeking, to exercise greater control through participation. There is a widespread recognition that the British system of industrial relations is poorly equipped to deal with technological change and its attendant social problems. British trade unions see the way to tackle such problems through joint monitoring of technological change at work-place and company level, greater rights of disclosure of information and the oportunity for trade union involvement and participation, if desired, at all levels of the company up to and including board level (see TUC/LP 1982). If these far-reaching changes ever materialise, they will change the face of British industrial relations. They will not turn it into a carbon-copy German system but they will develop notions of joint responsibility and joint control which up to now have been largely abset from the British system.

Equally the German trade unions are moving in the same direction. They are attempting to strengthen the role of works councils at work-place level and put more teeth into co-determination. There is a recognition that legal rights require shop-floor strength to be put into effect and that new technology presents a challenge to existing bargaining structures.

Attempts to seek greater participation and involvement as a consequence of technological change whether by voluntary or legislative means, will succeed only as far as trade unions, employers and governments are prepared to let them. Tackling the problems for work and society arising from the social and economic consequences of information technology, including its challenges and opportunities, demands a tripartite approach. The more governments, trade unions and employers pull in different directions the more uncertain the future becomes, both in regard to industrial relations and for society as a whole.

APPENDIX

RESEARCH PROJECT : New Information Technology and Industrial Relations

Semi-structured interview schedule

The following provides an outline of areas the interviews will explore. Specific questions will be pertinent to the interviewees' occupation, experience, role, and knowledge of the particular aspects of technology and industrial relations under discussion.

(1)   The background to technological change
      What was it hoped to achieve?

   (a)   Management goals

      - reduction of unit costs
      - greater productivity
      - greater efficiency through elimination of duplication etc
      - improved quality
      - greater range of possible areas of involvement.

   (b)   The role of technology in the industrial process. Was it?

      - a new departure
      - a replacement of an older form of technology
      - the refinement of an existing automated process representing a quantitative change in terms of efficiency and productivity levels, rather than a qualitative change in terms of the process of production.

   (c)   Trade union goals and attitudes

      - in the past and today
      - conditions of acceptance
      - perceived benefits
      - positive and negative factors.

(2)   Implementation of technological change

How was it introduced? Was its introduction preceded by a process of consultation and negotiation with the workforce on the part of management? Was it the source of confrontation of any kind? To what extent did consultation/bargaining revolve around skill requirements, training and retraining needs, and to what extent on the implications for employment levels?

Also explore: employment opportunities
                       pay levels
                       productivity
                       promotion/career prospects
                       working conditions.

What impact has introduction had on employment levels in terms of actual numbers employed, hours worked, down-time etc? What effects - if any - did the consultations and negotiations have on the way in which the new technology was introduced? Was a formal or informal agreement reached?

Role of local/national bargaining machinery and industrial relations
system? Implications of national agreements at local and regional level?

(3) Work organisation, skills and training

What impact has the technology or organisational change had on the
composition of the workforce in terms of age, training, qualifications,
promotion prospects etc?

What impact has it had on work organisation practices and job
structuring? Negotiation and participation in work re-organisation and
job restructuring.

What skills are required for the introduction and efficient use of the
technology?

What is the effect of the technology on existing skills? Negotiating
de-skilling, re-skilling, up-grading etc.

What is the industry's assessment of training needs and provision of in-
house training?

What training and re-training requirements are thrown up by the effects
of the technology. Can existing training schemes cope? Consultation and
participation in training programmes.

(4) Trade union and management responses and initiatives

What general strategies are being pusued by management and trade unions
in regard to technological change?

The nature of the managerial bargaining strategy (its aims and
objectives) and the trade union response (benefits and safeguards)?

To what extent are the trade unions at national and local levels
encouraging, co-operating with or campaigning against the introduction of
the technology or changed working practices and organisation?

To what extent are the unions responding to the introduction of new
practices and to what extent are they taking an initiative?
Relationships between national policies and local developments.
The handling of technological change within local and national industrial
relations' systems?

Did the trade unions pursue an integrated strategy or did each individual
union pursue its own independent policy? Was the managerial strategy
dependant upon an integrated or singular trade union approach? How has
inter-union relations affected the process of bargaining and negotiating
technological change?

How was technological change and its consequences influenced inter-union
relations and employer/trade union relations?

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