MANPOWER UTILISATION AND FLEXIBILITY IN SHIPBUILDING

'A CASE STUDY ON ORGANISATIONAL CHANGE'

by

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ABSTRACT

This study will provide an analytical account of the changing practices and strategies for manpower utilisation in a single shipyard (Govan) from the 1950/60's to the beginning of the 1990's. This will reveal, at different phases, four distinct approaches to manpower utilisation strategies and their associate industrial relations process. These could be summarised as:-

Model One - the classical approach where manpower utilisation strategy was based on the principle of dividing labour and characterised by the concept of job specialisation and manpower agreements that were concluded on the basis of national agreements.

Model Two - the scientific management approach where the strategy was to conclude local agreements between management and the workforce that were characterised by the introduction of limited forms of functional flexibility and industrial engineering techniques.

Model Three - the flexibile work approach where the strategy was based on the concept of the 'Flexible Firm' and characterised by the move to conclude national agreements to enable the introduction of functional and numerical forms of flexible working.

Model Four - /...

> Model Four - the new realism approach where the strategy was to recognise that manhours were the principal component of shipyard competitiveness and where local agreements were concluded between management and the shipyard workers that increased manpower effectiveness.

The account of models One to Three provides us with an understanding and detailed analysis of the systems of manpower utilisation and associated industrial relations practices adopted by management as the shipyard progressed through different economic, technological and organisational phases prior to Kvaerner's acquisition of the yard in 1988.

Model Four is the approach to manpower utilisation developed and implemented as part of this work, and this account details the ways in which the manpower and industrial relations problems were identified and resolved.

The differences between the approaches as depicted in the four models will be interpreted on the basis of a 'conceptual framework' developed for this purpose, and this 'toolbox' will enable us to present conclusions on the successive phases of change.

INTRODUCTION

1. THE AIM

The Govan Shipyard was acquired by the Kvaerner Group, Norway's largest privately-owned commercial enterprise, from the state owned British Shipbuilding Corporation in August 1988. At the time of the acquisition the shipyard was highly unprofitable and taking two to three times more manhours to build its ships than its international competitors. A contributory factor of these additional manhours was the way in which manpower was being utilised in the yard. As such, the shipyard's approach to manpower utilisation was an influential determinant of Govan's uncompetitiveness.

Developing and implementing an effective manpower utilisation policy aimed at making the best use of the shipyard's manpower resources and thereby reducing the manhours taken to build ships was, therefore, a major priority for the new management at the yard. However, the process of bringing viability to Govan required more than this. The internal manpower constraints associated with demarcation, restrictive working practices and overmanning, an inherent part of the shipyard's traditional approach to manpower utilisation, had to be changed. A prerequisite of this was altering the prevailing industrial relations system and the attitudes and values within it.

The simple fact was that the shipyard had been uncompetitive for at least three decades and during that period massive numbers of shipyard workers in the U.K. and on Clydeside had lost their jobs. Those still in employment preserved their restrictive working practices as a means of protecting their jobs.

The prevailing industrial relations system was the means by which this was achieved. The shipyard also suffered through a lack of strategic direction and an inconsistency in implementing corrective actions, particularly actions associated with manpower and industrial relations issues.

The manpower utilisation policy to be developed for Kvaerner Govan had, therefore, to be an integral part of an overall strategy aimed at achieving shipyard competitiveness and thereby providing job security for the shipyard workers. Within that strategy the approach to manpower utilisation had to be aimed at changing the work ethic, shipyard culture, workforce attitudes and industrial relationships. It also had to be aimed at increasing the competence and effectiveness of the shipyard workers and management and thereby provide a base on which competitiveness will be achieved.

2. THE PLAN AND STRUCTURE

The aim of this thesis is to provide an analysis of the systems of manpower utilisation which preceded the Kvaerner acquisition of the Govan yard, providing an explanation of the deep seated nature of the Kvaerner inheritance; and to provide a detailed account of the ways in which Kvaerner identified the problems and set about resolving them. To achieve its aim, the thesis will be structured in four parts:-

> Part One - will provide a brief historical review of the Upper Clyde shipbuilding industry. The aim will be to provide an understanding of the industry, its shipyards and the economic influence these shipyards had on the Clydeside urban communities and the reason for the industry's decline. Chapter one will be devoted to this review.

Part Two - will be devoted to a set of theoretical ideas underlying manpower utilisation and, in particular, the concepts of job specialisation and flexible working. The aim is to develop from theory a 'conceptual framework' to enable Govan's manpower utilisation developments from the 1950's/60's onwards to be looked at with a set of analytical tools. This is designed to assist in explaining what management were trying to do when they changed their approach to manpower utilisation. Chapters two and three will be devoted to this.

Part Three - will provide an account of three approaches to manpower utilisation adopted and practiced at the Govan shipyard as it progressed through different economic, managerial and organisational considerations. The account will be framed in terms of three models of manpower utilisation broadly identified as the Classical Approach, the Scientific Management Approach and the Flexible Working Approach. Chapters four to nine will be devoted to this analysis.

Part Four - will provide an account of the 'New Realism' Approach to manpower utilisation developed and implemented at Kvaerner Govan. In particular the account will demonstrate where the manpower utilisation policy fits into the overall business strategy. The restrictive nature of working practices and manpower inhibitions will be described and quantified.

The uniqueness of the prevailing industrial relations system will be outlined and the merits of the alternative industrial relations framework explained. Finally, the account will provide supporting data to confirm that the manpower utilisation policy and the associated 'action programmes' have improved manpower utilisation, manpower effectiveness and shipyard competitiveness, in the period down to the end of 1992.

The thesis will conclude by addressing a number of fundamental questions related to the four manpower utilisation models. They will be set within the context of recent contributions to the literature relating to manpower utilisation. The 'conceptual framework', developed earlier, will be used to draw conclusions on and to explain, on a model by model basis, the developments associated with the individual approaches.

PART ONE

A Historial Review of The Upper Clyde Shipbuilding Industry

PREFACE

Part one of the work is devoted to a historical review of the Upper Clyde shipbuilding industry. It will be concerned with:-

Firstly - The establishment of the Upper Clyde based industry and the reasons associated with the move by shipbuilders from their existing locations to the Upper Clyde.

Secondly - The shipyards who operated in the 1940's at a time when the industry was at its peak, and the economic importance of these shipyards to the Clydeside urban communities.

Thirdly - The shipyard closures of the 1950's and 1960's and the consequences of these on the community, in the terms of jobs and economical losses.

Fourthly - The reasons put forward for shipyard closures and the decline of shipbuilding on the Upper Reaches of the River Clyde.

Chapter one will be devoted to this review which is aimed at providing a basic understanding of the Upper Clyde shipbuilding industry, its shipyards, the economic influence these shipyards had on the Clydeside urban community and the reasons put forward for the industry's decline.

CHAPTER 1: A HISTORICAL REVIEW

1. THE ESTABLISHMENT

Upper Clyde shipbuilding, an industry that, since its inception in the nineteen century to the late 1940's, expanded to such an extent that it provided the main employment for, and was the economic lifeline to, the urban communities of Clydeside. Indeed, the expansion was such that during this period, shipbuilding emerged as the leading industrial sector in the economy of the West of Scotland.

The Clyde based industry built up a tremendous reputation in the international shipbuilding market field and became renowned throughout the world for the quality of its products and the skill of its workforce. 'Clyde Built' became synonymous with high quality ships that were respected throughout the world for their reliability and performance.

The important question, therefore, is why of all the rivers in the United Kingdom did the River Clyde become a principal shipbuilding centre of excellence? There have been various explanations put forward to explain the reasons why shipbuilding was initially attracted to, and thereafter established, on the upper reaches of the Clyde and, indeed, to explain the emergence of shipbuilding as a leading sector in the economy of the West of Scotland.

According to Campbell (1971) the initial main determinants were twofold:-

> Firstly, the changes associated with the construction of ships of iron and steel instead of wood.

Secondly, the changes associated with methods of propulsion, and in particular, the move away from sail to steam and diesel.

Campbell (1971) wrote:-

"Frequently these determinants in the first group are regarded as being more important to the growth of shipbuilding and following this reasoning it becomes possible to suggest that the rise of the iron and steel industries in the West of Scotland adequately explains the rise of shipbuilding on the Clyde." (Campbell 1971 Page Ref.5).

However, he suggested that there was a further determinate. He argues that the meteoric rise of the Scots industry was mainly dependent on its ability to keep wage costs lower than those in England. In effect, the shipbuilders moved to the Clyde to be nearer the source of their raw materials and to take advantage of the cost benefits of the lower wage rates which prevailed in the locality.

Pollard (1951), putting forward his explanation, identified three major factors which he suggested were associated with the establishment of shipbuilding on the Clyde's upper reaches All were interlinked with the transformation from wood to iron technology. These factors were:-

Firstly, raw materials, and in particular the transport costs for iron, coal and steel.

Secondly, proximity to the shipping markets and in this context the sea-route linking Glasgow to the open sea was particularly important.

Thirdly, labour.

Like Campbell, he suggested that one of the principal determinates was the location of the shipyard raw materials and the advantages of locating the shipyard in close proximity to these materials. Pollard, however, adds a new determinate. He suggests that the deepening of the River Clyde and its transformation into a navigable sea route linking Glasgow to the open sea, meant that a shipyard located on the Clyde was in close proximity to the shipping market.

He further suggested that, in terms of labour, the key factor was not so much the actual wages levels, which he recognised as comprising only a third of total shipbuilding costs, but more the question of the malleability of labour. His key labour factor was the degree to which more extensive malleability could be introduced. In this context, factors such as, a lack of strong craft tradition and the lack of resistance to the introduction of new methods of production and organisation were of great importance.

> "It is certain that the marked tendency for the industry to leave the large cities for the open banks of their rivers was, to some extent, at least due to a hope for a more intensive exploitation (malleability) of labour." (Pollard 1951 Page Ref.6).

He, therefore, added a new dimension with regard to the "malleability" of labour as a factor in the siting of the shipbuilding industry on the upper reaches of the Clyde. He suggested that, in order to create the conditions for a greater malleability of labour, the general trend in the mid 19th century was to move away from the large industrial towns. The areas where working practices had become restrictive and strong trade union influences were prevalent.

The East end of London was only one of the areas which fell victim of this general trend and this move had devastating effects on the shipbuilding community of that area.

> "The removal of the iron shipbuilding trade from the River Thames was enough to reduce the whole East End of London to chronic pauperism." (Engles 1949 Page Ref.6).

Glasgow and its district communities were major benefactors as industries, such as shipbuilding, moved away from the large industrial towns. The process of relocation took place in the 1850's and shipbuilding, in particular, was attracted to the now developed River Clyde with its open river banks and its navigable waterway linking Glasgow to the open sea.

The Upper Clyde shipbuilding industry expanded spectacularly in terms of competed tonnage from a level of 100,000 gross registered tonnes in 1864 to 500,000 gross registered tonnes in 1900. The expansion was also reflected in the growth of population in the districts around the shipyards.

Perhaps the growth of the district of Govan is as eloquent as any testimony to the expansion of the industry, and even its emergence as a leading sector in the economy of the community. In the late 1850's, Fairfield was a farm on the south bank of the Clyde, immediately west of the village of Govan and within three miles of the City of Glasgow. Govan had a population of 9058 before the creation of the Fairfield Shipyard. Fifty years after its establishment in 1907 the number of inhabitants was 93,093 as illustrated in figure 1.1.

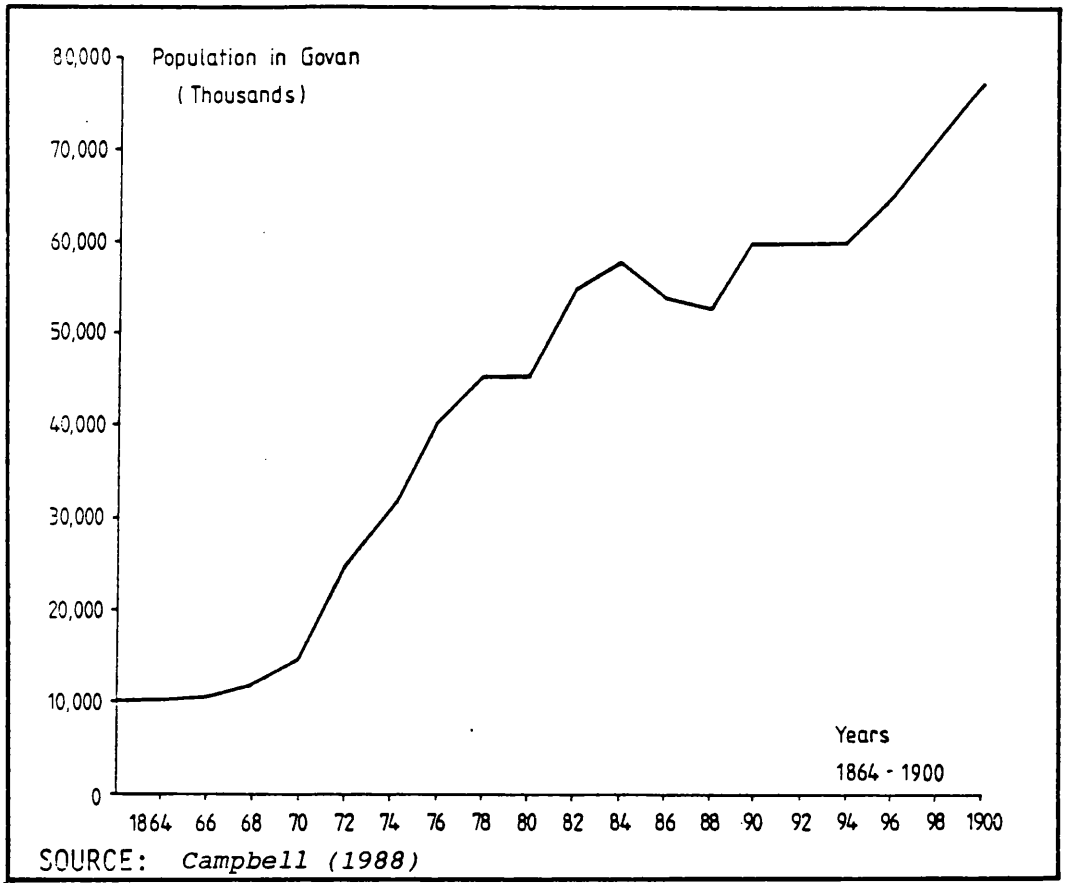


Figure 1.1

This fast pattern of growth reflected the significant part that shipbuilding was playing in the provision of employment and business opportunities with more and more immigrant workers flocking to the Clydeside shipyards in the search for work. A major shipbuilding industry, with considerable international recognition was, therefore, established on the River Clyde. In the world shipbuilding market place, the colloquial term "Clyde Built" was generally understood to mean a high class product from a Clyde shipyard.

Accordingly, the main determinants for the establishment of this internationally recognised industry, based on the upper reaches of the River Clyde were:-

a) The changes associated with methods of construction and propulsion.

b) The lower wage rates prevailing on the Clyde as compared to the industrialised rivers of the 1850's.

c) The proximity of the River Clyde to the shipping market of Glasgow.

d) The close proximity of the River to the source of raw materials for wood and steel ships.

e) The malleability of labour.

The final determinant is particularly important in terms of the work of this project, as it was concerned with the shipbuilders ability to introduce new methods of production, manpower utilisation and organisation.

2. THE SHIPYARDS

By the late 1940's, shipbuilding on the Upper Reaches of the River Clyde was thriving. Most of the districts of Glasgow, from the Broomielaw to Old Kilpatrick, had their own individual shipyard. Each shipyard had its own unique history and the local communities looked to the shipyard for employment and an economic lifeline.

In the Burgh of Partick and bordering on the Anderston district of Glasgow, were sited two fine shipbuilding and engineering companies, these being, A. & J. Inglis and D.W. Henderson. Their premises were located on the north bank of the River Clyde, just west of Yorkhill Quay, as illustrated in figure 1.2.

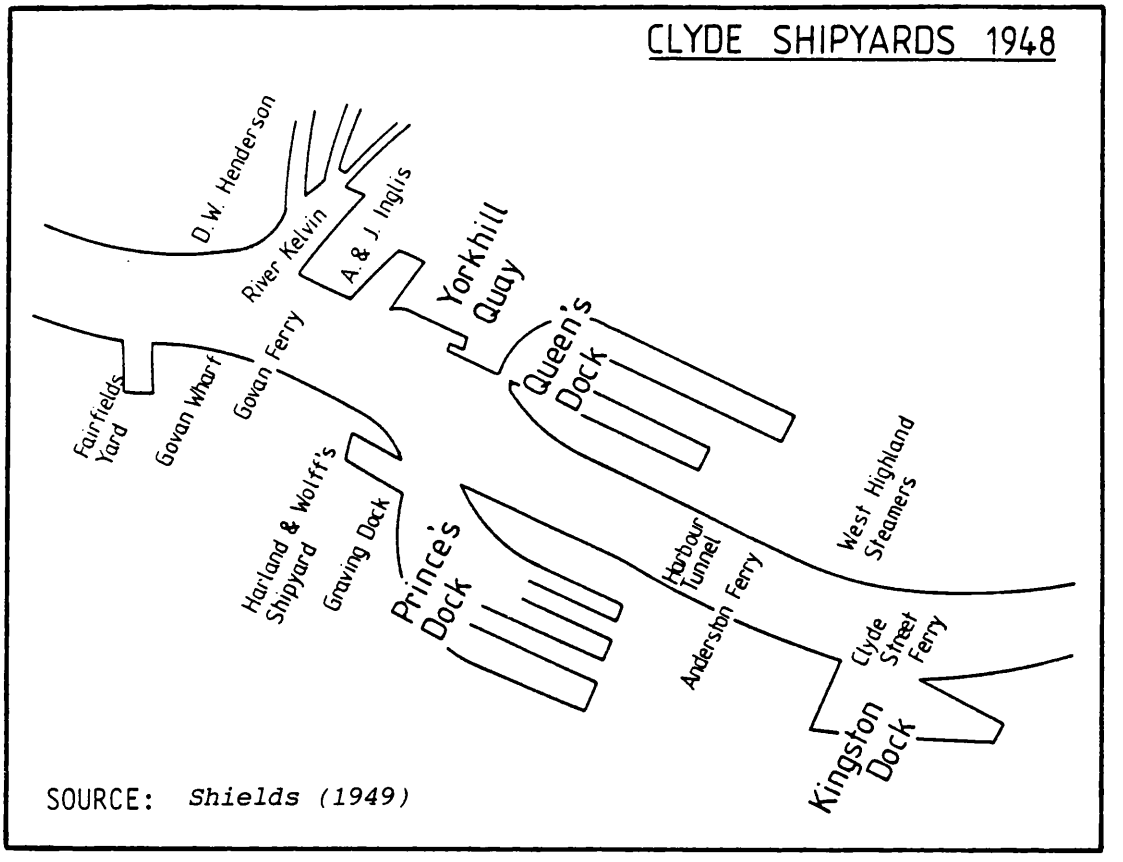


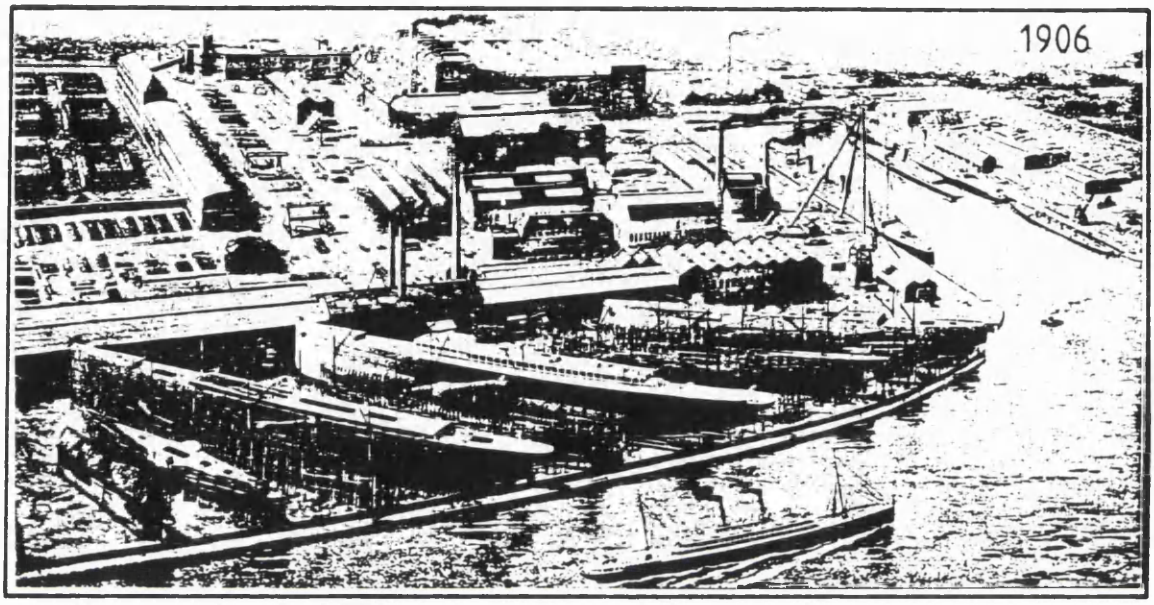
Figure 1.2

The district of Govan had within its boundaries two thriving shipbuilding and engineering companies. On the south bank of the River Clyde, immediately opposite A. & J. Inglis, was the site of Harland Wolff, - illustrated above. Harland's acquired the shipyard on 4th April 1912, from the London and Glasgow Shipbuilding and Engineering Company who had operated the site from 1864.

To the west of Harlands, on the south bank of the River Clyde, was the Fairfield Shipbuilding and Engineering Company Limited, founded in 1864 by Randolf and Elder. Initially Randolf and Elder entered shipbuilding in 1885 by purchasing the shipyard known as the "Old Yard". However, some 5 years after purchase, with business steadily expanding, they moved to the more extensive premises at Fairfield. At the new works, John Elder laid out, with forethought, a shipyard to meet the requirements of the future - a fact which his successors have not failed to appreciate.

The layout of the Fairfield Shipyard which is the sole remaining merchant shipyard on the Upper Reaches of the Clyde and is illustrated in figure 1.3.

FAIRFIELD'S YARD LAYOUT



SOURCE: *Fairfield (1908)*

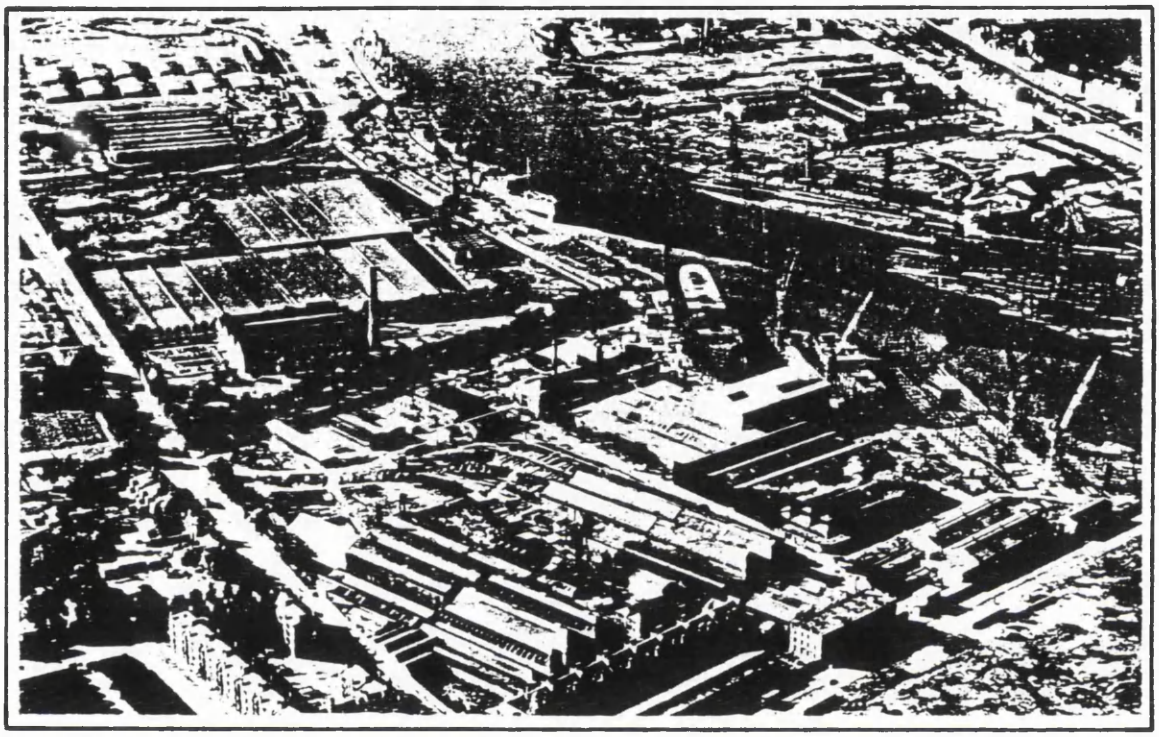
Figure 1.3

The shipyard was initially established under the management of William Pearce. Business at what was then John Elder & Co., went steadily forward and by 1871 the yard had added facilities for the construction of engines and boilerwork. In 1887 the Company changed its name to Fairfield Shipbuilding and Engineering Company. Fairfield made shipbuilding history and helped establish the reputation of Clyde built ships, in the international market place, when the sister ships "Camporia" and Lucanic", built in 1893, became the fastest vessels of their time on the Atlantic Route.

Located on the south bank of the River Clyde, to the west of the Fairfield shipyard, in the Linthouse district of Glasgow, stood the shipyard known as Alexander Stephen and Son.

This shipyard was set up in 1869 after Alexander Stephen purchased the Linthouse Estate. Stephen was no stranger to shipbuilding, or indeed the River Clyde, when he set up business at Linthouse. He had previously leased and traded for a shipyard at Kelvinhaugh. The layout of the Stephen shipyard is illustrated in figure 1.4.

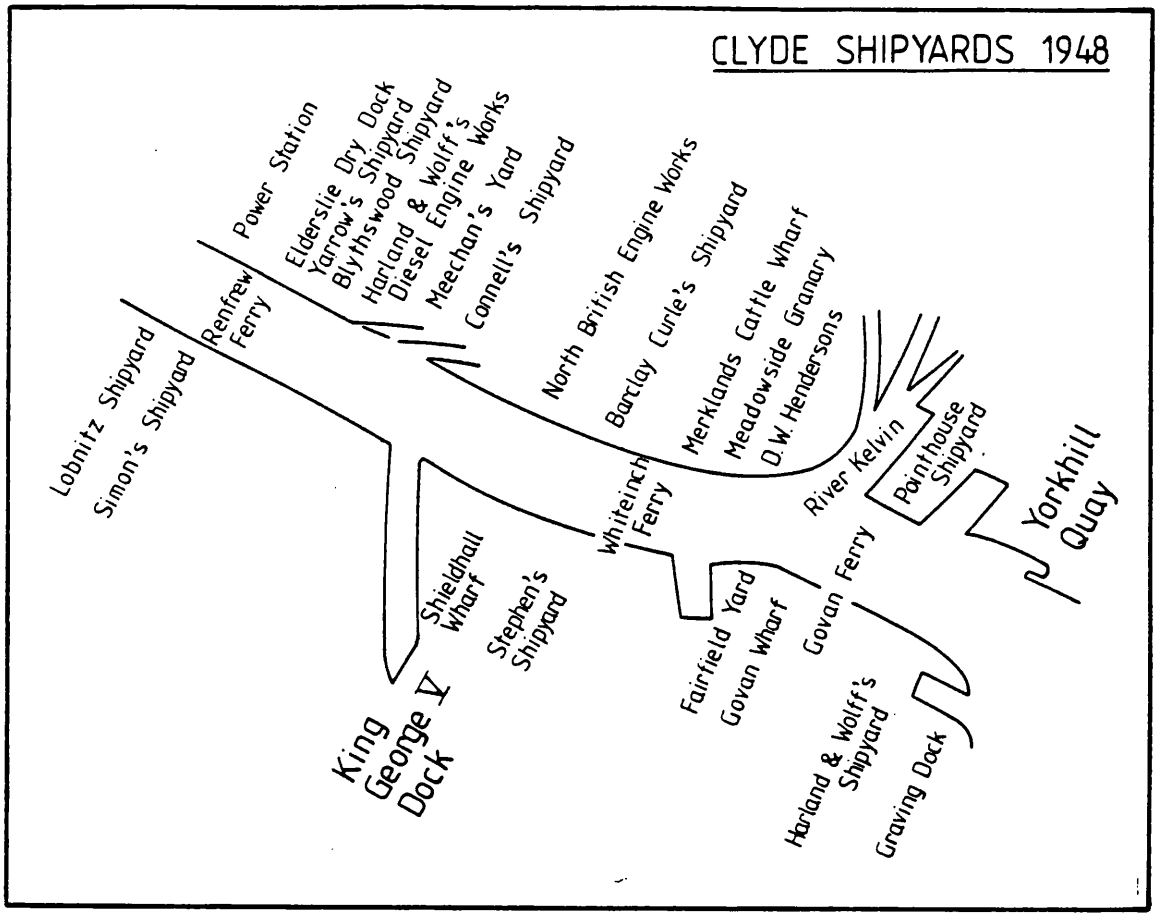
LINTHOUSE YARD LAYOUT



SOURCE: *Carvel (1951)*

Figure 1.4

In the Whiteinch district of Glasgow was, without doubt, one of the oldest shipbuilding companies on the Clyde. Located on the north bank of the river and occupying one of the most historical shipbuilding sites on the river. The location of Barclay Curle and Alexander Stephen is illustrated in figure 1.5.



SOURCE: *Shields (1949)*

Figure 1.5

To the west of the Barclay & Curle shipyard at Whiteinch, was a very extensive engineering works known as the North British Engine Works, where marine engines were built for ships constructed by a number of shipbuilders on the Clyde. The engine works had a wharf where the installation of propelling machinery could be carried out.

The Scotstoun district of Glasgow was well served by the shipbuilding industry in the late 1940's. No fewer than four of the Upper Clyde Shipbuilders were resident within its boundaries. To the west of the North British Engine Works, stood the Charles Connell and Coy. shipbuilders. The Scotstoun yard was founded in 1861 when Charles Connell left the Kelvinhaugh Shipyard of Alexander Stephen and Son to set up his own shipbuilding complex.

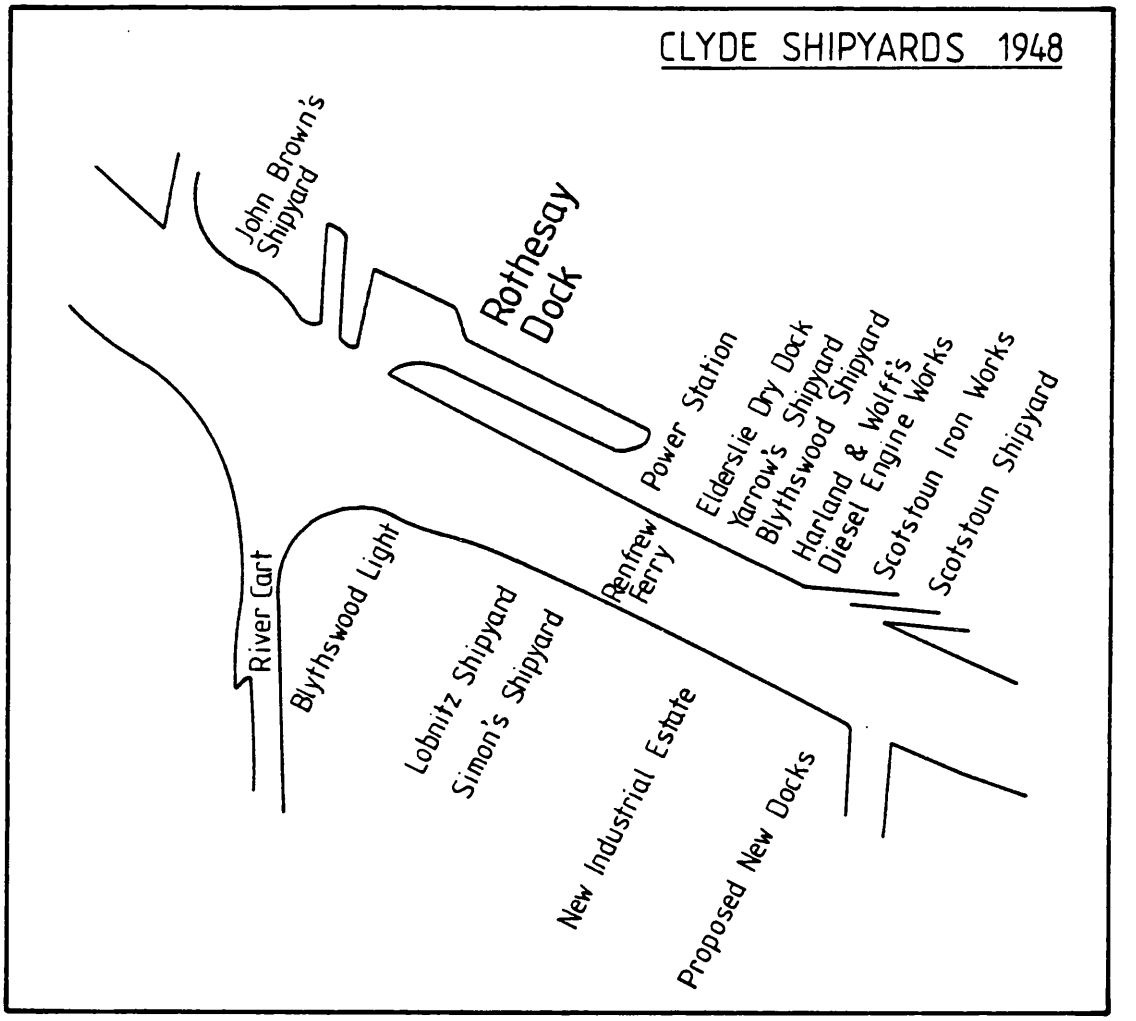
The second of the Scotstoun's shipbuilders was the Scotstoun Iron Works which was better known as Meechan's Limited and was located to the west of the Charles Connell Shipyard. Meechan's were specialists in the building of ships lifeboats, a function, which, before the arrival of the larger sized passenger ships, was, for many years, carried out by a department of the larger shipbuilders All types of lifeboats were built at the yard, some with motor power and others without. Further down river was the ordnance works of Harland and Wolff and to the west of that stood the Blythswood shipyard. Though well known in the 1940's, Blythswood was a comparatively young shipyard. Founded on 16th October 1919.

Next door to Blythswood, as illustrated in figure 1.5, stood Scotstoun's fourth and largest shipyard, the Yarrow Shipbuilding and Engineering Company. The sole surviving naval yard on the Upper Clyde and, who with the Kvaerner yard, are the only shipbuilding operation on the upper reaches of the Clyde in the 1990's. Founded at Poplar on the River Thames by Alfred Yarrow, the shipbuilders became famous for their admiralty work and moved to the River Clyde in 1907. To the west of Yarrows was the largest ship repair facility in Scotland and possibly the largest in Britian. Known as the Elderslie Dry Dock, the site was initially opened in 1904 by Messrs. Shearer and Coy. and purchased by Barclay Curle and Coy. in 1911.

In the Town of Renfrew, on the south bank of the River Clyde, and 5 miles to the west of Glasgow, stood two of the Clyde's specialist shipbuilders. The site of the first of these shipyards, Lobnitz and Coy., was initially developed in 1847 by James Henderson and Son.

Next door to Lobnitz was the second of Renfrew's shipyards, Messrs. William Simons who moved to the site in 1860. Simons had previously established themselves as shipbuilders in 1812 on the lower reaches of the River Clyde at Greenock. From Greenock, Simons moved to Canada before finally settling at Renfrew.

Across the river, on its north bank, in the town of Clydebank, stood the John Brown's Shipbuilders, illustrated in figure 1.6 below.

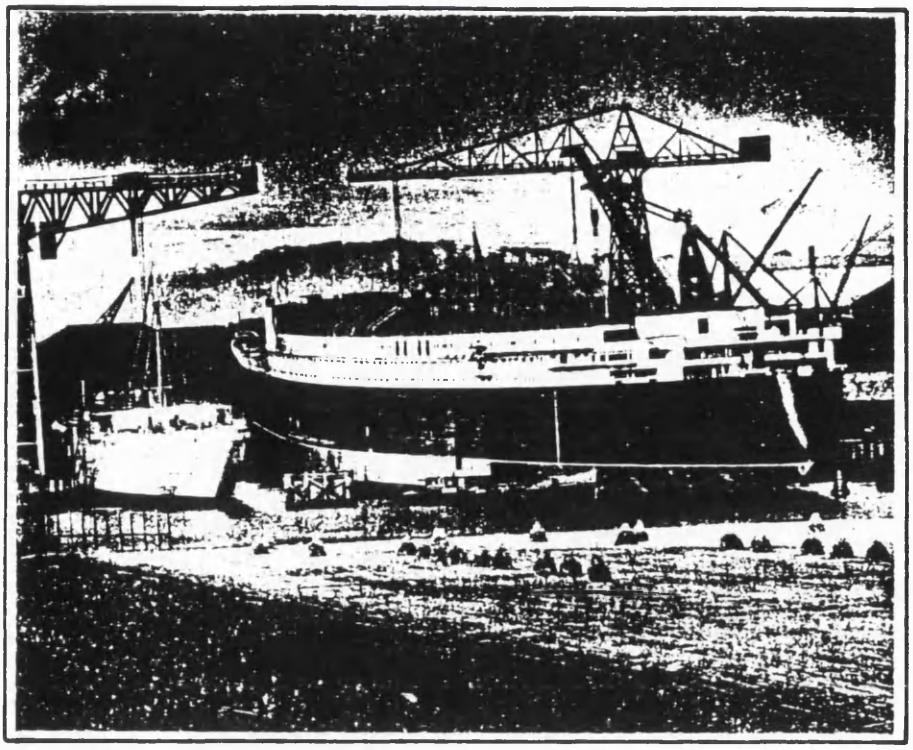


SOURCE: *Shields (1949)*

Figure 1.6

This shipyard was originally developed in 1870 by brothers James and George Thomson. Two important dates in the history of Clydebank were associated with the launching of the Queen Mary in September 1934 and the Queen Elizabeth in September 1937. The fitting out of one of the ships is illustrated in figure 1.7.

"QUEEN ELIZABETH"



SOURCE: *Shields (1949)*

Figure 1.7

The Upper Clyde shipbuilding industry, and its thirteen shipyards, were thriving towards the end of the 1940's. They provided around 45,000 employment opportunities direct, and almost three times that number of jobs indirectly, in industries associated with shipbuilding. Moreover, nationally, the shipbuilding industry was providing 290,000 direct jobs and three times that number in industries associated with building ships.

It can be concluded, therefore, that:-

a) The shipbuilding industry on the Upper Clyde consisted of 13 shipyards. These shipyards were located in the eight District communities between the Broomielaw to Old Kilpatrick.

b) The shipyards provided 45,000 direct jobs and a substantial number of indirect jobs. Consequently, shipbuilding became a leading sector in the economy of the communities.

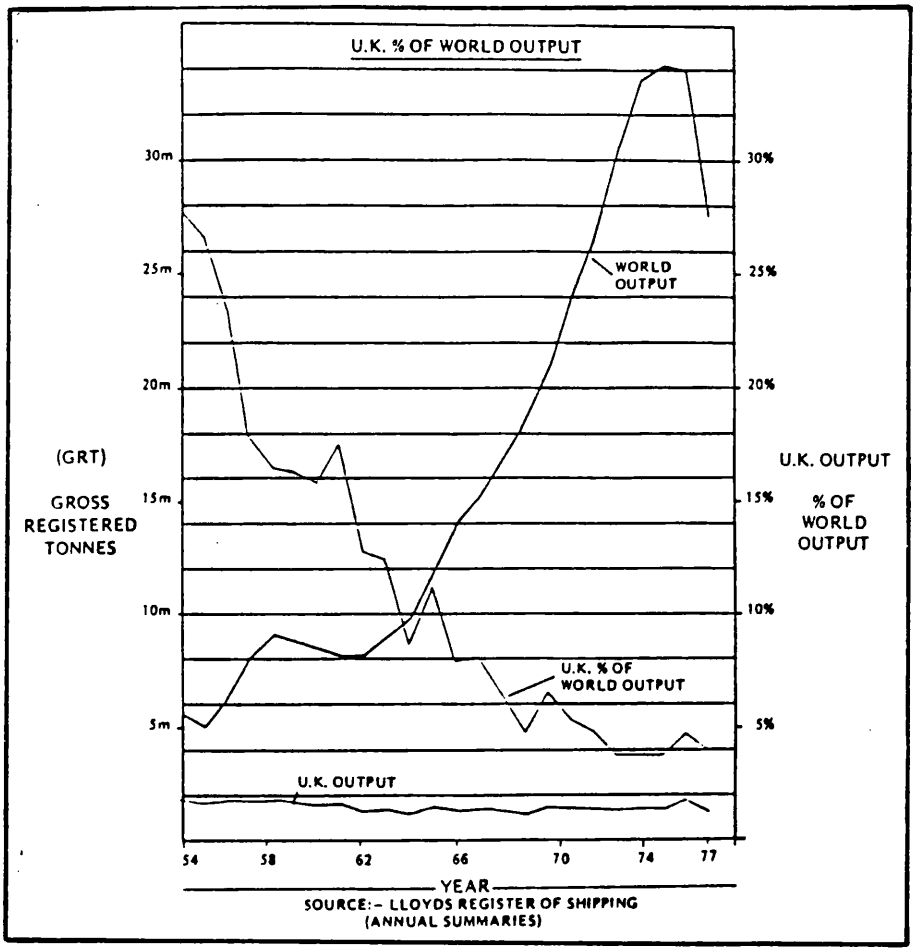
The shipbuilding industry, therefore, became a leading sector in the economy of the shipbuilding communities by providing the main source of employment.

3. SHIPYARD CLOSURES

The Upper Clyde shibpuilding industry was, as indicated previously, at its peak in the late 1940's. The thirteen shipyards were working 'flat out' to refurbish the shipping fleet lost during the second world war. This Clydeside shipbuilding 'boom', however, was not to last, and within a decade the industry was in decline.

Ironically, the Clydeside decline took place at a time when the international shipbuilding market, in terms of world output, was on the increase - illustrated in figure 1.8. The decline of the shipbuilding industry was not confined to the Clyde based shipyards. There had been no expansion generally in the United Kingdom shipbuilding capacity to meet the increased world demand and the industry steadily lost its share of the market to the rest of the world. While the output of the United Kingdom shipbuilders, in ship tonnage, had remained fairly constant at around 1,300,000 registered tonnes, the world output increased from 4,700,000 tonnes in 1954 to around 40,000,000 tonnes by 1974. The United Kingdom's share of the market fell, therefore, from 42.79% in 1954 to 3.49% in 1975.

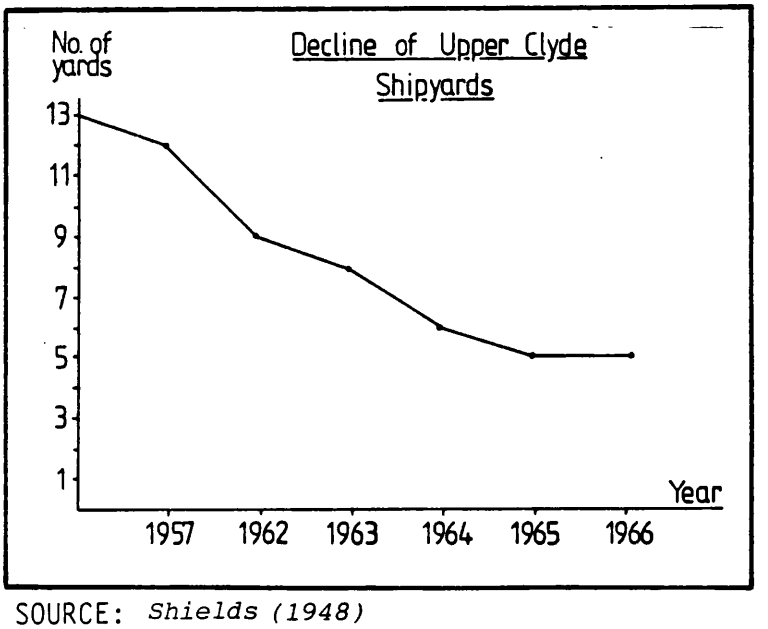
A consequence of this loss of market share was, in some cases, shipyard closures and in others amalgamations, as an alternative to closure. The effects of the closures, on the Upper Clyde shipbuilding industry, were devastating, both to the industry, and to the communities they served.



SOURCE: *Lloyds (1978)*

Figure 1.8

By 1966, only 5 of the 13 shipyards who operated in the late 1940's continued to trade and the once thriving industry entered a serious stage of decline, as illustrated in figure 1.9.



SOURCE: *Shields (1948)*

Figure 1.9

This decline started in 1957 when the two Renfrew yards, famous for building dredgers, amalgamated to become Simon & Lobnitz. Five years later, in 1962, the close of D. & W. Henderson, A. & J. Inglis, and Harland & Wolff were major blows to the communities of Partick and Govan, but worse was to follow. Renfrew lost its amalgamated shipyard of Simon & Lobnitz in 1963 and the Scotstoun district suffered the loss of two of its shipyards when firstly, Blythswood and then Meechans closed their doors in 1964. A further blow to the industry came when the giant Barclay Curle shipbuilding complex in Whiteinch closed in 1966.

Concern about the serious decline in the shipbuilding industry, on the upper reaches of the Clyde and throughout the United Kingdom, prompted the Government to set up the Shipbuilding Inquiry Committee under the chairmanship of Mr. A.R.M. Geddes. Its terms of reference were:-

> "To examine the shipbuilding and marine engine industries and to establish what changes were necessary in organisation, in the methods of production and any other factors affecting the costs, to make them competitive in the world markets."

The committee made recommendations on actions to be taken by the shipbuilding employers, trade unions, and Government, to bring about changes. Their findings were published in 1966 under the title of the "Shipbuilding Inquiry Committee 1965-66 Report", popularly known as the Geddes Report.

The main recommendation was the rationalisation of U.K. shipbuilding into four big and compact groups. One group was set up on the Upper Clyde, and brought about the amalgamation of shipyards, John Brown, Yarrow, Charles Connell, Alexander Stephen and Fairfield, to form Upper Clyde Shipbuilders Limited. By this time Fairfield was the subject of an important industrial experiment, known as the 'Fairfield Experiment', the details of which will be discussed later in this work.

The new shipbuilding group was set up in 1968, but, by 1971, Yarrow withdrew from the consortium and re-established itself as an independent naval yard. One year later the consortium collapsed.

Fairfield, which had, by 1971, incorporated Alexander Stephen's into its complex, merged with Charles Connell's to become a new Company known as Govan Shipbuilders Limited. John Brown's the remaining member of the ill-fated U.C.S. consortium, was taken over by the oil rig builders Marathon (U.K.) Limited.

Accordingly, the consequences of the decline of the once thriving Upper Clyde shipbuilding industry were:-

a) A reduction in the number of shipyards from thirteen in the later 1940's to two by 1971.

b) Two remaining shipyards - the naval yard of Yarrows, and the merchant shipbuilders of Govan.

c) A new Govan Shipbuilders Limited which had, within its complex, the shipyards of Fairfield, Connell's and Stephen's.

The decline also had catastrophic consequences for the Upper Clyde shipbuilding communities, with the number of direct employment opportunities reduced from 45,000 in the late 1940's to around 9,000 in 1971, while jobs in industry, associated with building ships, declined from 135,000 to 27,000.

4. REASONS FOR DECLINE

There have been various reasons put forward to explain the decline of the shipbuilding industry. Some of the reasons have been put forward by individuals concerned about the future competitiveness of the industry.

One such individual who anticipated the industry's decline when he expressed his concern about the shipbuilding industry's ability to compete in the international market place. He was quoted as having said:-

> "The peculiarly restrictive nature of British as opposed to foreign shipyard labour conditions has, in some instances, nullified serious attempts to raise the standards of shipbuilding costs and efficiency. As a consequence, the ability of British shipbuilders to compete successfully in foreign markets has been jeopardised." (Ayre 1939 Page Ref.113).

Ayres, therefore, had the view that the industry's restrictive approach to manpower utilisation and flexibility adversly affected its ability to compete in the international market place. Ayres was, therefore, indicating that British shipbuilding industry's attempts to reduce the costs of its ships were being hampered by the age old problems of restrictive working practices, demarcation and over manning. In effect, the mechanisms which the shipyard workers were using to protect their jobs were placing the industry in an uncompetitive situation and thus placing jobs at risk.

A Government inspired report, "The Commission of Industrial Relations", chaired by George Woodcock, and set up in 1971, was considered highly relevant and instructive, in that, it assessed the industry's progress in productive bargaining and consultation. It also looked at developments in personnel functions and union organisation. Moreover, it examined the industry's record of disputes and assessed the contributions made nationally by procedural and demarcation agreements.

> "We are struck by the comparative narrowness of the area subject to joint determination by negotiation and consultation and to the wide area of common concern that are the subject to independent control by one side or another." (Woodcock 1971 Page Ref.140).

He expands on these comments by indicating that his committee considered this approach to industrial relations was a major factor of the industry's decline. He pointed out that both sides could improve industrial relations and achieve more of what they wanted by extending negotiations and consultations into the areas which were controlled independently.

Interwoven with the prevalence of this independent or individual action was what Woodcock termed as 'sectionalisation'. This was simply the extent by which action was confined to an individual union or work group. This sectionalisation had its roots in a variety of factors, including job specialisation, union organisation and economic pressures. The report, therefore, identified shipbuilding's poor approach to industrial relations as a major obstacle to the industry's performance. This poor approach manifesting itself in the areas of business associated with the effective use of manpower and demarcation issues.

A further significant report, commissioned by the Department of Trade and Industry, and produced by the consultancy firm of Booz, Allan and Hamilton International B.V, also put forward reasons for the industry's decline. The report 'British Shipbuilders 1972', published in 1973, recognised that the performance of the United Kingdom's shipbuilding industry had not been impressive and the future outlook appeared bleak. It also recognised, that following Geddes (1966), funds had been provided for the restructuring of shipbuilding, but these funds were short term measures and that for the longer term, a more positive strategy was required.

The report highlighted a number of major problems facing shipbuilding, and indeed contributed to the industry's decline. These included a shortage of management ability, particularly in support functions, such as, personnel and labour relations. The industry's failure to plan adequately at both strategic and detail level. It also highlighted management's lack of close control over Company activities.

The Booz Allan Report added to the views already put forward from the decline and, perhaps, help explain the industrys poor approach to industrial relations. It highlighted a shortage of managerial competence, particularly in labour relations, as a principal reason for the industrys decline.

Castle (1988) views on the decline of the shipbuilding industry were restricted to the Clyde based shipyards. He suggested that the main reasons for the decline were:-

a) A reluctance to invest in new plant and equipment.

b) Competitors adopting new mass production techniques.

c) Misjudgement of market needs.

d) Fixed price contracts.

He supported his view by suggesting that the Clyde shipyards failed to cash in on the post 1945 shipbuilding boom. He pointed out that there was a marked reluctance by the shipbuilders, of Clydeside, to invest in new plant and equipment during their boom periods. In contrast to this, competitors in Japan, West Germany and Scandinavia, did invest and, as a result, adopted new mass production techniques to ensure that they gained a market share of what had been hitherto a British dominated market.

He also suggested the misjudgement of the market needs, as a critical factor of the industrys decline. On this Castle, was particularly critical. He stressed that even when the Clyde based shipyards realised that the shipbuilding boom in the tanker market was to be sustained, they continued to:-

a) Build liners when it became apparent that the future of long distance travel lay with air transport.

b) Built dredgers when up-river terminals were closing in favour of deep water ports.

c) Built ferries when roads, bridges and tunnels, were reducing the dependence on these.

Castle (1988) final view was that the Clyde shipyards were making hugh losses as a result of fixed priced contracts, poor labour relations, rising material costs, and in some cases, a reluctance to accept new technology.

Accordingly, can be concluded that amongst the factors associated with the decline of the Upper Clyde shipbuilding industry were:-

a) Poor approach to industrial relations, typified by the narrowness of joint consultation and negotiations on manpower issues.

b) Sectionalisation, which had its roots in union organisation and craft specialisation, and which restricted the effective use of manpower.

c) Low productivity and high cost due to restrictive working practices and the ineffective use of shipyard resources.

d) Shortage of management ability, particularly in support functions such as personnel and industrial relations.

e) Lack of management control of Company activities and a failure to adequately plan at both strategic and detail level.

f) Reluctance to invest in new plant and equipment at a time when competitors were adopting new mass production techniques.

g) Misjudgment of the market needs, insofar as the various shipyards continued to build specialist ships, when the tanker market was buoyant.

h) Fixed prices and unreliability of delivery dates.

Perhaps, however, the most significant factors were the industrys poor approach to industrial relations which restricted the shipyard ability to utilise its manpower effectively and, as such, was a major factor of the industrys low productivity and uncompetitiveness.

PART TWO

The Theories Related to Manpower Utilisation

PREFACE

Part two provides a 'conceptual framework' and is devoted to the theories related to manpower utilisation. In particular, part two is concerned with the theories associated with job specialisation, the associated problems of co-ordination, flexible working and the concept of the flexible firm, all of which have a direct bearing on manpower utilisation and management in the Govan Shipyard during its long and distinguished history.

The aim is, therefore, to put into a meaningful format:-

> *Firstly - The theories associated with the division of labour and job specialisation and, in particular, the doctrines of Adam Smith. This part of the work, detailed in Chapter 2, also examines the negative side of Adam Smith's doctrines and the challenges put forward to this concept of manpower utilisation.*
>
> *Secondly - The alternatives to job specialisation and, in particular, the theories associated to flexible working and the concept of the flexible firm. This part of the work is illustrated in Chapter 3.*

In a shipbuilding context the concept of job specialisation was synonymous with the craft and trade structures operated as the principal means of manpower utilisation for over 100 years, while the flexible working and the concept of the flexible firm had relevance to the manpower utilisation approaches adopted during the 'Fairfield Experiment' and British Shipbuilders.

CHAPTER 2: JOB SPECIALISATION

1. INTRODUCTION

We are, during the course of this work, going to be looking at changing practices and strategies for manpower utilisation in a single shipyard from the 1950/60's to the beginning of the 1990's. This investigation will reveal, at different phases, four distinct approaches to manpower utilisation strategies and their associated industrial relations processes. These could be summarised as:-

Model One - the classical approach where manpower utilisation strategy was based on the principle of dividing labour and characterised by the concept of job specialisation and manpower agreement that were concluded on the basis of a national bargaining process.

Model Two - the scientific management approach where the strategy was to conclude local agreements between management and the workforce that were characterised by the introduction of limited forms of functional flexibility and industrial engineering techniques.

Model Three - the flexible working approach where the strategy was based on the concept of the 'Flexible Firm' and characterised by the move to conclude national agreements to enable the introduction of function and numerical forms of flexible working.

Model Four - the new realism approach where the strategy was to recognise that manhours were the principal component of shipyard competitiveness and where local agreements were concluded between management and the shipyard workers that increased manpower effectiveness.

The purpose of the investigation will be to provide an understanding that will enable us to interpret the difference between the models and the reasons for the change. In order to achieve this there needs to be some conceptual framework; some prerhetorical basis, which will inform the investigation. This is the task of the following two chapters.

A review of literature does not suggest any simple approach which will readily be appropriate to the specific case; thus what we are attempting here is to develop a selective, pragmatic framework focused on the tensions between specialisation and flexibility which are, we would argue, at the heart of the problems of manpower strategy for shipbuilding.

In the next two chapters, we review some of the relevant literature on specialisation and flexibility allied to an analysis of organisation or managerial requirements. This will provide a conceptual tool box, which we believe will permit a better understanding of the successive phases of change in the case study shipyard depicted as four separate models of manpower utilisation each with its own identifiable characteristics.

2. DIVISION OF LABOUR

The shipbuilding industry was an offspring of the Industrial Revolution. In general terms, the processes associated with the Industrial Revolution had begun spontaneously, not in response to any systematic doctrine.

The doctrine was provided by Adam Smith who, in 1776, at a time when the Fairfield shipyard was still a green field, published his "Inquiry into the Nature and Causes of the Wealth of Nations".

Essentially, Smith's doctrine had two apparent pillars:-

> Firstly, enterprise should be free in that individuals and organisations should be left free to deal in open markets. This was in the belief that the "invisible hand" of the market place would ensure that in following their own self interest, they would necessarily work to the public good.
>
> Secondly, labour or manpower should be divided because the process of division makes tasks simpler, easier to learn and more speedily carried out. Through division, the output of a number of people in a given time could be immensely multiplied, and this was an important contribution to economic growth.

To illustrate this point Smith cited an example from a very trifling manufacturer; but one in which the division of labour had been taken notice of - the trade of the pin-maker.

> "A worker not educated to this business (which the division of labour has rendered a distinct trade), nor acquainted with the use of machinery employed in it (to the invention of which the same division of labour has probably given occasion), could scarce, perhaps, with his utmost industry, make one pin in a day and certainly could not make twenty. But in the way which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades." (Smith 1776 Page Ref.4).

More precisely, the business of making a pin was divided into about eighteen distinct operations. One man draws out the wire, another straightens it, a third cuts it and a fourth points it, a fifth grinds it and so on. In some manufacturers, all eighteen operations were performed by different operators while in others the same man performed two or three operations.

In the particular example cited by Smith, the manufacturer employed ten men. Some performed two or three distinct operations, and collectively the ten produced twelve pounds or forty eight thousand pins in a day. Had the ten employees wrought separately and independently without any of them having been educated in this peculiar business, they would not have produced twenty pins each in a day. They would certainly not have produced the four thousand eight hundred pins a day they were capable of as a consequence of a proper division and combination of their different operations.

With Adam Smith the division of labour principles was certainly a key factor in economic progress. He had the view that in every art or manufacture, the effects of the division of labour was similar, in that its introduction gave rise to a proportional increase in labour productivity. However, it is important to recognise that Smith accepted limitations on the division of labour, stemming from the extent of the market. In other words, how far specialisation was profitably to be carried would depend on the market size. An important implication to this is that in a contracting market, previously achieved degrees of specialisation may no longer be feasible. That, as we shall see later, is important from the recent history of the shipbuilding industry.

The process of trade specialisation was not a phenomenon restricted to shipbuilding, nor indeed, to this country. It was generally carried furthest in countries which enjoyed the highest degree of industrial improvement. In this context, Smith's doctrines were accepted in the liberal economies of the west - the economies now regarded as developed. Assisted by advances in technology, and the release of more mechanical energy to support muscle power, affluence increased and as a consequence, the doctrines were unchallenged. This illustrated in Figure 2.1.

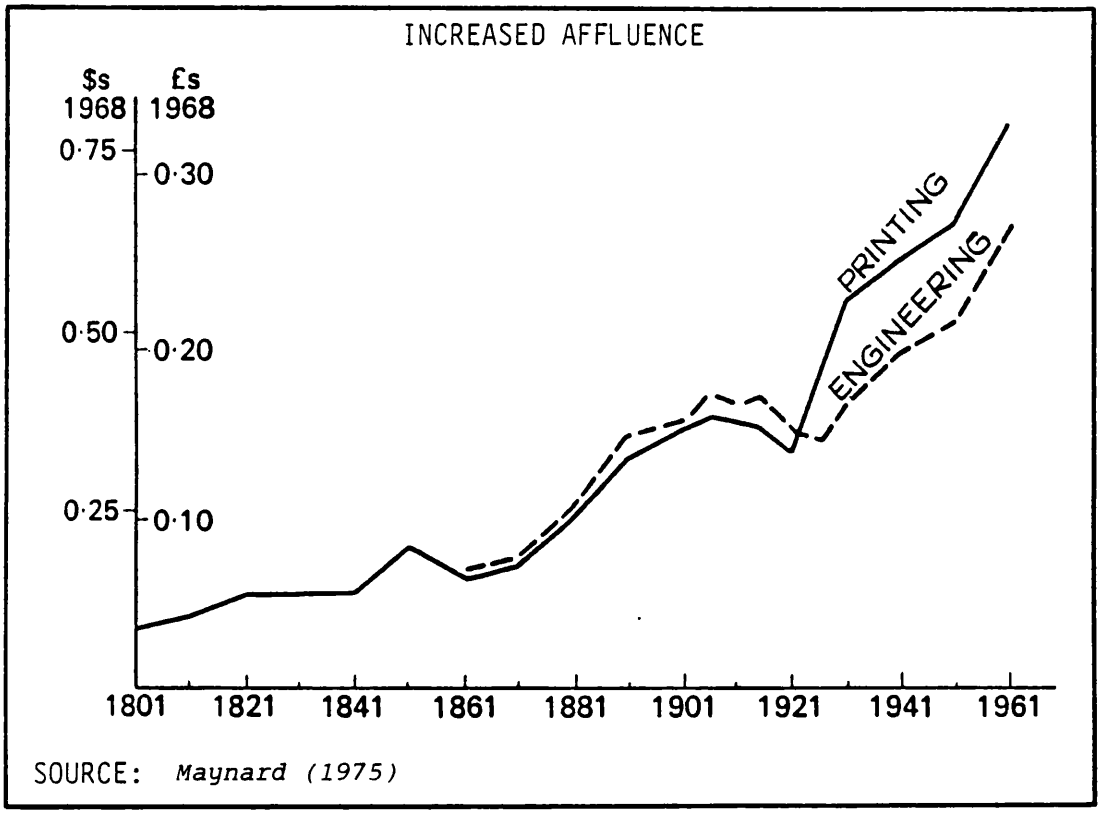


Figure 2.1

This increased affluence can be demonstrated in two industries which applied the principles, both in the United Kingdom and the International Market Place. The graph illustrates the fruits of the Industrial Revolution in terms of the purchasing power of the pre-tax basic wage of a skilled man in the printing (solid line) and engineering (dotted line) industries of the United Kingdom. The graph was compiled under severe limitations insofar as cost of living indices only began to be compiled in 1880.

Before then, calculations of this nature were based on the price of bread. Even using this measure, long-term comparisons were difficult due to the massive increase in consumer choice. However, not withstanding these limitations, decade on decade changes are reasonably comparable. The graph clearly illustrates that the purchasing power of the skilled worker, based on one hour's work, had significantly increased between 1801 and 1961.

Smith may have argued that this increase in purchasing power was made possible by a range of factors, one of which was his doctrines and, in particular, the division of labour. Indeed, even although marxists, churchmen and humanists spoke out against the unbridled capitalist aspects of Smith's doctrines, nobody challenged the belief that the way to increase the wealth of the whole community, and increase productivity within industry, was through even more detailed division of labour. This belief was based on the underlying principle that jobs should be segmented as far as possible and that the way to increase productivity was to make tasks simple and therefore more speedily carried out.

3. JOB SPECIALISATION

The principle of job specialisation gained new life in the early years of the twentieth century when methods of Industrial Engineering were introduced to Industry. Taylor (1911), probably best known as the founder of work study, had the view that maximisation of specialisation was the key to manpower and organisational efficiency. In fact, he regarded work study as scientific management.

His approach, distinguished by the organisational theorists as the classical approach, was founded on four basic principles:-

> Firstly, that true science of work should be developed. Observations and measurement should be used to discover what constitutes a fair day's work.
>
> Secondly, men should be scientifically selected and trained to work for which they are best suited.
>
> Thirdly, the science of work and the scientific selection and training of men need to be integrated, so that the employee has the opportunity of earning a high rate of pay, while the employer obtains a low cost of production.
>
> Fourthly, there must be constant and willing co-operation between employer and employees to achieve the benefits of scientific management.

Taylor's scientific observations and measurement of work, led him to believe that greater efficiency could be achieved by dividing work into component parts and training men to very high performance levels on individual parts. This type of scientific observation was a major feature of the manpower utilisation strategy to be examined as model two.

The practitioners of Taylor's time and motion studies the Industrial Engineers, were not always regarded as the most popular members of the industrial society and were often looked upon with suspicion by their colleagues in industry. Indeed during the 1940's and 1950's that suspicion turned to opposition from the trade union movement. The point at issue was not that industrial engineering brought about improved productivity, after all, the results were there as to the merits of the techniques involved. The point at issue was who should benefit from this increase in productivity.

In other words, there would be no argument about using the techniques to produce the biggest cake; the argument would be about how the cake would be shared out afterwards. Although, to be fair, some were concerned with how the cake was produced in terms of the psychological costs and efforts of those subjected to work study. Thus, Industrial Engineering became closely bound up with the collective bargaining process.

It was within the setting of a local bargaining process that scientific management techniques, associated with model two, where introduced into the Govan shipyard, ironically some two decades after trade union suspicion had turned to opposition against such techniques.

Specialisation was, therefore, a key factor in Taylor's contribution to manpower effectiveness from an organisational point of view and was a major feature of model two referred to as the 'Scientific Management Approach' but it was not the only one. Others included work measurement, selection, training and co-operation. However, all of this tends to concentrate the discussion at operator level, or in the case of shipbuilding, at craft level, but the concept of maximising specialisation is about much more than this and at a higher level, co-ordination, decision making and supervision, technical support and material supplies, figure prominently.

> "Specialisation brings both a greater degree of efficiency and a greater need for co-ordination. Decisions must be centralised in one command, if company wide co-ordination is to be maintained. There must be man-to-man responsibility and no supervisor should be asked to control the work of more men than he can effectively supervise. The strength of the organisation lies in its ability, lack of ambiguity and rigidity." (Barnes 1969 Page Ref.24).

Specialisation to the organisational theorists, therefore, makes full use of standardisation and uniformity of company wide practices in areas such as union negotiation, wage structures, and outside contracts. Moreover, the idea of central direction is embodied in the two classical concepts of unity of command and centralisation of decision making. Consequently, the organisation's strength lies in its clarity, rigidity and lack of ambiguity.

Perhaps Taylor's best known contribution to this organisational theory was in the system he called 'Functional Management'. He realised that while specialisation improves efficiency at the operator levels, it greatly expanded the duties of first line supervisors. As a solution Taylor advocated that the principle of specialisation was no less appropriate at higher levels than it was at operator level. The result was his Functional Management system, under which each supervisor had a specialist function. In shipbuilding, as will be demonstrated in manpower utilisation, model one 'The Classical Approach', this specialisation is inherent in production supervisory/management structures which are reflective of the specialist craft and trade structure.

4. DEHUMANSING EFFECTS

The Industrial Revolution, the Adam Smith doctrines and specialisation might well have increased industrial output and efficiency but not everyone appeared to benefit from it, or indeed, the Industrial Revolution itself.

> "The population is crowded into one dense mass, in cottages separated by narrow, unpaved and almost pestilential streets, in an atmosphere loaded with smoke and exhalations of a large manufacturing city.

> The operators are congregated in rooms and workshops during twelve hours in a day, in an enervating heated atmosphere, which is frequently loaded with dust or filaments of cotton, or impure from constant respiration, or from other causes. They are engaged in an employment which absorbs their attention, and unremittingly employs their physical energies. They are drudges who watch the movements and assist the operations of a mighty, material force, which toils with an energy ever unconscious of fatigue." (Kay 1830 page ref. 2).

Kay, therefore, perceived that there was a negative side to the industrial revolution and to the Smith doctrines; the population was concentrated into industrial based areas where the quality of life was less favourable and where the environment was polluted. They worked long hours in unhealthy conditions doing menial tasks.

For example, to service the shipyards, the population of Govan, according to Campbell (1988), increased from 9058 to 93,058 in little more than 50 years. This was as a direct result of an influx of what was termed as 'immigrant workers'. These workers moved from the rural communities of Ireland and the highlands of Scotland into houses crowded around the shipyards in a smoke populated atmosphere. The immigrants worked long hours and were often engaged in unskilled employment which employed their physical energies rather than their intellect. In Kay's words they were drudges who watch the movements and assisted operations, of a mighty, material force, which toils with an energy ever unconscious of fatigue.

On the wider front, others, critical of Smith's doctrines, bemoaned the division of labour and job specialisation as dehumanising industrial society, pointing out when work is soulless, life stifles and interest and commitment dies.

Perhaps the most critical views on the negative or dehumanising side of Smith's doctrines and, in particular, the division of labour, were expressed in a proposition put forward by Herzberg (1959).

No matter how theoretically efficient the division of labour was, in the end it was self-defeating. Simplification of tasks to lessen learning problems; fragmentation of work to enable it to be carried out more speedily; close specification of methods to ensure that operations were carried out in the most efficient way; the end result of all of these, according to Herzberg, may not be to segment the job, but to fragment it. Consequently, this produces jobs that are inherently so meaningless and alienating that they destroy any commitment of the worker to effectiveness of his work.

5. HUMAN RELATIONS APPROACH

The approach to organisation, distinguished by the theorist as the Classical Approach and, in which the division of labour and job specialisation was a major feature of manpower utilisation, pre-supposes the availability of materials and, although people are part of the organisational requirements, their individual needs tend to have low priority. This approach recognises only financial incentives, physical, and occasionally, the security needs of individuals and was the typical approach adopted by shipbuilders.

It is, however, not the only approach to organisation that is recognised as an important influence on manpower utilisation. The contrasting Human Relations Approach, emphasises the need to take full account of people when designing industrial work places. Part of the design process recognising the conditions under which people are more likely to co-operate in achieving organisational objectives.

The starting point being the realisation that individuals bring their own needs and values to the work place. These are categorised as physical needs, security, self fulfilment and the achievement of potential.

The order of the categories is significant, as the Human Relations approach is based on the assumption that people try to satisfy their needs in this order of priority. The more the needs for physical well-being and security are satisfied, the more the need for self-fulfilment and achievement of potential is frustrated in the Classical approach by standards, uniformity, specialisation and over-definition. The Human Relations approach is, therefore, an attitude rather than a set of principles of organisation, a warning that people are not machines and cannot be treated as such. Their needs and values have to be taken into account and integrated with the needs and values of the organisational objectives.

Support for this approach is found in research into motivation and general behaviour of people at the work place, conducted by American social psychologist Douglas McGregor. His work, which he calls theory 'X' and theory 'Y', distinguishes between two basic theories and human behaviour at work.

Theory 'X' which we would argue was the prevailing work ethic associated with the shipbuilders manpower utilisation model one and reflected by management and reward system methods, assumes that the average worker is lazy and dislikes work; he is unambitious, awaits responsibility and prefers to be led; he is selfish, having no concern for organisational objectives. He must, therefore, be controlled, coerced and directed if the organisational objectives are to be achieved. This idea of behaviour had gained strength and, according to McGregor explains many of the observable features of human behaviour, but there are many facts which it did not explain. For example, why was it that higher productivity could be found in units where control and coercion was minimal?

McGregor's answer was Theory 'Y', which he claimed, was a more realistic explanation of human motivation and behaviour. Theory 'Y' concludes that people are not, by nature, as Theory 'X' supposes them to be, but they have become so as a result of their treatment in the work place. Behaviour at work should be no different from that displayed in society generally insofar as the average individual can seek responsibility.

McGregor's research found that people had a great resource for self-direction, commitment to problem solving and co-operative potential, most of which is completely untapped in the work place. McGregor's idea of an effective organisation, therefore, is one which has replaced direction and control with integration and co-operation.

In such an organisation, everyone affected by a decision contributes to the decision making process and people are encouraged to realise their potential. The seperate work units of the organisation are interacting and support each others functions. The ideal being achieved when everyone can identify with the organisational objectives and feel that their contribution is worthwhile.

6. ATTITUDES AND REALITY

Having considered the broader implications of the Smith doctrines previously, and accepted that they also had a negative side, there seems little doubt that generally they provided the constituents for advances in all branches of economic activity as well as economic success. In this way, the doctrines helped create the basis for successive improvements in the standard of living and were an important instrument in efforts to improve the working environment. This was particularly so of the Upper Clyde shipbuilding industry which, as discussed previously, prospered and developed to such an extent that by the 1950's it became the leading Industrial sector in the economy of the West of Scotland.

In shipbuilding, as in other sectors of industry, changes took place in the way ships should be built and the way in which manpower should be utilised. The detail of the changes will be discussed later. However, with this change came a challenge to the very principles of the division of labour by the people engaged in job specialisation and those whose concern was with increasing productivity.

> "People showed their dissatisfaction in complaints and formal grievance; in industrial disputes; in absence and in unpunctuality; in a fairly widespread lack of commitment to work; and, in a small minority or cases, in calculations that no work or intermittent work would be preferable to continuous employment of the kind offered." (Wilson 1972 page ref.7).

Managers were unhappy about workers who lacked commitment but their worries extended beyond this particular issue and included concerns about the fact that the single trade specialists lacked the skills required by modern industry, skills associated with adaptability and versatility; the type of skills which multi-skilled tradesmen had. There was also some apprehension about workers' reliability, work discipline and their poor approach to quality and lack of economic realism.

It is, of course, difficult to say exactly when the particular industrial changes described by Wilson occurred, but some of the symptoms of the change are perhaps more easier to detect. An extreme example, cited by Wilson, was industrial disputes, an activity which became more and more commonplace towards the end of the 1960's.

> "From the relatively peaceful year of 1966 onwards, there has been a considerable and fairly constant increase in total losses from industrial action in shipbuilding, although this is also true of industry as a whole." (Woodcock 1971 page ref.88).

Indeed, Woodcock's point is well founded. From 1965 to 1970 the shipbuilding industry was losing days through strikes; on average, some 5 times the National level, with only 3 industries - the docks, motor vehicles and coal mining having worse records.

The only significant difference between shipbuilding's record and elsewhere, is on issues of demarcation. Over the same period disputes on demarcation issues were three times more important in shipbuilding as compared to other industries. They accounted for roughly double the proportion of total days lost in shipbuilding than was the case in industry generally.

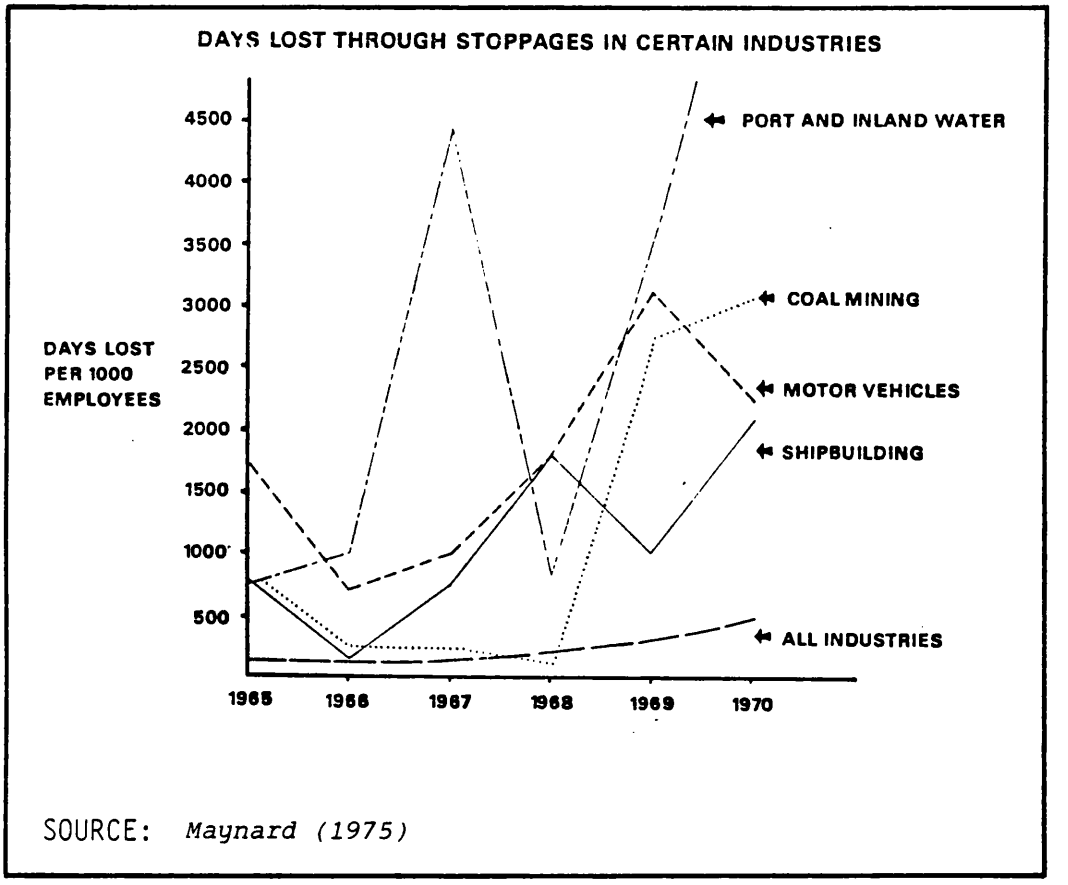


Figure 2.2

The pattern and causes of industrial disputes in shipbuilding were, according to Woodcock, roughly comparable with that experienced by all other industries, although some marginal differences can be discerned. Wages, as in industry generally, were by far the biggest cause of industrial disputes, accounting for almost two-thirds of all stoppages from 1965 to 1970 - illustrated in figure 2.2.

Strike action was used as a weapon by groups of shipyard workers who were distinguished only by the work they did, and the way in which shipbuilding labour was divided into its various trade structures, i.e. Welders, Platers, Cranemen etc. This strike weapon was used primarily to protect the group's relative position in the pay scale.

A display of industrial strength was regarded as the best way of establishing a point of view. Thus a strike by one group, to achieve an advantage, would almost certainly provoke a counter strike in defence of the wage differential. This produced what the Donavan Commission of 1968 described as "leap frogging" bringing about chaotic wage structures and a lack of control of labour costs. Using these methods, shipyard workers increased their earning powers considerably towards the end of the 1960's, as illustrated in figure 2.3.

Average weekly earnings of full time adult male manual workers and male administrative, technical and clerical employees in shipbuilding and all manufacturing industry, UK

Industry group	*April* 1964 £ s.	*October* 1965 £ s.	*October* 1968 £ s.	*October* 1969 £ s.	*October* 1970 £ s.
Shipbuilding and marine engineering:					
manual	17 10	19 16	23 19	26 3	29 12
staff	n.a.	24 0	28 3	30 18	35 6
All manufacturing industry:					
manual	18 4	20 3	23 12	25 11	28 18
staff	n.a.	25 13	30 1	32 8	36 10

Source: *Employment and Productivity Gazette*, July 1969 and *Department of Employment Gazette*, April 1971, tables 122 and 123

Figure 2.3

The table shows that the average weekly earnings of adult manual workers in shipbuilding, up until the mid 1960's, was rather lower than the average for all manufacturing industries. The position changed rapidly from the mid 1960's and the industry's average weekly wage moved above that of manufacturing generally.

Strike action was also used by the various work groups to thwart attempts to influence the way in which labour had been divided. Demarcation lines had previously been drawn around the work associated with the various work groups and any attempts to encroach was met with resistance. Consequently, the industry suffered from what became known as "who does what disputes". Management's attempts to introduce more flexible forms of working met with opposition.

The other symptoms of change cited by Wilson were the reports of increased absence and unpunctuality which were perhaps less obvious than those of industrial disputes but nonetheless equally damaging to industry generally. Figures for April 1970, according to Woodcock, indicated that in shipbuilding the percentage of employees being paid for less than their normal basic hours, for any reason, was 42%.

This was far in excess of any other industry and almost double the rate for manufacturing generally. Of that total, 10.5% was accounted for by voluntary absence and and 12% for late arrival and early finishes. This was more than double the figures for all manufacturing industries as illustrated in figure 2.4.

Full-time manual men employees paid for less than their normal basic hours, by selected industry group and reason in Great Britain, April 1970

Industry group	Percentage of total sample losing pay by reason					
	All reasons	Sickness		Voluntary Absence	Late arrival or early finish	Holidays or other approved absence
		Certified	Uncertified			
Shipbuilding and shiprepairing (National agreement group)	42·3	6·6	0·8	10·5	12·4	4·9
Mining and quarrying	31·1	12·3	0·7	12·1	1·9	3·5
Mechanical engineering	20·3	4·5	2·1	3·8	7·8	1·5
All manufacturing industry	19·6	4·5	1·6	3·9	6·2	1·8

Source: Department of Employment Gazette, February 1971, p. 142, Table 96 and information on the shipbuilding and shiprepairing industry supplied by the DE

Figure 2.4

In shipbuilding, therefore, as in other sectors of industry, there was sufficient evidence to suggest that things were changing. The symptoms described previously by Wilson were part of a change process in which those directly concerned with increasing productivity were challenging the principles of the division of labour and job specialisation.

CHAPTER:3 FLEXIBLE WORKING

1. INTRODUCTION

The single minded exploitation of the principles associated with the division of labour had, as illustrated earlier in chapter 2, become unsuitable and, in many circumstances, unprofitable. As such, those responsible for increasing productivity and industrial efficiency sought different ways of improving manpower utilisation. This prompted a move away from job specialisation to more flexible patterns of working.

> "There is nothing new about the need for change in the labour market. Change is, and always has been, the norm. More recently however, there has been a sharp edge to things. Competition sets international standards, and failure to adjust to it extracts a severe penalty. Couple that with the onward rush of technology and the much increased uncertainties of financial markets, and there is little surprise that companies are constantly seeking to do things in better ways and to adjust more readily to the changing demands of markets and customers." (Cassells 1986 page ref.iv).

The move to more flexible working patterns was, in effect, industry's response to uncompetitiveness. In shipbuilding terms the British industry had become uncompetitive. Shipyards were closing, jobs were being lost and new orders were hard to come by. New, better ways had to be introduced in order that the remaining yards, including the Govan Shipyard, could adjust to the changing market demands. Given that manpower was a principal component of shipbuilding costs, as will be illustrated in Part Four, changes to the way in which manpower was utilised were at the forefront of the thoughts of those responsible for the industry's survival and profitability.

It was against this type of backdrop that the National Economic Development Office commissioned the Institute of Manpower Studies to carry out a major study of changing working patterns and practices in four important sectors of the economy; Engineering, Food and Drink Manufacturing, Retail Distribution and Financial Services. The aim was to assess the nature, extent and underlying rationale of the changes in working patterns and practices that had been taking place, and to consider their implications for the competitiveness of British Industry.

Atkinson (1985), found that widespread changes in working practices had been introduced in the past few years to allow companies to respond more flexibly to the changing market conditions. The study identified and analysed the different forms of flexibility which had been introduced, allowing companies to fit more precisely the demand for labour to its supply.

The principal forms developed were; functional flexibility, numerical flexibility, distancing strategy and pay flexibility. We will discuss each of these, with specific regard to the shipbuilding industry, in the following sections.

2. FUNCTIONAL FLEXIBILITY

The shipbuilding industry's problems of low productivity tended to be associated with restrictive working practices, related to job specialisation and demarcation. The form of flexibility introduced to improve productivity and aimed at removing demarcation and encouraging workers to acquire further skills was termed as "Functional Flexibility" and is defined as:-

> "The ability of firms to reorganise the competence associated with jobs so that the job holder can deploy such competence across a broader range of tasks. This may involve horizontal enlargement of competence at roughly the same skill level." (Atkinson 1986 page ref.8).

It is important to recognise that, within the context of this definition, a job is defined as a collection of tasks allocated to an individual job holder. There may have been a variety of historical, organisational or technical reasons for associating certain tasks to particular jobs. This was certainly true of shipbuilding. It was, after all, the introduction of new systems of industrial organisation, over one hundred years ago, which prompted a move towards dividing the industry's manpower into specialist occupations. At that time certain tasks were allocated to particular jobs. The trade structures which resulted from this move had remained more or less intact since their inception.

As indicated previously, the shipbuilding industry's performance throughout the second half of the 1960's was adversely affected by industrial disputes. It was, moreover, acknowledged that the significant difference between the industrial relations record of shipbuilding and elsewhere was on issues of demarcation. The demarcation lines previously drawn around the tasks associated with the various shipbuilding trades were jealously guarded and any attempts at encroachment were met with opposition. Management's attempts to introduce more flexible forms of working had been, in the main, resisted, or met with token agreement with little or no change in practice.

The concept of functional flexibility, which became fashionable during the 1980's was, according to Edwards, particularly relevant to the problems associated with demarcation issues.

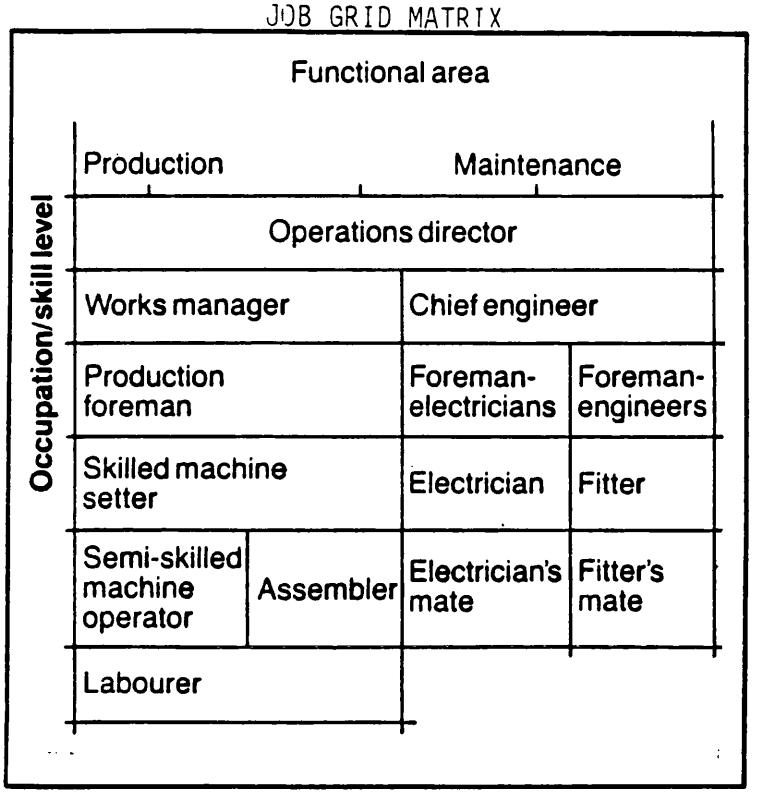
> "Task or functional flexibility embraces changes in working practices; the ending of demarcation lines so that, for example, production workers can do routine maintenance job; and the replacement of separate craft trades with one multi-skilled worker." (Edwards 1988 page ref.2).

He stressed that some form of change in working practices had been widespread and cited surveys conducted in 1983 and 1984 to support his view. These surveys indicated that 85% of responding plants had introduced significant changes in working practices over the previous three to five years. While these figures may appear to support the widespread impression that significant change had taken place in work organisation, they did not, in themselves, mean that manpower was being deployed more flexibly.

Functional flexibility was only part of the change process taking place in industry generally during the 1980's and perhaps a more accurate method of measuring the significant changes associated with functional flexibility could be gained by analysing the criteria adopted by Atkinson. His criteria were based on the principle that a job is located on a Company's organisational structure by means of a grid on matrix as illustrated in figure 3.1. over.

In the grid, the horizontal lines represent the distinction between skill and occupational level, i.e. craft, semi-skilled or unskilled. The vertical lines represent the functional area of work - i.e. production or maintenance. A job can therefore be represented on the grid by a box. Some boxes cover more than one square and not all squares will be contained in a box representing a job.

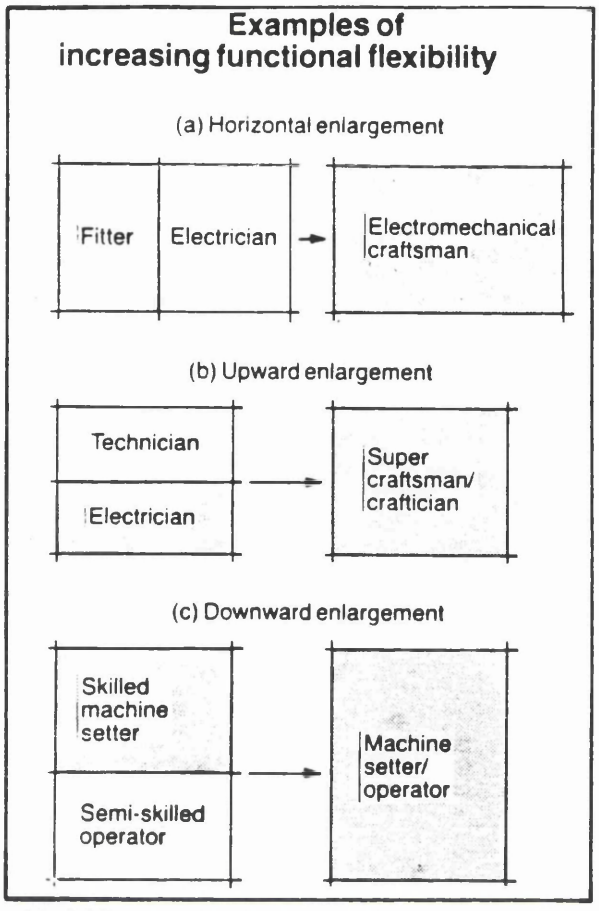
JOB GRID MATRIX



SOURCE: *Cassells (1986)*

Figure 3.1

The model, according to Atkinson (1986) is simplistic, but a useful device, firstly to distinguish between those kinds of changes which do represent functional flexibility and those which do not, and secondly, to distinguish between the various types of functional flexibility. The measurement of functional flexibility is, therefore, associated with a Company's ability to enlarge boxes in an organisational grid. This enhancement may take place in a sideways, upwards or downward direction as indicated in the examples illustrated in figure 3.2.



SOURCE: *Cassels (1986)*

Figure 3.2

The three examples differ but are representative of the various types of increased functional flexibility. Example (A) illustrates what is termed as "sideways or horizontal" enlargement of a craft job. In this example functional flexibility is increased at the same skill level by adding the tasks of an electrician to that of a fitter. The result is the multi-skilled craftsman referred to in the example as an electromechanical craftsman.

An upward enlargement of the job is cited as example (B). In this example, the electrician adds a number of high level diagnostic electric skills; previously the preserve of a technician. The increase in functional flexibility is therefore in an upward direction, with the electrician taking on the more demanding tasks of the technician.

Example (C) represents a downward enlargement of the job. In this example, a skilled machine setter no longer simply sets machines, but undertakes the semi-skilled tasks of operating the machine. This increase in functional flexibility is downward, with the skilled machine setter taking on the less demanding semi-skilled tasks of the operator.

In shipbuilding functional flexibility, as will be demonstrated in the models of manpower utilisation to be examined in Parts Three and Four, was considered as a means of breaching the strict demarcation boundries between the specialist trade structure. The changing and much more competitive demands of the shipbuilding market place, rendered these as restrictive and an obstacle to competitiveness. Platers waited on the services of welders and burners to carry out specialist tasks before they could progress fabrication work. There was, therefore, a need to horizontally enlarge the jobs of platers by adding the skills of welding and burning to that of their plating skills.

In this way, the platers would be able to progress fabrication work without the assistance of welders and burners and thus manpower utilisation and shipyard competitiveness would increase. Accordingly, the enlargement of the job content which is the key to functional flexibility was totally appropriate to the shipbuilding industry. Atkinson recognises three factors which should be noted when examining changes in functional flexibility. These could be summarised as:-

a) The extent - how far will the worker expand or deploy his skills?

b) The duration - how much is flexibility called upon, continuous, permanent, when required, exceptional, or short term?

c) Location - where in the organisation or what part of the organisation?

He also acknowledges that the main constraints on functional flexibility were usually associated with demarcation restrictions, training, and health and safety considerations.

3. NUMERICAL FLEXIBILITY

A second area of flexible working, appropriate to shipbuilding, is that of numerical flexibility which is defined as:-

> "The ability of firms to adjust the number of workers or the level of hours in line with changes in the level of demand for them." (Atkinson 1986 page ref.6).

This form of flexibility is not new to shipbuilding; the 'labels' associated with it were new but the management of shipyards had been adjusting manning levels to suit work programme since the industry's inception. The cyclic nature of shipbuilding work meant that static employment levels could not be maintained throughout the build cycle. Large numbers of steelwork tradesmen were required during the early stage of construction and, at a launch many were dismissed at this stage and replaced by outfit workers who would complete the ship before they were paid off. The management of the shipyards may not have regarded what they were doing as numerical flexibility but to all intents and purposes it was.

Numerical flexibility would, therefore, appear to have considerable relevance to shipbuilding, given that it was based on the principle that as workload fluctuates, as is the case of the ships build cycle, employers respond by either changing the number of workers employed or by changing the distribution of worked time.

In general this form of flexibility seeks to match labour supply more accurately with demand. It acknowledges that fluctuations may occur, indeed it is the duration of this fluctuation which influences the form of numerical flexibility adopted by a Company. For example, short term fluctuations are more frequently handled by the use of part-timers or overtime working. Long term fluctuations are more often met by the use of temporary workers or by increased shift-working.

Accordingly, numerical flexibility can vary depending on the circumstances, but, overall, four typical forms can be identified - temporary workers, part time worker, overtime and shift workers, and flexible working time. Shipbuilding's application of these forms of flexibility will be demonstrated in the four models of manpower utilisation to be examined in Parts Three and Four. However, an understanding of all four forms is required prior to this examination.

Historically, according to Meager (1985) the employment of temporary workers has been dominated by two trends:-

> Firstly, a cyclical pattern of work in which an employer laid off temporary workers first in the downturn and rehired them in the upturn.
>
> Secondly, a structural shift towards an increasing proportion of temporary workers due to the long term secular increase in the relative importance of sectors or occupations which use a relatively high proportion of temporary workers.

The first of the trends suggested by Meager could have an association with the shipbuilding industry where the work programme is cyclic, while the shift from manufacturing to service based industrial sectors is particularly important in the second of the trends.

In both trends cited, the common factor was that temporary labour existed primarily as a means by which employers can meet their long-term labour requirements during workload fluctuations.

The second form of numerical flexibility, that of part-time workers, did not find much favour in shipyards. The research findings of Robinson (1984) indicated that employers preference for part-time rather than full-time labour was essential to the adoption of more cost-effective policies dictated by pressure to improve efficiency in highly competitive conditions. In manufacturing industries, the benefits employers derive from this particular form of numerical flexibility are gained from maximising the utilisation of capital equipment and from the ability to maintain continuous production without incurring premium rates for overtime or shift working.

The two key side factors which emerged from Robinson's research work into part-time working were:-

> Firstly, that part-time working facilitates the cost-effective matching of manning to output fluctuations and enable fuller utilisation of fixed assets.
>
> Secondly, that labour can often be cheaper per worked hour than comparable full time labour, particularly where premium rates are involved for full timers.

In contrast to this form of numerical flexibility, the use of overtime and variations of shift patterns are traditional approaches to securing greater flexibility in working time patterns. These were approaches practiced by shipbuilers.

Atkinson (1986) indicated that the two are often intimately connected, in that, as demand increases, a Company may expand its overtime up to a point where it becomes economic to change the pattern of the shift. This form of numerical flexibility differs from those discussed previously, insofar as it takes the form of changing working patterns of existing workers rather than adding extra workers to achieve numerical flexibility.

The last of the four forms of numerical flexibility is that of flexible working time, an approach which had not been adopted by shipbuilding. This differs from the straightforward approach of changing shift patterns because it involves not only the re-scheduling of blocks of working time, but also re-organising the blocks themselves. The most prominently discussed notion of flexible working time concerns what is referred to an annual or contractual hours. In this notion, employees are contracted to work a predetermined number of hours over a year. Longer hours worked in one period are offset against shorter hours worked in another. The attraction for the employer is the ability to adjust the working hours to meet demand at no extra cost.

Overlaid on all the developments outlined previously in the long term, secular decline is the length of the working week and the need to adjust more readily to the changing demands of markets and customers. Therefore, in terms of providing a conceptual toolbox which will permit a better understanding of the phases of change in the Govan shipyard, as depicted by the four separate models of manpower utilisation, the review of the literature associated with numerical flexibility reveals that:-

> Firstly, the cyclic nature of shipbuilding lends itself to the principle that as work fluctuates employers have responded either by changing the number of workers employed or by changing the distribution of worked times.

Secondly, shipbuilding has long been regarded as an industry where overtime working has become the established norm. Putting aside for the moment the question of the efficiency of this practice, the fact remains that the use of overtime and shift working has long been a traditional approach to securing flexibility in working times.

Thirdly, the use of part-time workers and the notion of flexible working time, are two forms of numerical flexibility which have not been taken up by the management of the shipyards.

To conclude a review of the literature on flexible working the following section will be devoted to considering a model of the flexible firm developed at the Institute of Manpower Studies. The module draws into a simple framework the new elements in employers manpower practices, including those discussed in the previous sections.

4. THE 'FLEXIBLE FIRM'

The model of the 'flexible firm' developed at the Institute of Manpower Studies by Atkinson (1985) describes the main parameter of change in the areas of manpower utilisation and flexibility. It draws into a simple framework the new elements of manpower practices, some of which were the subject of the previous discussion, and distinguishes between a Company's 'core' of essential workers and the periphery who either perform routine operations or have skills which are readily available in the outside market.

This model will be of particular relevance during the examination of manpower utilisation Model Three - 'The Flexible Working Model', adopted by British Shipbuilding in the 1980's during nationalisation.

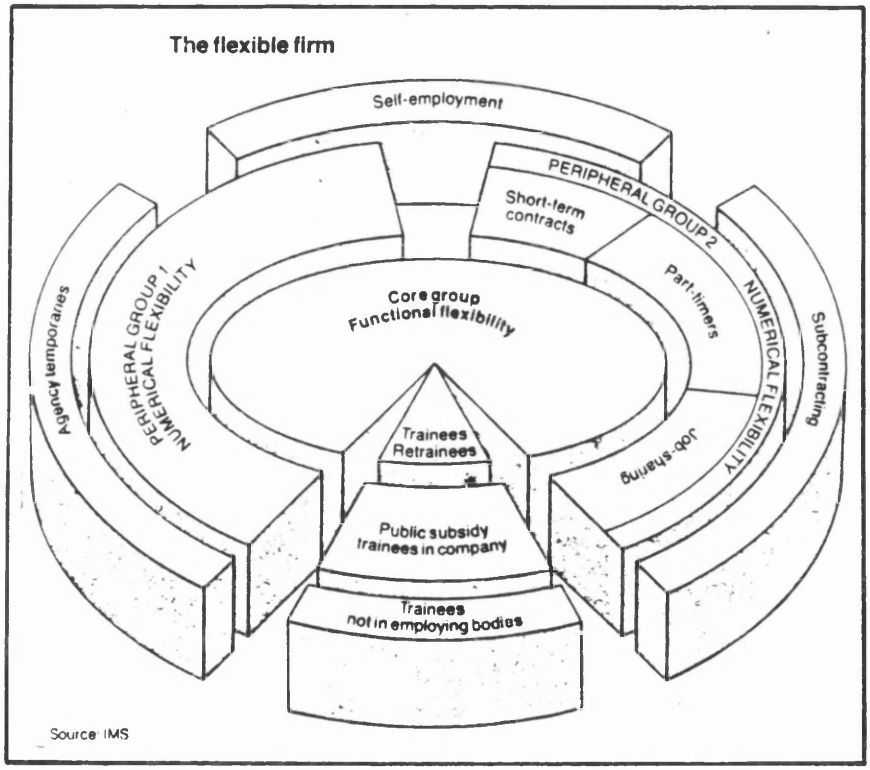
As such, the model has some importance, insofar as it was developed as an analytical tool whose purpose is to identify four different types of flexibility; these being functional and numerical flexibility whose relevance and application to shipbuilding was discussed previously and two others referred to as distancing strategies and pay flexibility whose relevance and application we should understand before using the flexible form model as an analytical tool.

Distancing strategies, in simple terms, involves the displacement of employment relationships with commercial ones. Employers may opt to sub-contract rather than re-organise their internal manning practices. In shipbuilding sub-contracting work had long been an established practice. Many shipyards, including Govan, sub-contracted painting, piping, electrical and engineering work. Indeed, as will be demonstrated in model three, British Shipbuilders, during nationalisation, adopted a strategy of sub-contracting 'cyclic work' at a time when they were declaring redundancies in the shipyards. The argument being that the 'cyclic work' could not sustain employment level and, as such, sub-contractors would be employed to carry out these tasks when required. Other activities, including catering, office cleaning and maintenance, were also sub-contracted.

The principal difference between the distancing strategies of British Shipbuilders and those adopted by other companies, was that the process of creating the distancing became more important than the commercial advantages offered. To explain - to encourage the move to sub-contract an activity such as catering, for example, the shipyard management had to ensure that the displaced shipyard workers were employed by the sub-contractor at rates of pay similar to those prevailing in the shipyard. The employees transferring to the sub-contractor were paid attractive redundancy payments and, as in the case of catering, took up their new employment immediately.

> Functional flexibility is achieved in the core, supported by appropriate incentives and rewards, including the (implicit) guarantee of job security (or absence of threat of insecurity) which is possible because the peripheral group soak up numerical fluctuation in demand." (Atkinson 1985 page ref.4 and 5).

The essentials of the 'Flexible Firm' are illustrated in figure 3.3



SOURCE: *Atkinson (1985)*

Figure 3.3

Consequently, the 'core' workforce or, in shipbuiding terms, the 'permanent' workforce is at the centre of the flexible firms' operations, and indeed, the model itself. The employer will bear the cost, including those associated with training and retraining, re-location, pay maintenance, pensions and career development etc. for these employees in order to secure functional flexibility.

The employees will in turn receive benefits including those associated with employment security, access to a career, sickness and holiday payments etc.

Surrounding the 'core' workforce in the model are the peripheral workers who are basically part-timers or temporary workers and they are not afforded the benefits of employment security. Indeed their numbers can be readily expanded and contracted to achieve numerical flexibility in line with the Company's manpower fluctuation. The outer ring represents the adoption of distancing strategies and this part of the model contains sub-contractors, specialists, and the self-employed who are normally engaged on fee based contracts.

It is argued, according to Edwards (1988) that, in the attempt to maximise its flexibility and minimise its fixed costs, a firm will aim to increase not only the functional flexibility of its core employees, but also the numerical flexibility of the periphery. The latter, as indicated previously, can take the form of temporary or part-time working, or more fundamentally, the sub-contracting of a firms' activities. This may have been one of the aims of model three - the 'Flexible Working Model' adopted by British Shipbuilders.

Sub-contracting of mainstream activities, particularly in manufacturing and shipbuilding, is comparatively rare. More common is the practice to sub-contract those parts of the operation associated with catering, cleaning and transport. Accordingly, given that the shipbuilding industrys performance was being adversely affected by restrictive working practices and demarcation issues, it was incumbent upon those with responsibility for improving performance and productivity to consider alternative methods of manpower utilisation. The alternatives considered included some of the aspects of flexible working which have been previously discussed, and new approaches to organisation.

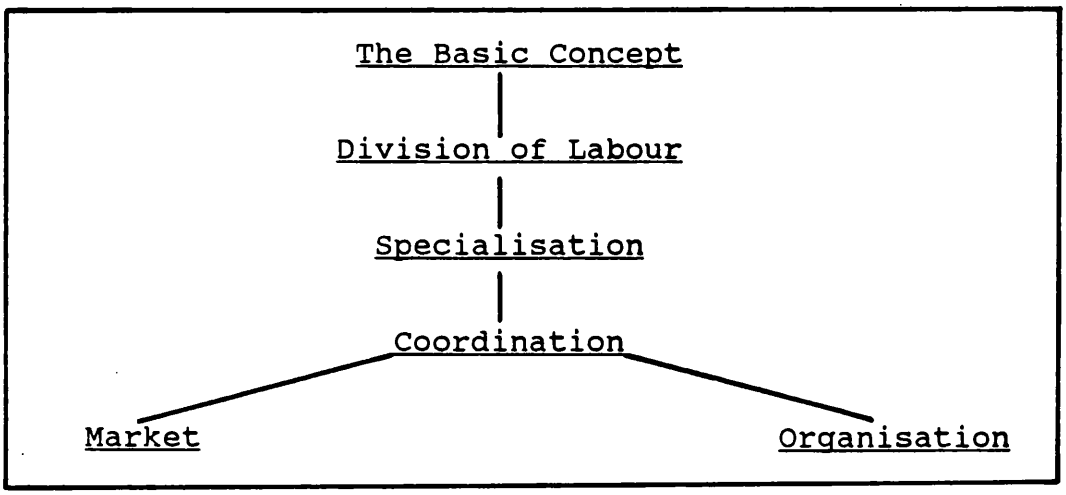
The detail of the flexible working practices considered will, of course, be examined in Parts Three and Four and during this examination the 'Model of the Flexible Firm' will be used as an analytical took to determine to what extent flexible working was applicable or successful.

4. CONCEPTUAL FRAMEWORK

Establishing a 'conceptual framework' drawn from theory particularly that discussed previously in Chapters 2 and 3 and associated with 'job specialisation' and 'flexible working' and selected according to relevance for shipbuilding will enable developments from the 1950's/60's onwards to be looked at with a set of analytical tools which will help with the understanding of the central question, i.e. the progressive development and change of manpower utilisation policy and practice and associated role of industrial relations. In fact, four phases or models of manpower utilisation and industrial relations policy from the 1960's onwards will be identified. There is a need to be able to tackle the changes between the models and to make sense of them - hence the need for a framework or a toolbox.

One useful line of approach would be to borrow from Douma and Schreuder (1992), a conceptual framework based on the work of Coase (1937) and illustrated in figure 3.4.

CONCEPTUAL FRAMEWORK STRUCTURES



SOURCE: *Douna & Schreuder (1992)*

Figure 3.4

This basic concept recognised the great importance accorded to the division of labour. Adam Smith's famous example of a pin factory demonstrated that progressive division of labour led to productivity increases by having each man perform one specific task rather than many enterprises. Smith gave the following explanation:-

> "This great increase in the quantity of work which in consequence of the division of labour, the same number of people are capable of performing is owing to three different circumstances; Firstly, to the increase of dexterity of every potential workman. Secondly, to the saving of the time which is commonly lost in passing one aspect of work to another and lastly, to the invention of a great number of machines which facilitate and abridge labour and enable one man to do the work of many." (Smith 1776 Page Ref.5).

Douma and Schreuder (1992) suggested that basically, when work is split into specific costs, tasks may be selected to suit the needs and capabilities of individuals. Specialisation in the task means that the individual becomes good at it and attention can be devoted to improving performance of the task. The individual specialist can learn from experience and use this experience to devise methods and instruments which will further improve the execution of the task.

Division of labour thus leads to specialisation, as illustrated in figure 3.4, and this allows for efficiency gains. In sport, for example, specialisation leads to higher performance levels but there is a cost. Choices have to be made and long hours of training has to be put in. Once specialised, high performance is restricted to a narrow range of options. Even an acclaimed athlete like Carl Lewis is restricted to running and jumping in athletic competitions.

Specialisation allowed him to excel at these particular athletic events, but no coach would contemplate switching his assignment to shot-putt or pole-vault.

Douma and Schreuder (1992) argue, therefore, that specialisation has the disadvantage of restricting choice options. The limits of specialisation are reached when the satisfaction gained from higher performance is outweighed but the disadvantage from too narrow an area of application of the individual's skills with the result bordering on frustration. Individual limits are thus one boundary to increasing specialisation, but there is another boundary which could be labelled as coordination.

The framework, therefore, takes the division of labour as its starting point. This division leads to specialisation which allows for efficiency gains. However, with increasing specialisation there is a corresponding need for coordination to arrange the network of exchange between specialists. For example, Carl Lewis and three other 100 meter specialist sprinters could, under relay conditions, record a faster time over 400 meters than say an athlete who covered the 400 meter distance on his own. The efforts of the 100 meter specialists would, however, have to be co-ordinated to ensure that their sprinting specialisation was maximised and not inhibited by baton changes etc.

Mintzberg (1989) developed a technology of organisation configurations which basically distinguished between the various types of coordination. This will be another relevant analytical tool when looking at the changes associated with the four models of manpower utilisation adopted at Govan from the 1960's onwards. He suggests there are six coordination mechanisms which be describes as:-

a) Mutual adjudgment, which achieves coordination by the simple process of information communication (as between two operating employees).

b) Direct supervision, in which coordination is achieved by having one person issue orders or instructions to several others whose work interrelates (as when a boss tells others what is to be done one step at a time).

c) Standardisation of work processes, which achieves coordination by specifying the work processes of people carrying out interrelated tasks (those standards usually developed in the Technostructure * to be carried out in the operating core, as in the case of work instructions that come out of time and motion studies.)

d) Standardisation of output, which achieves coordination by specifying the results of different work (again usually developed in the Technostructure *, as in a financial plan that specifies sub unit performance targets or specifications that outline the dimensions of the product to be produced.)

Footnote

* Technostructure is that part of the organisation where the analysis are located. They are the staff outside the hierarchy who plan and control the work of others.

e) Standardisation of skills (as well as knowledge), in which different work is coordinated by virtue of the related training the workers have received (as in medical specialists - say a surgeon and an anaesthetist in an operating room - responding almost automatically to each other's standardised procedures.)

f) Standardisation of norms, in which it is the norms determining the work that are controlled, usually from the entire organisation, so that everyone functions according to the same set of beliefs (as in a religious order).

The six mechanisms developed by Mintzberg are, therefore, all ways in which work is coordinated within organisations and ways in which individuals communicate knowledge and experience. Conversely, they are the means by which employees learn what they need to know from one another to carry out their tasks.

Specialisation, therefore, as illustrated in figure 3.4, leads to a need for coordination. Douma and Schreuder (1992), however submit that there are two types of coordination which they describe as across markets and 'within organisation'.

> "Coase posited markets and organisations are alternatives for the execution of transactions. On markets, the price system is the coordinating device. Within organisation, the price system is replaced by authority as a coordinating mechanism. The question remains as to the circumstances under which the market will be employed for exchange transactions and the conditions under which organisation will be preferred." (Douma and Schreuder 1992).

Coase's answer was that this is determined by the relative cost of the transaction under these two alternatives. Transactions will typically be executed at lowest cost. As a consequence, transactions will shift between markets and organisation as a function of the transaction costs under these two alternatives.

On the labour supply of shipbuilding these distinctions will have relevance to the changes which were taking place between the four models. They will be particularly relevant when looking at the move away from the concept of the division of labour and job specialisation which formed the basis of model one to more open forms of functional and numerical flexibility which were a feature of the later models. These manpower utilisation changes were taking place in response to the fact that the U.K. shipbuilding industry's share of a more competitive shipbuilding world market was in decline.

PART THREE

Research Related to Three Approaches to Manpower Utilisation Adopted at the Govan Shipyard.

PREFACE

Part three of the work provides comprehensive research into three approaches to manpower utilisation adopted by those responsible for the management of the Govan shipyard. For the purpose of the research the approaches have been distinguished as:-

(a) Model One - The Classical Approach adopted when the shipyard was moving to the construction of iron and steel vessels at the beginning of the 1860's and maintained, under the management of Fairfield Shipbuilding Co. Ltd., until the shipyard went into receivership in the 1960's.

(b) Model Two - The Scientific Management Approach adopted for a two year period commencing 1966, when the shipyard was the subject of an 'Experiment' under the management of Fairfield Glasgow Ltd.

(c) Model Three - The Flexible Working Approach adopted when the shipyard was, for the decade up to 1988, part of the state owned nationalised shipbuilding corporation British Shipbuilders.

Initially, the aim is to put into an 'explanatory form of words', the suppositions related to the adoption of the traditional approach to manpower utilisation. Of particular concern are the specialist manpower and management structures and the organisational support functions.

This part of the research, identified as Model One, is in two parts.

Part one, graphically detailed in Chapter 4, is concerned with:-

Firstly - the origin of the manpower who supported the shipyards growth and the relationship between this and the occupational distribution. This suggests that cultural background was a factor influencing manpower and management structures.

Secondly - the hypothesis associated with the concept of job specialisation and the manpower and management structures adopted on the basis of this hypothesis. This aims to provide a descriptive insight into what may be regarded as traditional and restrictive working practices and bureaucratic management structures.

Thirdly - the assumptions underlying the traditional system of incentive payments adopted by the shipyard and their purpose in terms of manpower efficiency and shipyard competitiveness.

Part two, illustrated in Chapter 5, is concerned with:-

Firstly - the assumption related to the organisation functions established to support the shipyard manpower with drawings and information. This aims to ascertain the link between organisation and manpower utilisation.

Secondly - the presumptions allied to the creation of an organisation support function devoted to the people side of the business. The intention here is to determine the relationship between this support and the effectiveness of the shipyard workers.

Model one is a critical part of the research. In a sense the traditional approach to manpower utilisation formed the basis of the shipyard workers traditional values, working practices, attitudes and industrial relationships and was, therefore, the major influence on manpower effectiveness.

Secondly, the aim is to put into an analytical framework the context in which the Fairfield Glasgow approach moved away from the shipyard's traditional specialist working practices and methods of organising. This part of the research, identified as Model Two, is detailed in Chapters 6 and 7.

Chapter 6 is concerned with:-

> *Firstly - the theories linked to the move away from national to local bargaining arrangements and the concept of affording the trade union officials and the shop stewards a role in the management of the shipyard's change process.*
>
> *Secondly - the philosophy that problems of redundancy and lack of job security were the root cause of the shipyard workers resistance to change and the proposition that shipyard workers counter productive attitudes can be influenced by job security.*

In Chapter 7, the focus is as follows:-

> *Firstly - The notion that manpower utilisation and shipyard competitiveness were improved by the move to more open forms of flexible working brought about by concluding local industrial relations agreements.*
>
> *Secondly - The belief that the words of industrial relations agreements could be translated into positive deeds by training.*

Thirdly - The impression that manpower effectiveness was improved by the adoption of scientific management techniques that provided sufficient information to introduce measured day work incentive payments.

Model two was an important landmark at the Govan Shipyard from the point of view that both management and the trade unions were committed to introduce a range of far reaching changes to traditional manpower practices and management techniques in an experiment aimed at improving manpower utilisation.

The third model analyses the centralised approach to manpower utilisation adopted by British Shipbuilders. Of particular concern is the nationalised corporations Performance, Improvement and Productivity programme and its aims of increasing the output potential of those involved in the shipbuilding industry. This part of the research, identified as model three, is again covered in two chapters:-

Chapter 8 is concerned with:-

Firstly - The theories related to the development of the Performance Improvement and Productivity programme and the challenge that such a programme faced. This explores the strategy adopted and the degree of difficulty associated with introducing the programme on a national basis.

Secondly - The coherent and comprehensive process adopted, to identify the industry's manpower constraints. This highlights areas where the removal of constraints could lead to productivity improvements and cost reduction.

Thirdly - The concept of establishing a central bargaining arrangement as a means of by-passing the local shop steward movement and concluding industrial relations agreements that would challenge the restrictive working practices, demarcation and overmanning and introduce more open forms of flexible working.

Chapter 9, is concerned with to:-

Firstly - The strategy adopted at Govan to ensure that the national industrial relations agreements were fully understood by the shipyard's workforce.

Secondly - The proposition that health and safety performance could be improved and shipyard workers attitudes changed by training.

The significance of Model three is that the manpower utilisation policies and practices inherited by Kvaerner at the time of taking over the Govan Shipyard were products of this highly centralised approach that had the support of the British Shipbuilder's executive management and the national trade union officials and financed by extensive Government funding. Model three was the culmination of a long period of evolution of traditional work organisation in the shipyards, and its failure provided the launching pad for the new thinking and approached to be introduced by Kvaerner.

CHAPTER 4: THE CLASSICAL APPROACH TO MANPOWER UTILISATION MODEL 1, PART 1

1. SHIPBUILDING MANPOWER

The establishment and the growth of the Upper Clyde Shipbuilding Industry was, as indicated earlier, supported by a large drift of workers from rural communities into the new urban shipbuilding communities and the industry itself. The flood of what could be termed, as "immigrant workers" to the burgh of Govan, whose shipyards built about a fifth of the Clydeside tonnage, was perhaps typical of this influx.

In little over 50 years the population of Govan grew from 9058 in the 1850's to 93,058 in 1907 and during approximately the same period 1860 to 1900 the shipbuilding tonnage completed by the Clydeside shipyards increased from 100,000 to 500,000 tonnes. The massive growth in Govan's population was generally understood to be directly related to a large influx of "immigrant workers" who came to Govan and provided the manpower support for the rapidly expanding shipbuilding industry. This view supported by the census schedules of 1871 and 1891 and illustrated in figure 4.1.

BIRTHPLACE OF HOUSEHOLD HEADS

	1871	1891
Govan	4.9	6.0
Lowlands Scotland	43.6	41.8
Glasgow	12.2	11.6
Highlands	19.9	11.8
Ireland	14.5	23.4
England	4.5	4.8

SOURCE: *Campbell (1988)*

Figure 4.1

Firstly, the census schedules give details of the origin or birthplace of Govan's household heads and they confirmed that the vast majority of the population, some 95%, were born outwith the burgh.

Over 40%, came from the semi-industrial rural communities of Lanark, Renfrew and Ayr or, what was termed as, the 'Lowlands of Scotland.' These rural communities had suffered severely over the previous generation, from the collapse of both handloom weaving and the Scottish Cotton Industry. As a result, families moved from the rural communities to the rapidly growing shipbuilding communities in search of work. These Lowlanders, who moved to the shipbuilding communities, entered the industry with some industrial experience, a familiarity with trade unionism and with a knowledge of industrial wage/labour employment.

Just over a third of the population came from either the famine stricken communities of West and North West Ireland or the croft areas of the Highlands. Many of them spoke English only as a second language. They had little knowledge of industry or trade unionism.

The population of Govan was, therefore, made up predominately of people born outwith the burgh, people who came to Govan from different backgrounds and cultures. These diversities, including the Highlanders with their presbyterian traditions, the Irish with the catholic traditions and the Lowlanders with their trade union familiarities.

Secondly, the census schedules gave details of the proportion of household heads employed in shipbuilding. This confirmed that over half of the household heads were employed in the shipyards and lends support to the view that the Shipbuilding Industry's remarkable expansion was largely responsible for the steady stream of immigrant workers to the community and the industry itself. It also shows just how dependent the industry was on the immigrant manpower as illustrated in figure 4.2.

PROPORTION OF HOUSEHOLD HEADS EMPLOYED IN SHIPBUILDING

	1871	1891
All Heads	42%	56%
Irish Born	47%	60%
Highland Born	52%	43%

SOURCE: *Campbell (1988)*

Figure 4.2

Furthermore, Campbell (1988) suggested that it was possible to identify the type of employment taken up by the immigrant manpower. He demonstrated this by, applying the information from the census schedules to the general socio-economic groupings adopted by the Registrar General some years later in 1951. The results are illustrated in figure 4.3.

TYPES OF EMPLOYMENT TAKEN UP BY IMMIGRANT GROUPS IN % TERMS

Social Economic Group	1871	1891
1. Owners	3.7	2.1
2. Managers	10.1	6.5
3. Skilled	38.4	33.2
4. Semi-Skilled	26.6	29.5
5. Un-skilled	20.9	28.6

SOURCE: *Campbell (1988)*

Figure 4.3

Campbell's analysis indicated that over half of the immigrant manpower were employed in the lowly paid job, the semi-skilled and unskilled categories. About a third found employment in the skilled workers groups and about a fifth in the work categories of Managers and Owners.

He suggested that what he termed as the "culture cleavage" between the three major groups of immigrant workers had severe consequences for their employment prospects when they entered the shipbuilding industry. According to Campbell (1988):-

> "Although the vast majority of the household heads were immigrants, those coming from the Lowlands of Scotland secured a quite disproportionate share of the better paid employment." (Campbell 1988 Page Ref.7).

He supported this view by, once again, applying the census scheduled information to the general socio-economic grouping adopted by the Registrar General in 1951. The results indicated that the Lowland Scots almost monopolised the immigrant workers share of the first two job categories, owners and managers. They also took the lions share of skilled manual jobs occupied by the three major immigrant groups. This indicated in figure 4.4.

THE INDIVIDUAL IMMIGRANT GROUPS
SHARE OF JOBS
BASED ON 1871 CENSUS SCHEDULES

	Lowland	Highland	Irish
1. Owners	3.6	0	0
2. Managers	9.2	.8	.1
3. Skilled	27.9	8.5	1.9
4. Semi Skilled	16.4	6.5	3.7
5. Unskilled	7.7	4.4	8.8

SOURCE: *Campbell (1988)*

Figure 4.4

The Lowlanders monopoly of the better paid jobs may well have been reflective of the fact that they had industrial experience, trade union familiarity and skill which other immigrants did not. The Highlanders and the Irish were employed predominantly in semi-skilled and unskilled work.

The proportion of unskilled or labouring jobs increased sharply between 1871 and 1891, as the industry moved towards full Iron and Steel Technology. The additional demands for these jobs were met entirely by the Irish and Highland born with the Irish, in particular, occupying a large share of the new jobs.

Accordingly, a large influx of immigrant workers from three major areas supported the expansion of the Upper Clyde Shipbuilding Industry.

The three immigrant work groups were sharply stratified in that:-

a) The Lowland workers, the group of immigrant workers who had previous industrial experience, principally gained the well paid skilled jobs.

b) The Highlanders, the immigrant workers with the presbyterian traditions, tended to move into intermediate bands of less secure semi-skilled jobs.

c) The Irish, the immigrants with the catholic traditions, were mainly dependent on very unstable, badly paid unskilled work and were taken on as needed.

The immigrant workers, therefore, entered shipbuilding at a time when the industry was growing and adopting a new approach to manpower utilisation. This new approach moved away from the concept of the multi-skilled shipbuilder to the principles of job specialisation.

Many new occupations were established as a result of this move and the effect of this had on the 'immigrant workers' occupations tended to be directly related to their culture cleavage.

2. TRADE SPECIALISATION

In taking full advantage of the benefits offered by the industrial revolution the Upper Clyde Shipbuilders, as indicated previously, altered the methods by which ships were produced and changed the way manpower was utilised. These changes introduced trade specialisation, a feature of manpower utilisation that remained more or less intact in shipbuilding for over one hundred years.

Mortimer (1973), in his history of the Boilermaker Society, a trade union whose membership represented the largest proportion of shipbuilding workers, argues that the main determinants of the shipbuilding industry's traditional approach to manpower utilisation were:

a) The development of steam power.

b) The building of ships from iron and steel instead of wood.

c) Manufacturing in workshops.

d) The introduction of power generated machines.

His view was that before the industrial revolution, nearly everyone in Britain worked on the land. A small minority worked in towns and villages as hand craftsmen. However, with the coming of the Industrial Revolution, a growing proportion of the populaton were employed in factories. The manufacture of goods in these factories and industries, such as shipbuilding, was made possible by the development of steam power. This enabled the muscle power of human beings to be replaced by power generated from heating water and transforming it into steam. This transformation enabled mechanical work to be performed by machines:-

> "Machines were introduced, tasks were broken down to allow for the division of labour, and workers were employed together in large numbers in factories and workshops. The range of goods which could be manufactured in this way was greatly increased and productivity was much higher." (Mortimer 1973 page ref.25).

In theory, this meant that labour could be trained to carry out single or specialist tasks rather than a range of tasks and, in keeping with the doctrine of Adam Smith, they could perform more productively.

In order to make this type of workshop manufacture possible, other developments were necessary. Iron had to be obtained for making machinery, coal had to be mined to provide power for the new steam engines. New specialist skills had, of course, to be learned for the preparation, shaping, cutting and fabrication of metal. As such, the building of ships from iron and steel instead of wood and the introduction of the power generated machines brought about major changes to the shipbuilding industry.

Typical of these changes was a move away from a system whereby shipwrights were virtually the only shipbuilding trade. The shipwrights were multi-skilled workers who, on the basis of sub-contract, named their price for building ships. A former shipbuilder, Wigram, concluded:-

> "The old wood-using industry had been run on virtual sub-contract lines, with Shipwrights naming their price, then building the ship." (Wigram 1867 page ref.15).

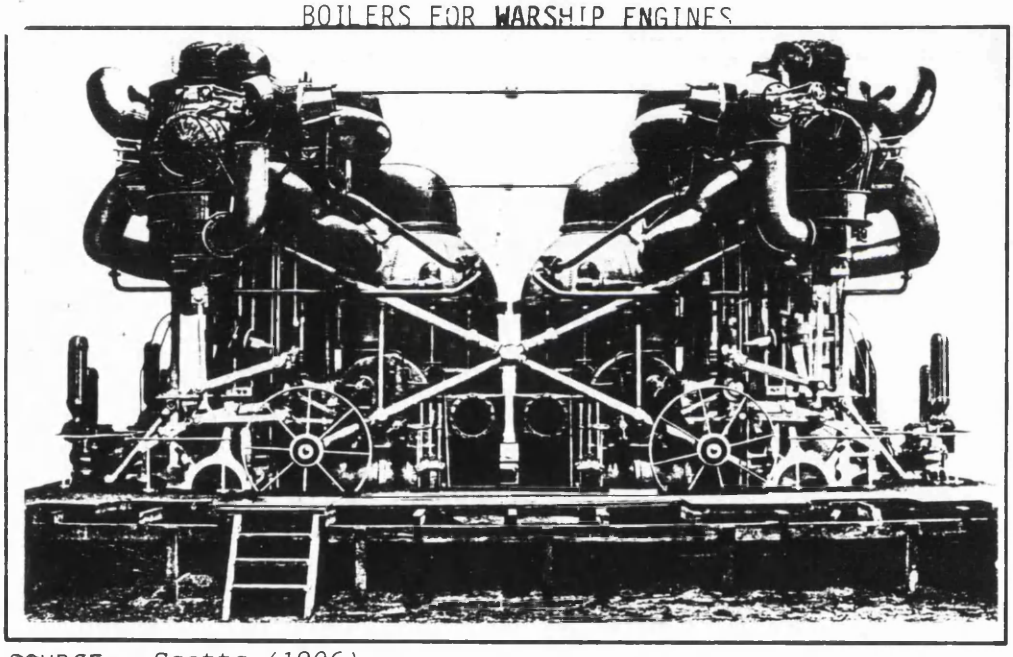
However, the much heavier demands of iron and steel shipbuilding and the introduction of new machines and technology meant that full profit could only be achieved if the workforce was transformed. A different approach to manpower utilisation, based on trade specialisation, had to be established.

3. MANPOWER STRUCTURES

The manpower structures which emerged from the move by the shipbuilders to introduce trade specialism, split the industry's skilled workers into two basic work groups - metal users and outfitters.

The metal users, whose main function was to build the ship's hull, evolved from the craft of Boilermaking. Originally the Boilermakers purpose was to construct boilers for steam engines. Figure 4.5 illustrates the type of boilers constructed by boilermakers.

BOILERS FOR WARSHIP ENGINES



SOURCE: *Scotts (1906)*

Figure 4.5

These boilers were made of plates of metal which were cut and bent to shape. The plates had then to be joined together to make them steam tight.

The craft of Boilermaking, as it originally developed, was an extremely wide one, calling for considerable skills in many different operations. These include plating, template making, rolling, planing, punching, shearing, bending, welding, flanging and drilling.

It was also part of the Boilermakers trade to fabricate metal structures or machines.

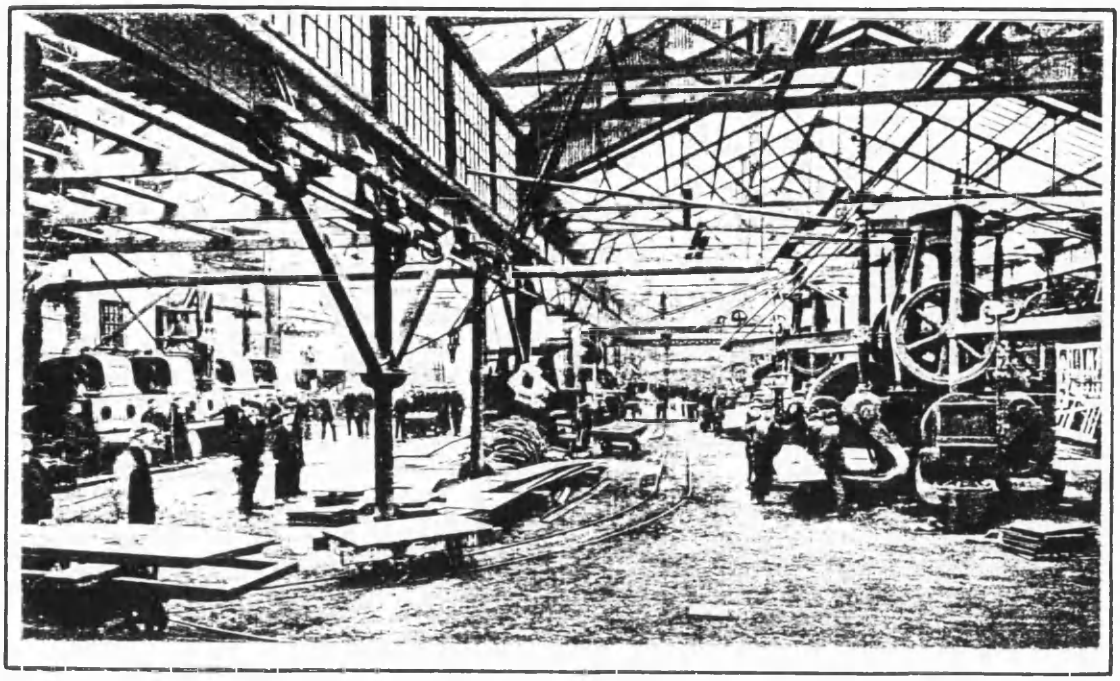
The development of iron and steel shipbuilding was to provide employment for tens of thousands of boilermakers whose skills seemed ideally suited to the metal ship construction. However, it was not as multi-skilled craftsmen that boilermakers were employed in ship construction, their multi-skills were divided into separate specialist functions.

> "Boilermakers had considerable skills in many different operations. It was not surprising therefore that a measure of specialisation began to develop. The employer recognised that specialisation would help productivity". (Mortimer 1973 page ref.27).

This specialisation brought about a metal-using or Boilermaking trade structure which reflected the many different operational skills of the Boilermaker. The trade structure comprised the individual trades of Platers, Riveters, Drillers, Caulkers, Template-makers, Markers-off and Welders.

Much of the manpower required to support the metal using trade structure came from the Highland immigrant work group who moved from semi-skilled occupation into the new rivetting and caulking trades. Trades which appeared to be ideally suited to the physique of the large brawny Highlanders as distinct from the much smaller Irish. The type of machines and equipment used by the specialist tradesmen known as platers as illustrated in figure 4.6.

PLATING MACHINE SHOP



SOURCE: *Fairfield (1908)*

Figure 4.6

These machines allowed the specialist platers to cut and bend the steel plates required to build the ships and, given the fact that some platers become specialists in this particular task, they could carry out the function with a greater degree of efficiency and, perhaps, faster than a tradesman who only used the equipment occasionally.

> "Some who today criticise the specialisation amongst Boilermakers overlook, or are perhaps, unaware of the circumstances in which it originated and developed. It was introduced and extended as a means to higher productivity". (Mortimer 1973 page ref.28).

The Shipwrights, probably the oldest established trade, and who built the hulls of wooden ships although, not initially, part of the boilermaker trade structure, still had a role to play in the construction of iron and steel ships. Their duties, in addition to fitting out, were associated with lining off, erecting, 'fairing' the steel skeleton of the ship and launching it.

The cyclic nature of shipbuilding meant that the metal-using trades build the ship's hull and they are followed, at a later stage in the build cycle, by a work group known as the "Out Fitting" trades. The emergence of this work group owes much to the developments discussed earlier by Mortimer. A new group of workers, many from the Lowland immigrant group, came into existence to perform these specialist tasks. These became the trades which formed an outfit trade structure. They included Turners, Fitters, Moulders, Smith and Millwrights who were sometimes known as mechanics.

In addition to the outfitting trades mentioned, there was also an assortment of others such as, for example, Joiners, Electricians, Plumbers, Sheet Metal Workers, Tinsmiths, Painters and the Sawmill trades who found employment in the shipyards. In essence, therefore, the Iron Shipbuilding Industry developed as a specialist Tradesman's industry. Man, perhaps, being an approriate word. There were very few women in this trade structure, the exception being those involved in the trades of French Polishers and Upholsterers.

> "This yard (Fairfield) has a typical shipbuilding trade structure. The majority of the labour force are tradesmen. The semi-skilled category is relatively small. The helpers or semi-skilled tend to attach to, and work with tradesmen. The women shown are French Polishers. The yard employs over 500 boys, most as apprentices, although about 100 are pre-apprentices". (Robertson 1960 page ref.75).

Shipbuilding was a tradesman's industry. The tradesmen were single trade specialists and large numbers of apprentices were recruited to provide a continuous supply of specialist tradesmen. The semi-skilled workers were but a small minority of the workforce.

In summary, the traditional approach to manpower utilisation involved:-

a) The adoption of the principles of trade specialism as a means of improving productivity.

b) The creation of craft and trade structures which split the skilled workers into two basic workgroups - metal users and outfitters.

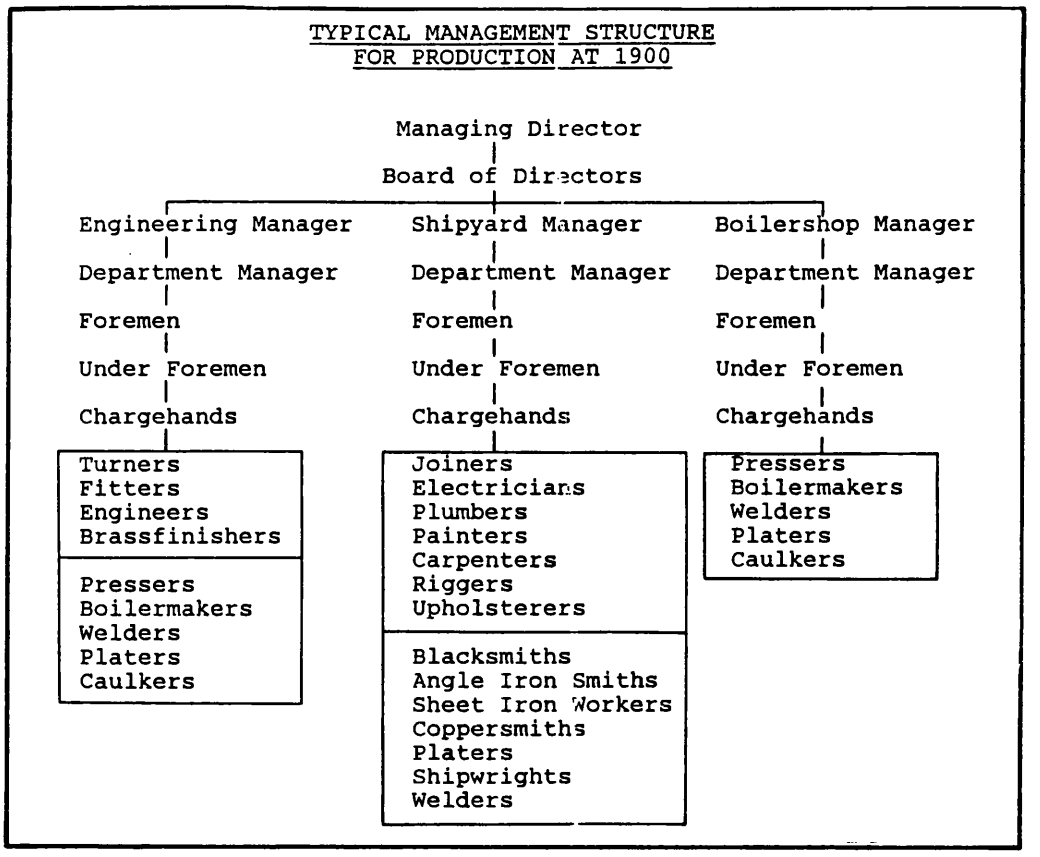
c) Reliance upon apprentice training as a source of manpower supply for the specialist trades.

4. MANAGEMENT STRUCTURE

To manage and supervise the labour force, the individual shipyards developed what was described as a hierarchy or bureaucratic structure.

> "Yard hierarchy could be a complicated affair with some variation from time to time. All were bureaucratic in structure with clearly defined systems of accountability and routes of communication. Every man, in theory, knew to whom he was responsible and a detailed job description gave him a clear idea of what was expected of him." (Castle 1988 page ref.30)

A general outline of the management structure, for what was essentially the production function, is illustrated in figure 4.7.



SOURCE: *Castle (1988)*

Figure 4.7

The production function was divided into three areas - Engineering, Shipbuilding and Boilermaking. The trades associated with each of these areas were grouped under an appropriate Manager. For example, the Engineering Manager had, at his disposal, a group of tradesmen consisting of Turners, Fitters, Engineers, Brassfinishers, Pressers, Boilermakers etc. To assist him in the management and supervision of this manpower, he was supported by a bureaucratic structure consisting of departmental managers, foremen, underforeman and changehands each with, what Castle describes as, clearly defined responsibilities and channels of communications.

The position of foreman was regarded as particularly important in terms of the shipyards' performance and indeed its ability to effectively utilise its manpower. The foremen were given relative privileges which included security of employment, access to benefit schemes and company housing. These foremen were normally selected on the basis of their ability and trade background.

A plater, for example, would be selected as a chargehand or assistant foreman, and further up the structure, the foreman plater would be selected from those who were assistant foremen. Accordingly, the job specialisation which was inherent within the craft and trade structure was also reflected in the management and supervisory structures. In theory, these foremen knew exactly what authority and responsibilities they had, even though they had little or no training for their supervisory role. They had the right to "hire and fire" manpower to suit the fluctuating demands of the shipbuilding market place in an industrial environment free from employment protection legislation. Indeed, Campbell (1988), by implication, illustrated that this authority to "hire and fire" was a major factor in terms of the shipyards' ability to effectively utilise its manpower.

> "The violent fluctuations in shipbuilding demand were used to create what were effectively two grades of workmen, a permanent core of skilled workers and a much larger body of workers who were hired and fired as needed." (Campbell 1988 page ref.16).

The delegated authority to "hire and fire" gave the foreman a major control over his manpower and, indeed, the way it was utilised. The foreman also had a major influence on the shipyards' production performance and the earnings level of his workforce, through his control of incentive payment systems such as "piece work". This is, perhaps, best illustrated by quoting from an essay written in 1857 by an un-named Boilermaker and included by Mortimer (1973), in his work devoted to the history of the boilermakers.

> "If the men cease work and take shelter for a short time until the storm abates, they are found fault with by the foreman or the master, who tell them plainly that they cannot afford to pay them to stop skulking there, they must either work in the rain or go home.

> The result is that the men agree to work piece-work, so that the master may lose nothing through their waiting for a few hours occasionally and that the men may have an opportunity by a little extra exertion in good weather of making up their lost time in bad weather." (Boilermakers 1857).

In effect, under the piece work system the shipyard workers were not paid when they ceased work due to inclement weather and they worked extra hard when the weather was good to make up for lost time.

The importance of the foreman's role and, indeed, his application of the piece work systems, were also considered by the former Personnel Services and Safety Manager of Govan Shipbuilders as vital factors of the industry's approach to manpower utilisation, particularly from its inception to the 1960's. In an unpublished report the manager, who was first appointed a foreman in the industry in the 1950's, wrote :-

> "The foreman exercised a range of options to engage or reject labour and to have his instructions carried out. Not least of these options was the control of the piece work system, under which, in the case of a welder for example, output could be measured and paid for at a certain pace. The foreman was allocated responsibilities which included the duty to allocate work based on the skills available in his workgroup, fix rates of pay, plan the job, and control the quality of workmanship. The authority vested in the foreman's job allowed him to order the worker to carry out rework without compensation in cases of poor workmanship, and to hire and fire to meet production demands." (Yuill 1990).

Through the piece-work system, the foreman effectively controlled and eliminated payments for lost or ineffective time. He could also afford his workers an opportunity to make up their lost time and earnings by extra exertion.

The main characteristics of the Upper Clyde shipbuilding industry's management and supervisory structures could, therefore, be summarised as:-

a) The creation of a management and supervisory structure based on trade specialisation which was reflective of the craft and trade structures.

b) Clearly defined systems of accountability and routes of communication.

c) Detailed job descriptions with delegated levels of authority and responsibility.

Within the structure, the role of the foreman was critical to production performance and manpower utilisation. An important factor of this was the operation of incentive payment systems, the detail of which will be discussed in the concluding sections.

5. INCENTIVE SYSTEMS

Incentive payment systems had been traditional in many parts of the textile, mining, engineering, and shipbuilding industries. The systems practiced in shipyards, particularly during the period from the industry's inception to the 1960's, had a close relationship to the trade groupings. Outfit trades had bonus systems while the Boilermaking trades had payment by result systems known as "piece work".

Both systems were considered to be influential factors in the industry's traditional approach to manpower utilisation, in that, they provided an incentive to increase production outputs and employees earnings. Bonus systems operated on the basis that a worker was paid a guaranteed minimum wage, and in addition, a bonus derived from the hours saved in producing a particular job. The bonus was paid when the actual time taken to do the job was less than the time allowed.

> "Payment by merit to the tradesman is adopted as far as possible. In the engine works the bonus system - first adopted in 1902 - is extensively applied. The arrangement is satisfactory from the point of view of tradesmen, employer and client." (Scotts 1906 page ref.90).

Long experience had enabled the Scotts' Shipbuilding Company to set equitable standard times for many operations. Having set these times they guaranteed that the times would not be altered unless entirely new machines were introduced that greatly influenced the rate of production.

Under the Scotts' bonus scheme an employee who required the full time or more than the time set as the standard for a job was paid his full guaranteed wage. However, if he completed the work in less than the standard time, his rate of wage per hour increased in direct proportion to the saving in time - the shorter the time taken, the greater the rate of bonus.

> "The bonuses earned range as a rule from 20 to 30 per cent over the time rate wages. To quote actual cases, a workman who saves 26 hours on a job for which the standard time is 134 hours, increases his wages for the fortnight by 14s. while they money saves to the employer is only 2s.9d. He who saves 30 per cent on time adds 21s. to his fortnights wages." (Scotts 1906 page ref.91).

Reductions in the time taken was not attained at the expense of qualify, the premium job was carefully inspected and only those satisfying the quality standards attracted bonus payments. The employee was careful, therefore, to avoid risks which would result in a quality failure and a loss of the reward for his work. The reductions were mostly due to the exercise of foresight and ingenuity on the part of the employee who was ever on the alert to ensure that he would not have been kept waiting for materials to enable his work to progress.

From the Company point of view, the bonus scheme produced gains. These took the form of increased production from a given number of machines and men, from what was termed a 'constant establishment expenditure' - rent, rates, taxes etc. and the reduction of ineffective or lost production time. Even though there was an increase in wages paid to the men, the advent of the bonus scheme reduced the cost of production which in turn encouraged capital expenditure on improved methods and appliances.

Concurrent with the adoption of the bonus system there was a great increase in the cutting speed of tools from the new appliances which augmented the increased rate of production. Some indication of the increased economy resulting from the bonus system and from the 'speeding up' of tools as compared with the former systems is provided by the following illustration:-

> "A typical job, which had formerly occupied eighty hours, was, after experience, given a standard time of sixty hours. When first carried out under the bonus system the time actually taken was forty-five hours, the labour cost being reduced from £2.13s.4d. to £1.17s.6d. under the bonus system, while the wage of the worker was increased by 2d. per hours." (Scotts 1906 page ref.92).

In addition, it was stated that subsequently, a repeat of the job was machined by the same men who, confident that the time allowed would not be reduced, finished the work in thirty nine hours, saving twenty one hours on standard times. This reduced the cost to £1.15s.0d. and increased pay by 2.8d per hour.

In successive fortnights after the introduction of the bonus scheme, the percentage of time saved in Scotts steadily advanced from 16 per cent to 47 per cent. The pay of the workmen increased by 75 per cent and over the same period the saving to the Company was 50 per cent.

The introduction of a bonus scheme into Scotts had major benefits, particularly in terms of the Company's ability to utilise its manpower and machines more productively. This, in turn, reflected in the competitive position of the Company.

> "The client profits, as the contract price is reduced without any diminution in the satisfactory character of the work done; indeed it is probable that this is improved because of the special inspection to ascertain if the bonus has been conscientiously earned. A lower contract price, therefore, is possible and this places the firm both directly and indirectly in a better position in competition in shipbuilding." (Scotts 1906 page ref.93).

The benefits derived from the introduction of the bonus scheme, therefore, created a climate in which the Company obtained more work, thus ensuring more constant employment for the workforce. It also provided the additional inducement of higher wages for the capable and diligent workers.

6. PIECE WORK INCENTIVES

The Boilermaking trades, as indicated previously, had an incentive payment by results system known as 'piece work'. At its most basic, workers under the piecework scheme were paid in proportion to the amount they produce on the basis of a price list set by the Company. The advantages of the piecework system were firstly, that it was simple to operate and secondly, the worker had an incentive to increase production outputs and increase his individual earnings.

There were, of course, difficulties in setting such a price list. These difficulties, according to Robertson (1960) were associated with the measuring of output when the unit of production was not standardised and these can be illustrated by a piecework scheme for shipyard welders:-

> "Since some standardisation is possible in welding work this is not an example of the problem at its worst, which occurs when one only of a particular job is undertaken and it is necessary to try and price or time it for payment purposes." (Robertson 1960 page ref.82).

Prices or times, he stressed, could be set for each of the standard types of weld - butt, fillet etc. After this work was done however, standard corrections were required for (a) weld position since welding downhand is easier than welding in the vertical or overhead positions (b) thickness of plates to be welded (c) size and type of electrode (d) number of runs of weld required (e) types of plates to be welded (e.g. armoured).

The existence of such variations complicated the pricing of work. Welders had to work outside and in awkward corners. Slight discrepancies in measurement and the fitting of plates placed a requirement on welders to create good welds from badly fitting steel plates.

The example, cited earlier, illustrates the practical problem of allowing factors outwith the worker's control to influence his earnings. These factors included faulty electrodes or conditions under which the work was to be performed, weather etc., all of which affected output but could not be readily allowed for. Under this type of incentive scheme a welder, as indicated in a previous section, was allocated work by the foreman and his earnings were influenced by the type of work he was given and the conditions, including the weather, under which the work was to be performed.

The system, therefore, had disadvantages in that the workers' earnings were unstable and were often reflective of production outputs. As such, earnings were low when production output was low and high when production output was high. The quality of work was liable to suffer at the expense of quantity of output.

In summary, shipbuilding incentive payment systems:-

a) were closely associated with the craft and trade structures.

b) reduced payment for ineffective and lost production time.

c) rewarded effort, ingenuity and foresight.

d) were an important tool in the industry's approach to achieving efficient manpower utilisation.

The foreman was a major influence in the operation of the incentive payment systems, insofar as he allocated the work to the shipyard workers under his control and could, therefore, influence the earnings of his individual workers.

7. CONCLUSIONS

The shipbuilding industry's classical approach to manpower utilisation could be described as simplistic and self-motivating. Simplistic, from the point of view that it was based on Adam Smith's theory of job specialisation whereby burners were employed to burn, riveters were employed to rivet steel plates together and welders welded. The approach was, therefore, simply designed to make the best use of the people in the shipyard and based on the theory that every shipyard worker was a specialist. As such, each knew exactly what his job was and what was required to be done.

Arguably, the concept meant that the job specialist could do the job much quicker and to a higher standard than the non specialist. The specialisation theory extended to the structure adopted by shipyard management to supervise the workforce and to add credibility. This would not be considered as unreasonable given that it would be rational to suppose that platers, promoted from the shop floor on the basis of their specialist skills and knowledge, were the best people to supervise a group of specialist platers.

It could be argued, however, that this dependency on job specialisation, as the principal factor of manpower utilisation and resourcing, resulted in the creation of demarcation boundaries between the various specialist trades. This gave rise to the perception and practice that only job specialists could operate within these boundaries and, this in turn, limited the mobility and flexibility of the shipyard workforce.

The classical approach could also be described as self motivating in the sense that incentive bonus payments were a principal factor of workforce motivation insofar as these payments were associated with individual performance.

Arguably, the theory was that the more work the shipyard worker completed the more his pay increased. Workers would not have to be 'policed' at the work place and, in this context, it would be logical to assume that the urge to increase the take home pay was sufficient motivation to keep them working until the whistle signalled the end of the shift.

Accordingly, the Shipbuilding Industry's classical approach to manpower utilisation, was particularly suited to its 'time frame' given that it operated in a highly labour intensive and basic industry untroubled by international competitive demands of the market place during the late 19th and early 20th century. However, its appropriateness to that 'time frame' should not disguise its built in flaws, in that it 'restricted' the mobility and flexibility of the workforce in the interest of job specialisation.

CHAPTER 5: THE CLASSICAL APPROACH TO ORGANISATION MODEL 1, PART 2

1. TECHNICAL FUNCTIONS

Classical organisational functions were created by the builders of iron and steel ships, in order to secure efficiency in the design and construction of ships and machinery.

> "Organisation and administration are as important factors in securing efficiency as the mechanical methods and appliances are adopted." (Scott 1906 page ref.88).

Shipbuilders regarded organisation as a process to ensure that they made efficient use of workspace, equipment, materials and manpower. Part of the organisation process, taking account of the different types of specialist tasks and operations was performed on the production assembly floor. By the latter part of the nineteen century, shipyards had established technical and administration departments to carry out these organisation processes. The existence of these departments was revealed at Fairfield in the early part of the 20th century.

> "The interior of the office building is arranged for managerial, estimating, cost, supply and other branches of a well organised administration and for designing, drawing, tracing and photographic departments for both shipbuilding and engineering." (Fairfield 1908 page ref.91).

The design, drawing and tracing departments and the moulding loft were generally understood to be the principal technical departments. These departments were created as a means of discharging responsibility for ship design and to ensure accuracy and expedition in construction.

The shipbuilders recognised that they had a responsibility for the design of every ship constructed by them. In creating a design department they also recognised that success would be rendered more certain by:-

a) Possession of carefully collated records.

b) An organised system of working up all data.

c) Tackling new problems.

d) Making new calculations regarding any scientific question.

e) Studying the contemporaneous work as described in technical press and in papers read at technical institutions.

This continuous investigation produced a wealth of suggestions which enabled the heads of the respective departments to determine how far practice could be improved. The design staff were supported by a well selected technical library and work was initiated in drawing offices by a work group who operated under the job title of Draughtsman as illustrated in figure 5.1.

SHIPYARD DRAWING OFFICE

SOURCE: *Fairfields (1908)*

Figure 5.1

The "Printed Instructions to Draughtsmen" throws light on the general principles which influenced this work group. This reads:-

> "Every little detail should be definitely attended to on the drawings and not left to the judgement of the men in shops. Remember that it is usually the unexpected which happens, and that the want of a split pin may cause a breakdown." (Scotts 1906 page ref.89).

In making drawings or sketches for the production shops or for ordering material, the draughtsmen were encouraged to assume that those who had to interpret the instructions had no knowledge of, or information concerning the work in question, except what was contained in the drawing. This ensured that all information issued from the drawing office was complete and that no work was done in the production shops without drawing office instructions. The draughtsmen, in designing work, arranged details so as to fully utilise, as far as compatible, the special machine tools available and the system of gauges, templates, and jibs which were extensively applied in the production shops. Located in close proximity to the drawing offices was the tracing office, a technical department which was unique, in as far as it was resourced by women - illustrated in figure 5.2.

TRACING DEPARTMENT

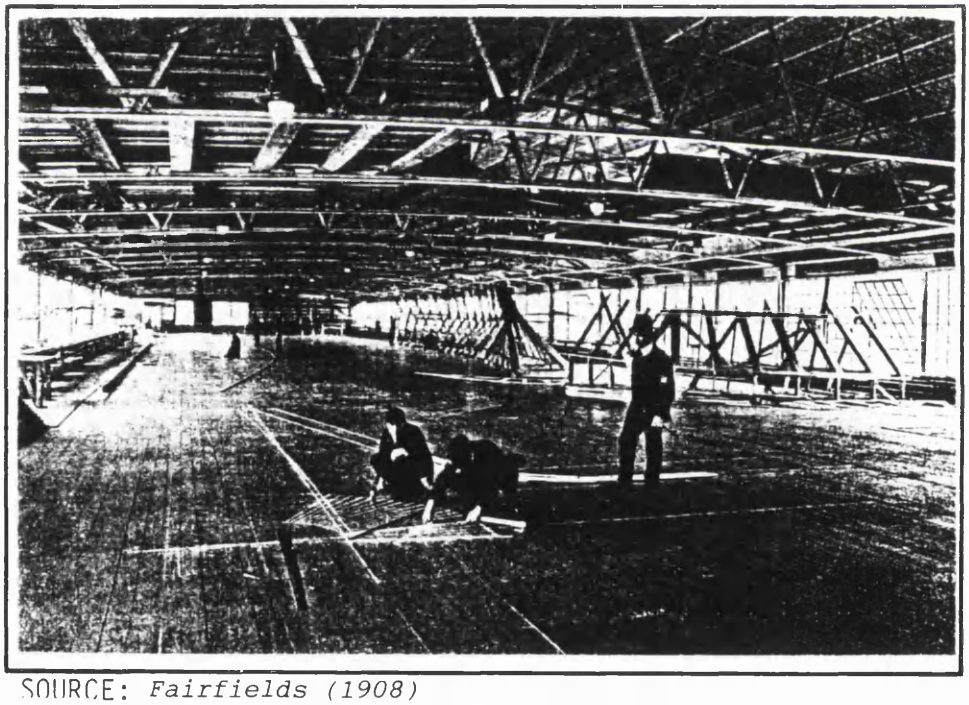
SOURCE: *Fairfields (1908)*

Figure 5.2

The Tracers role was to trace all the draughtsmens' work on to, what was termed "Blue Prints", from which the drawings could be reproduced.

Accuracy and expedition in construction depended largely on the work done, not only in the drawing office, but also in the mould loft. A group of workers known as "Loftsmen", used the draughtsmens' drawings and "layed off" the ships lines on the floor. All lines fair were made "eye sweet". A temporary scrieve board was built in the loft. On this the loftsman reproduced the markings of every unit. These boards were subsequently taken to the frame-bending slabs and used to guide the platers in forming material to the required shapes. Moulds were also made for heavy castings and for units such as stern-post, stem etc. The mould loft is illustrated in figure 5.3.

MOULDING LOFT



SOURCE: *Fairfields (1908)*

Figure 5.3

The loftsmen adopted a system of templating where work was accelerated on the building of the ships hull without losing any of the efficiency.

For example, by the judicious use of a single mould or template, 90 per cent of plates on any of the decks of a ship could be marked, punched, planed and otherwise made ready to go into position before the ship was even framed. All moulds and templates were stowed away after use and were available if a duplicate order was received.

The staff of the technical departments, with the exception of the tracing which, as discussed earlier, was staffed by women, were recruited from the production shop.

> "The great majority of vacancies in technical staff are filled by apprentices who have spent three and a half years in the shops and who are chosen as a result of examination and of satisfactory record in the shop." (Scotts 1906 page ref.90).

Even at the turn of the century, financial facilities were afforded to apprentices and to progressive workmen to attend special classes and the possibility of a transfer to the technical departments was an incentive to the willing apprentices.

Accordingly, the shipbuilding industry's traditional approach to organisation included the creation of a technical function to support the production process and aimed at:-

(a) Securing efficiency through mechanical methods and appliancies.

(b) Discharging responsibilities for ship design and ensuring accuracy and expedition in construction.

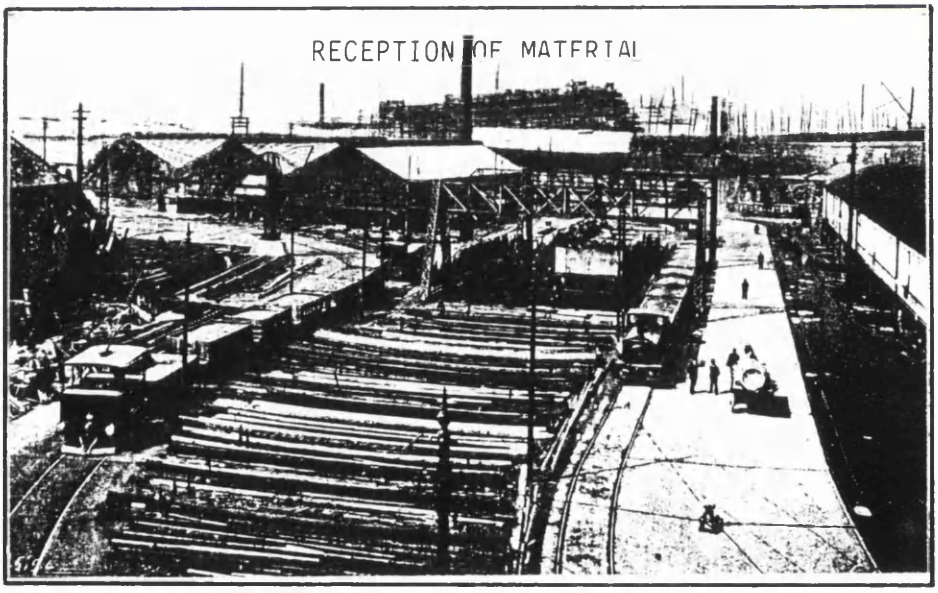
(c) Providing detailed drawings; sketches and templates etc., that ensured full utilisation of the shipyard's manpower and facilities.

As indicated earlier, in addition to the technical function, shipyards also established commercial functions as a means of organising their operations.

2. COMMERCIAL FUNCTION

Foremost amongst the commercial activities was that of estimating where, according to Fairfield (1908), the most complete and descriptive records of costs, rates, wages etc., were kept on a record system. This enabled reference to be made on the costs of steel units and other contract details. It was also possible, by a simple process of comparison, to effectively check the economy of design and manufacture without having to pay a high premium.

Other commercial departments concerned themselves with well organised administration including, timekeeping, wages and costs and material supplies - illustrated in figure 5.4.



SOURCE: *Fairfield (1908)*

Figure 5.4

The technical and commercial departments tended to be the principal function who supported the production process during the first part of the twentieth century, when shipyard plant was unsophisticated and construction proceeded at what, today, would be considered a leisurely pace.

Indeed, during this period great reliance was placed on craft skills and any errors were usually due to individual lapses and not inherently prone to persistent recurrences.

The introduction of electric welding into the shipbuilding production process, however, brought about changes and the emergence of departments associated with production planning and quality control. These departments were of American origin and were introduced during the second world war when there was a need to build ships quicker and in greater numbers. This meant that production schedules had to be planned in detail.

There was also a growing requirement to construct thousands of large sections of ships hulls in workshops far removed from the final assembly area. This gave great impetus to the establishment of accuracy dimensional standards by the individual shipbuilders and the creation of Quality Control Inspection functions. It was, however, a decade after the end of the 1939-45 war before the Upper Clyde shipbuilders recognised the value of introducing such planning and quality functions.

By 1960, however, the Clyde based industry had introduced some highly sophisticated plant and equipment, production rates increased, and the size of ships had grown enormously. Moreover, quality failures were having an adverse effect on production and the discovery and rectification of such defects were affecting the reputation of the shipbuilders. The response of the bigger shipyards was to establish Planning and Quality Departments.

Shipbuilding construction methods and techniques were developed further throughout the 1960's and beyond. Much of this development took place in the expanding Japanese shipbuilding industry which placed more and more emphasis on Planning and Quality. These further developments and the shipbuilding industry's response to them, will be the concern of a future discussion associated with models two and three.

The shipbuilding industry's classical approach to organisation, therefore, included the creation of functions known as 'commercial' and was aimed at:-

a) Providing a system to keep complete and description records of costs, rates and wages, etc.

b) Enabling reference to be made in the costs of steel units and other contract details.

c) Providing a system to effectively check on the economy of design and manufacture.

d) Producing information for future improvements and estimates.

By the 1960's, the shipbuilders had established organisation functions directed to production planning and quality control in response to the industry's requirement to build large sections of ship hulls in workshops, far removed from the final assembly area.

3. PERSONNEL

Shipbuilders created technical and commercial organisational functions to secure efficiencies from the application of mechanical methods and appliances but, in themselves, these functions were not specifically designed or created to address what could be loosely termed as the 'people or human resource side' of the business. The more forward looking of the shipbuilders realised, however, that securing efficiency, particularly in a highly labour intensive industry, was dependent on more than just mechanical methods and appliances.

Efficiency in these areas was related to the effectiveness of the people who were employed to operate the machines and appliances. It required a more human relations approach to organisation insofar as the shipyard workers brought their own needs and values to the organisation. As such, an organisational function known as 'Personnel' was established. The prime objective of the function being to integrate the needs and values of individuals to those of the Company.

Perhaps the Linthouse shipyard of Alexander Stephen best illustrates the industry's traditional approach to organisation related to the people or human resource side of the business. Stephen's yard was considered to be one of the more forward looking shipbuilders. They realised that experts were required to look after what they termed as their most important element - the human element. As such, they introduced a function known as "Industrial Welfare" into the organisation at the beginning of the twentieth century.

The importance of welfare work was, according to the author of 'Alexander Stephen and Son Ltd.', only recognised during the first world war although it had, perhaps, existed even in the nineteen century. He suggested that welfare work was not altogether an alien concept. Indeed, before the beginning of the twentieth century, when workshops were small, it was acknowledged that part of a good employer's responsibilities was to care personally for the well being of his individual employees. The objective of welfare work when introduced, therefore, was to restore that care in larger establishments. The only way to achieve this, on the much larger scale, was to set-up special arrangements for that purpose.

> "At Linthouse in 1918, the Directors realised that just as they required experts to look after machinery and caretakers for buildings, so they must have technicians to look after the most important elements of all - the human element." (Carvel 1951 page ref.156).

Stephen's, therefore, came to believe that, like machines, people required experts to take care of their welfare and other needs and who would ensure that the shipyard workers were trained to effectively carry out their tasks. Experts who would ensure that the work areas were safe and, as such, the shipyard workers could carryout tasks, safe in the knowledge that they would not be maimed, injured or killed, as a result of doing so. In other words, like machines, people had to have care and maintenance to ensure that they operated efficiently. Failure to provide this care would result in inefficiency and, perhaps, even a production breakdown.

Initially, Stephen's set-up an officially recognised committee to deal with welfare work which was generally associated with complaints and grievances relating to working conditions. The committee also provided a continuous communications channel between the Company and the employees.

> "Underlying the move was the recognition of the human worth of each individual from Manager to apprentice and office boy, and the determination that the condition under which a man earned his livelihood should help rather than hinder his attainment of a full and satisfying life." (Carvel 1951 page ref.156).

In effect, the move to set up the committee was a determined effort by Stephen's to recognise that the conditions under which a man performed his work was an influential factor of his satisfactory performance.

Good conditions would influence a good performance and poor performance would be reflective of poor conditions.

The next step was to move away from the committee type situation and appoint a Welfare Supervisor. His work in those days came mainly under the heading of what was called "Works Housekeeping" - the provision of meals, attention to cleanliness and the care of illness and accidents. As the role of Welfare Supervisor expanded, he became involved with issues associated with working conditions, statistics of sickness, labour turnover, timekeeping and absenteeism. As such, the Welfare Supervisors role started to take on many of the tasks which are now regarded as Personnel activities.

4. TRAINING

By 1919 the activities of the Stephen's welfare arrangements were broadened to include the Training of Apprentices.

> "The activities of the welfare department were broadened still further and among the most important considerations of the department was the training of apprentices and means of aiding their development." (Carvel 1951 page ref.162).

Apprentice training was the means by which the industry secured a continuing supply of specialist craftsmen for their craft and trade structures. Young men from the shipbuilding communities, on leaving school, sought a highly valued apprenticeship in shipbuilding as a means of securing their future. It was the welfare supervisor who selected and engaged the young men who would become the industrys' apprentices and it was he who monitored the apprentices progress and also issued them with apprenticeship lines when their time related apprenticeship was ended.

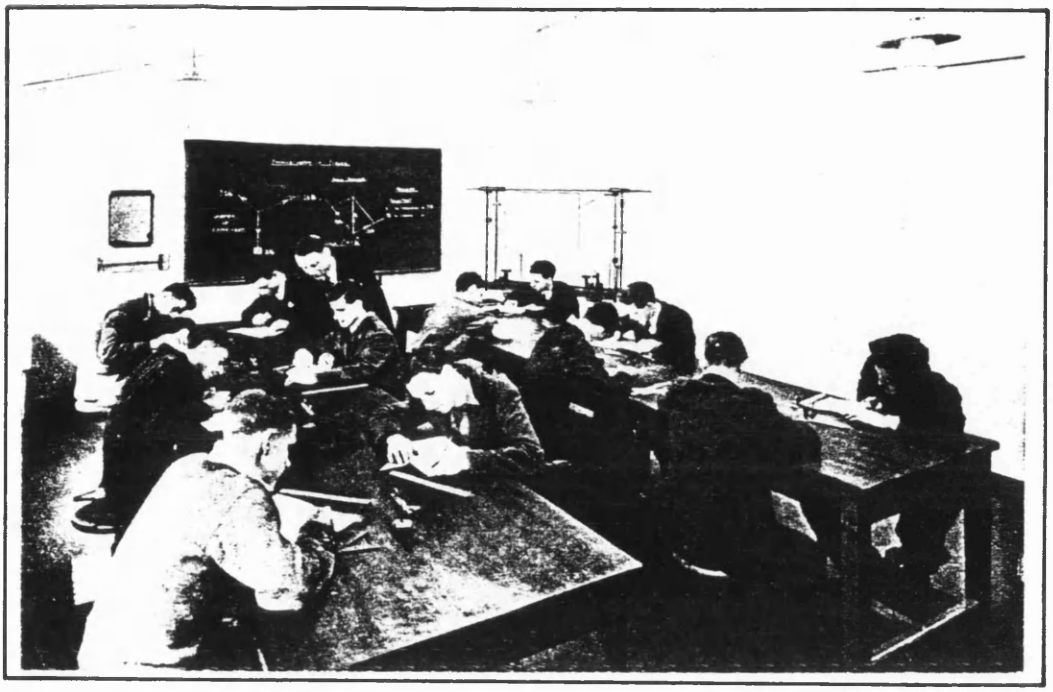
The Stephen's workshops were suitably equipped for the training of these apprentices and, where it was found necessary, special instructors were appointed to train and supervise the work of the apprentices. Alas, the Stephen's approach to apprentice training was not the norm and the training of apprentices in other shipyards did not have the support of special instructors. They had to rely on their own initiative or their good fortune to be apprentices to a craftsman who may, or may not, have been concerned with their training and development.

The role of training gained a boost in 1942 when, what was termed as Joint Committees, were introduced into the shipbuilding industry as a result of a common agreement between Government Employers' Organisation and trade unions. The purpose of the Committees' was to consider methods of improving productivity, preventing bad workmanship and eliminating waste. They also dealt with other practical problems identified by complaints from the management or the shipyard workers.

In the Stephen's Committees' early days, considerable time was given to discussing the recruitment and training of apprentices and, in particular, the stage of apprenticeship at which specialisation should begin. This would imply that the Stephen apprenticeships appeared to be initiated with broader based training and followed later by specialist craft training.

Interestingly, the Committees' at Stephen's, considered training to be about more than simply training apprentices - as illustrated in figure 5.5.

APPRENTICE TRAINING SCHOOL



SOURCE: *Carvel (1951)*

Figure 5.5.

Training included developing training schemes to equip adults and supervisors.

> "Attention was also given to preparing and developing training schemes to equip personnel as potential leaders and foremen of the future." (Carvel 1951 page ref.162).

Training was not simply confined to apprentices. It included "equipping personnel as potential leaders and foremen", shipyard employees who had to perform critical functions, if organisational efficiency was to be achieved, employees who required to acquire new skills and knowledge as part of the equipment required to perform their functions at an effective level. The Stephen's approach, recognised this and, moreover, acknowledged that leadership training was an essential ingredient of organisational efficiency.

5. HEALTH AND SAFETY

The Directors of the Linthouse yard, by 1920, were directing attention to Health and Safety of the employees by encouraging what was described as safety alertness amongst their employees.

> "The Directors encouraged employees by awarding trophies and prizes, because they appreciated that the best way to prevent accidents at work consisted of the alertness of all workers, and this, in turn, depended on their general health and happiness." (Carvel 1951 page ref.158).

The overall objective was to reduce the risks of shipyard workers being injured, maimed or killed in the processes associated with building ships. In keeping with this end, instructions were given in "Safety First" principles and first aid classes were organised. Suitable rewards were offered for suggestions, both for reducing accidents and increasing the efficiency of the works. The theory was that a work area, free from hazardous obstructions and safety risks, would also be a work area which shipyard workers would work more efficiently insofar as they would not lose time off the job due to accidents, or time off their work through injuries. A clean, tidy and safe work area being associated with organisational efficiency.

The Stephen's approach and concern for the care of the health and safety of their employees was not general throughout the Upper Clyde.

> "Working conditions were spartan in most of the Shipyards though some yards were known to be worse than others. Until the late 1950's, or early 60's, there were no mid-morning tea breaks and no canteens either." (Castle 1988 page ref.29).

Castle further pointed out that little attention was paid to one aspect of health in particular, the provision of toilets:

> "The older yards retained toilets fitted with a curved spiked bar attached to a pipe connecting the bowl to the cistern as a deterrent to would be laggards." (Castle 1988 page ref.30).

Toilets with spikes on the pipe connecting the bowl to the cisterns, in an effort to stop the shipyard workers from leaning back with some degree of comfort when going to the toilet - perhaps emphasising the lack of a human approach to organisation. However, this was the typical shipbuilders traditional attitude to their workforce and may explain the industrys' poor industrial relations.

The attitude of these less forward looking shipbuilders changed somewhat from the early 1960's. Prompted by legislation, and the introduction of the Shipbuilding Regulation of 1960 and the Factories Act of 1961, the approach to the health and safety of shipyard workers was more formalised. Implicit, within the legislation, was a requirement to maintain a 'safe' place of work and to appoint a 'Safety Officer' whose sole function would be related to safety activities.

6. PARTICIPATION AND INVOLVEMENT

Ensuring a safe place of work was not a process that could be carried out by a shipyard management in isolation. It was a process which required the participation and involvement of the shipyard workers. The type of participation and involvement that was introduced into shipbuilding in 1941 and known as the "Joint Councils".

The Joint Councils of 1941, were introduced as a result of a common agreement between Government, Employers Organisation and Trade Unions. The purpose was to consider methods of improving productivity, preventing accidents, bad workmanship and eliminating waste. They also dealt with other practical problems identified by complaints. The agreement for the functioning of these Committees was limited in time to the duration of the war or, at most, until the "essential work orders" were withdrawn in 1945.

However, at Stephen the work of the Joint Councils extended beyond that point. They established a Shipyard Joint Council after 1945. The Council first met in March 1946 and, in terms of the shipbuilding industry, this marked the inauguration of the first Shipyard Joint Council outwith the remit of the "Essential Work Orders Provisions" in Scotland. Addressing the opening meeting at Linthouse, the Stephen Director who presided, outlined the scope and function of the Council.

> "Our concern is different, for the only restriction laid on us is the avoidance of topics which are the subject of trade union agreement. We are concerned primarily with the efficiency of it - two subjects which go hand in hand, so that neither can be achieved without the other." (Stephen 1951 page ref.160).

He further pointed out that the shipyard Joint Council was a forum for joint consultation between management and the shipyard workers:-

> "This joint consultation is not merely window dressing or 'eye-wash'. We, the management, really believe that you are entitled to have a voice in these aspects of the business and they are many in which your skill and experience make your opinions of value". (Stephen 1951 page ref.160).

He appeared to recognise the expertise that the shipyard workers possessed. They, perhaps better than anyone else, had the skills and experience in the workplace and this gave them a knowledge of 'best practices' - as such their views on methods of improvement were important. Joint consultation was the Stephen's way of tapping this vast reserve of knowledge with the aim of improving productivity.

The statement on the Joint Councils work was accompanied by an announcement of Labour Policy which made it clear that the Company aimed at an equitable distribution of the benefits which resulted from joint consultation and the co-operation of employees. There was an assurance that everything would be done to provide continuity of employment and, where possible, to promote those who had proved their capacity. In effect the establishment of the Joint Council had all the ingredients of what, in the 1980's became known as Industrial Democracy, Worker Participation and Profit Sharing.

The far sighted approach of Alexander Stephen to participation and involvement and, indeed, their overall approach to the People or Human Resource side of the business was not universally practiced throughout the shipbuilding community. In fact Stephen's were one of the few shipbuilders who attempted to integrate the needs and values of their employees with that of the shipyard. With the great benefit of hindsight it is now, however, recognised that well organised and productive organisation functions devoted to the human resources side of the business, greatly influences manpower effectiveness and performance.

Indeed, in the three models of manpower utilisation, the Fairfield Glasgow Experiment, the British Shipbuilders P.I.P. Initiative and the Kvaerner Govan Approach, which will be discussed in detail in future chapters, the role of Personnel and its individual component departments was central to the change process associated with increased efficiency.

In all three models the organisational business plans were underpinned by industrial relations agreements and supported by effective training programmes. As such, they were brought to fruition through the effectiveness of the Personnel, Industrial Relations, Training and Health and Safety Departments. Shipbuilders, therefore, created a Personnel function aimed at:-

a) Caring for the well being of individuals and integrate their needs and values with those of the organisational objectives.

b) Dealing with complaints and grievances relating to working conditions and providing a continuous communications channel between the Company and the employees.

c) Directing attention to Health and Safety and attending to works housekeeping, the provision of meals, cleanliness, care of illnesses and accidents.

d) Recruiting, selecting and training apprentices and developing training schemes for all employees including programmes for potential leaders and foremen.

e) Collating statistics on sickness, labour turnover, timekeeping and absenteeism.

f) Providing a forum for joint consultation and co-operation between the Company and the employees.

Part of this joint consultation process considered methods of improving productivity, preventing accidents, bad workmanship and eliminating waste.

These joint consultations aimed at establishing mutual respect and confidence on both sides of industry which would lead to further innovations associated with manpower utilisation and flexibility.

7. CONCLUSIONS

It could be argued that the shipbuilding industry's classical approach to organisation developed, through necessity, on an adhoc basis. Necessity in the sense that the early builders of iron and steel ships recognised the need for securing efficiency in mechanical methods and appliances and a requirement to support their manpower with accurate information. Adhoc, from the point of view that organisational support functions, commercial, personnel and planning were simply added to the structure as the size and degrees of sophistication of the vessels to be constructed increased.

The establishment of organisation support functions, however, had considerable merit, from a manpower utilisation point of view, given that:-

(a) In addition to securing design efficiency, the technical organisational function also produced drawings detailing the structures or appliances to be constructed and the parts required for the work. This was rather akin to the approach adopted by the producers of the modern self assembly 'flat pack' furnishing units. A drawing gives the assembly procedure and details of the materials to be used during the assembly process. Providing all the materials and equipment are available, it would be reasonable to assume that no time would be lost during assembly and normally the unit would be built accurately.

However, if the detailed information is deficient or materials are missing or mislaid then, presumably, time will be lost searching for the missing materials and this adds time to the assembly process. In a shipbuilding context this type of lost time means that unnecessary manhours are added to the completion of ships. Therefore, an organisational function which reduces or eliminates lost time, improves the utilisation of manpower and, thereby, contributes to shipyard efficiency and competitiveness.

(b) Initially, shipyards were small uncomplicated units where the managers knew their employees and took time to care for their individual needs. They were transformed into large complex operations employing thousands of people, in any one site, as the size of the vessels and levels of ship sophistication increased. Under these circumstances, it was reasonable for the managers to conclude that they had to delegate responsibility for the care and maintenance of their employes to an organisation. It was, therefore, logical that an organisational function was created to deal with the 'people' aspects of the business, growing in importance as employment and health and safety legislation placed significant demands on shipyards and their management.

This completes the account of the 'classical' model of manpower utilisation which, after a century of experience (1860 to 1960), still retained the essential ingredients of its early phases - specialisation of function in production and management - traditional craft system and demarcation, adoption of incentive payment systems etc.

It was, however, still an evolving system taking account of larger scale new ideas and new technology, notably the influence of thinking on welfare, personnel, health and safety and consultations.

A new wave of thinking, as depicted in Model Two - 'the Scientific Management' model and associated with concerns about the treatment of employees, lack of achievement in productivity and the increased competition in the shipbuilding markets, produced the next stage of development.

CHAPTER 6: THE SCIENTIFIC MANAGEMENT APPROACH TO INDUSTRIAL RELATIONS
MODEL 2, PART 1

1. THE AIMS

The 'Fairfield Experiment' (1966-67), with its Government, private enterprise and trade union shareholding, was intended as a five year experiment, but events, and in particular, the establishment of the Upper Clyde Shipbuilding group, curtailed the duration of the experiment to slightly less than two years. Despite its short duration, the 'Fairfield Experiment' was, however, significant, in that it provided an opportunity to introduce new management techniques and communication systems into what had hitherto been a traditional craft industry. Furthermore, throughout the period of the experiment, determined efforts were made to resolve the shipbuilding industry's problems and, in particular, those associated with industrial relations and manpower utilisation policies.

Described by its founding chairman, Sir Iain Stewart, as the "Fairfield Industrial University", the experiment was, in his opinion, an opportunity to do something worthwhile in an ailing industry which provided work and employment for hundreds of thousands of people in Companies' associated with building ships.

Stewart, who inherited an organisation characterised by the problems of manpower utilisation outlined in the last 2 chapters, recognised that a poor approach to industrial relationships between management and labour had been a major obstacle to performance, not only in shipbuilding, but in industry generally. This obstacle had an adverse effect on the economic growth and prosperity not only of industry but, in general, of the country at large.

The founding Chairman believed that Fairfield would be an ideal "Proving Ground" for an experiment to address and tackle the major obstacles associated with this poor approach to industrial relationships. Some five years after the experiment ended he supported the original idea of setting up the "Proving Ground" at Fairfield by citing an independent study carried out by the International Institute for Economic Research. Quoting from the report and comparing the growth within Britain with that of its international competitors he said:-

> "The truth is that wherever the rate of growth has significantly exceeded ours, one may find in one form or another, a distinct superiority in the behaviour of labour as compared with ours and this superiority is mainly due to superiority either in practices of management or in Government policy or in both, in the approach to the influences which determine whether workers are willing or unwilling partners in the industrial process. There can be little doubt that the British malady of sluggish economic growth reflects fundamental failures in the handling of natural resources which on the precept of theory and by the example of practical success holds the key to growth, namely labour." (Stewart 1972 page ref.56)

He, therefore, was not alone in believing poor industrial relations had been the major obstacle to growth and prosperity during the 1950's and 1960's. Further, he believed that the problems of redundancy, caused by the drive for a more effective use of manpower, had to be solved to the satisfaction of the labour force before it could be hoped to improve industrial relations. He believed that redundancies, associated with modernisation, were at the root of shop floor resentment and resistance to the change process.

However, according to Stewart, the British labour force could be counted on to change their behaviour, and their non-co-operative attitude to change, if they were given the right leadership, security and the dignity they desired:-

> "It is useless to look to the workers themselves for the remedy for their counter-productive attitudes. Fundamental changes will not take place unless policies and practices both of management and of the Government are resourcefully shaped to produce them. It is best to place responsibility here because placing it with the workers will simply produce non significant results." (Stewart 1972 page ref.59).

He, therefore, felt that workers behaviour and counter productive attitudes could be changed if they were given the chance to work with superior management on plans and processes associated with improving efficiency and productivity without the risk of being thrown, as a result, on the scrapheap of unemployment.

This viewpoint perhaps, rather surprisingly considering the state of the Upper Clyde shipbuilding industry of the 1960's, was not universally welcomed. Indeed, the philosophies of the 'Fairfield Experiment' were deeply resented by the shipbuilding community at large and, as such, the enterprise was regarded as a dangerous rogue elephant.

Despite these rejections the founding Chairman recognised that Fairfield presented a unique opportunity to carry out a basic experiment in industrial relations in a traditional industry. The 'Fairfield Experiment' of 1966 was, therefore, set up as a "National Proving Ground" whose principal aim could be summarised as:-

(a) To first and foremost establish a testing place for management and the objective was to produce a transformation in the workers behaviour and counter productive attitudes.

(b) To remove from the industry the major obstacles to growth and prosperity.

(c) To secure lasting profitability for Fairfield as a shipbuilder.

(d) To prove to the nation that properly financed, planned and an understood approach to regular employment and training schemes for re-employment could result in profitability through real co-operation.

It was, however, acknowledged that Fairfield was being set up at a time when the risk of redundancy was increasing. Uncompetitive shipyards were closing. Moves to modernise those remaining threatened the shipyard workers' highly valued traditional working practices, manning levels and specialist craft and trade structures. One of the key components of the Fairfield strategy was, therefore, to provide an industrial relations forum where management and trade union at Fairfield could discuss these and other threats to job security, in isolation and in the spirit of co-operation and trust.

2. ATTITUDES AND REDUNDANCY

A fundamental principle of the Fairfield Glasgow philosophy, and indeed, the Company's approach to industrial relations was based on the founding Chairman's belief that the problems of redundancy were the root cause of shop floor resentment and resistance to change.

Indeed, this resistance was particularly evident in changes associated with any drive to increase the efficiency of manpower utilisation. However, Stewart's belief was that the workers' behaviour and counter-productive attitudes to change could be influenced if they were given the chance to work with management on plans and processes associated with improvements without the risk of being turned, as a result, on the scrapheap of unemployment:-

> "A big factor in the attitude of labour was killing the redundancy bogey. Once we got them accepting discipline and had started loading them with work we guaranteed them employment for three years and that took the heat off. We were guaranteeing to establish with training and re-training, flexibility and mobility provided we could make that work and turn an unprofitable Company into a profitable one." (Stewart 1971 page ref.132).

The killing-off of what was termed as the "redundancy bogey" was recognised as critical to changing the behaviour and counter-productive attitudes of the Fairfield workers. This, indeed, before any manpower utilisation policies aimed at transforming Fairfield from an unprofitable into a profitable shipyard could be introduced.

The cyclic nature of shipbuilding and the traditional way in which manpower was used, see reference above (Chapter 4 Sect.3) meant that redundancy had become an integral part of the business. The launch of a ship inevitably signalled that the work of those trained in steelwork trades was all but finished and their jobs redundant. Outfit workers, recruited after launch, took over the finish of the vessel and when the ship sailed from the yard they, like the steelworkers before them, found their places in the unemployment queues.

This tradition was probably acceptable when there were many yards on the Upper Clyde, at different stages of work and with healthy order books. Redundancy from one yard meant moving to another yard, but in the same local labour market and using the same skills. But with the shortage of yards and with those remaining having thin order books, the prospect of full employment through mobility, became increasingly difficult to achieve.

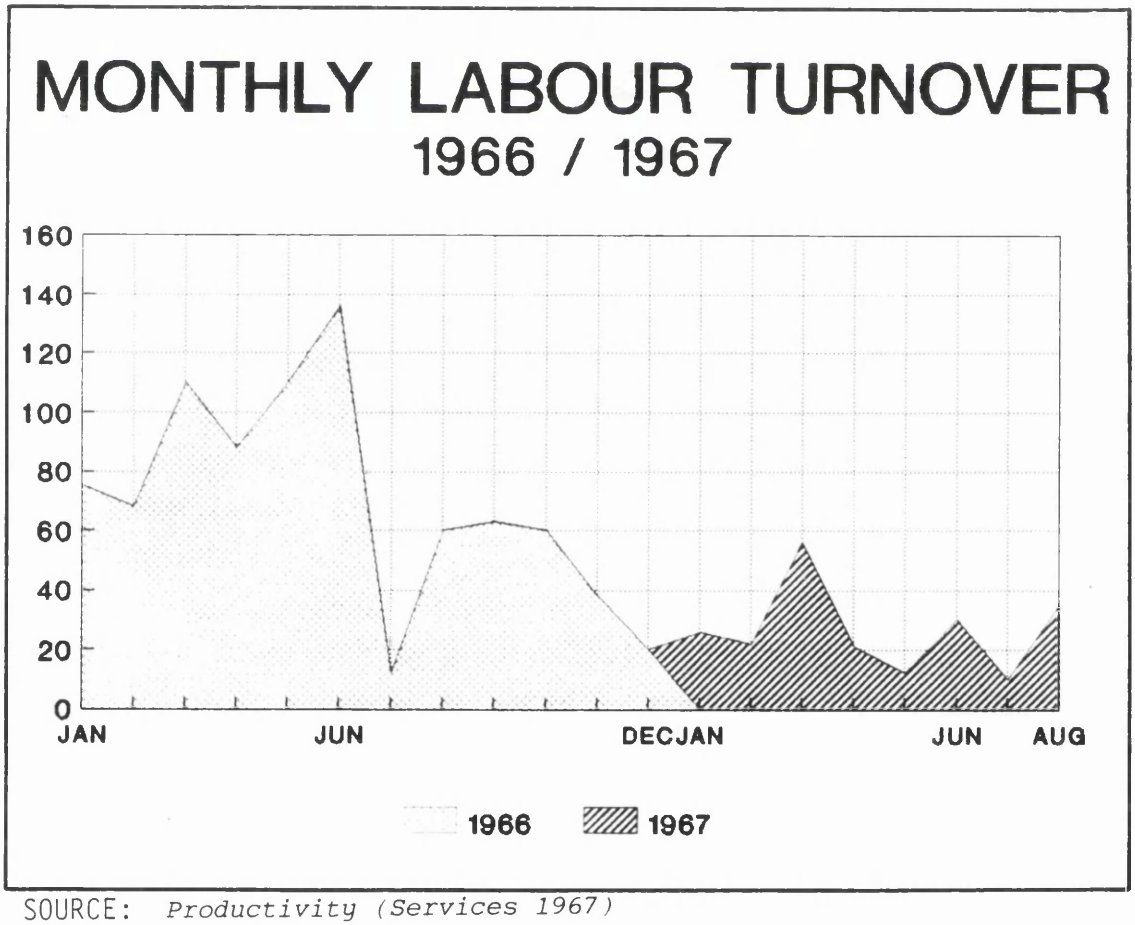
Insecurity, fear and resentment feelings, which helped mould, what has been previously described as, counter-productive attitudes, were all by-products of this redundancy bogey. These feelings gave rise to a resistance of any new ideas which, on the surface, appeared to be aimed at reducing employment prospects. Moreover, the fear of unemployment created situations where Unions defended overmanning and a job supported two or three workers instead of one. The reality of this was that the industry became uncompetitive, shipyards closed and the Upper Clyde shipbuilding industry was in decline.

The magnitude of what Stewart had called the 'redundancy bogey' is, perhaps, best illustrated by the Company's labour turnover statistics for 1966 and a shop stewards comment quoted in Paulden (1969).

> "The shop steward explained that every time a new ship hit the water a batch of men would be paid off. So, a few weeks before, if another yard was busy on a new order, half the lads would leave to get in there first and be sure of a few months more work at the other company. If there weren't any other ships coming along on the Clyde, then they'd say 'well let's get what we can out of this one. The way the men looked at it, according to the shop steward, was that it was in their interest to keep the ship delayed and keep themselves in work." (Paulden 1969 page ref.70).

In both instances cited by the shop steward, a ship nearing completion was held back because the men stretched the work out or because there were not enough men, suddenly, to finish the job. Therefore, by offering some job security, and by establishing trade union participation with the management processes of the Company, Stewart tackled firstly the redundancy bogey and thereafter provided a platform for workers to work with management on plans to improve manpower utilisation.

The strategy of offering job security to a labour force of 3,500 had a considerable impact on labour turnover, as illustrated in figure 6.1. From a monthly peak of 136 in June 1966, turnover dropped dramatically and the monthly peak for the following year was 30, reached coincidentally in June 1967.



SOURCE: *Productivity (Services 1967)*

Figure 6.1

It would, however, be foolish to suggest that the turnover problems were resolved entirely by the Fairfield approach to job security, of course they were not. Another influential factor was the shrinking Upper Clyde shipbuilding industry and the fact that job opportunities were limited by the reduction in the number of shipyards. As such, the shipyard workers' ability to move from one shipyard to another was restricted.

The Fairfield approach of offering job security as a means of changing the shipyard workers behaviour and counter-productive attitudes was, therefore, aimed at:-

(a) Killing off the redundancy bogey.

(b) Reducing the shipyard's labour turnover problems, which resulted in workers stretching out work as the ship neared launch or completion.

(c) Reducing the shipyards labour turnover problems associated with workers leaving the shipyard to take up new employment with a longer time horizon at critical times before the ship launch or completion.

The approach was also aimed at providing a platform for the shipyard workers and management to work together on plans to remove Fairfield's manpower constraints.

3. MANPOWER CONSTRAINTS

Even though the turnover problems had been partly resolved, it was recognised that the problems of removing Fairfield's manpower constraints would still be difficult. These problems included job demarcation, overmanning and a lack of supervisory control:-

> "Jealousy over jobs meant strict demarcation, not only between unions, but also between trades inside the same union, "one man one job" had been the slogan for 150 years and is applied, for example, to the ten or more distinct trades within the Boilermakers Society, so that a shipwright could not drill a hole, a blacksmith was not allowed to weld. There were caulkers, platers, shipwrights, welders, riveters, holders-on, and sheet iron workers, all with strict limitations on what they were permitted to do." (Paulden 1969 page ref.71).

Paulden explained how it took three men all afternoon to fix an electric cable on the ship's bulkhead. The electrician would go and find a driller. His foreman would contact the foreman of the drillers and ask for a man to be sent. When the driller had been spared and had drilled the couple of holes, the electrician would then ask his foreman to locate a caulker to prepare the holes for his fixture. The same procedure was repeated and then at last, after the various breaks and delays, the electrician was allowed to install his cable.

This type of demarcation was, of course, having an adverse effect on the Fairfield competitive situation and, as such, was a principal manpower constraint. However, James Houston, the Production Services Director at the Yard, stressed that the management at Fairfield were not against demarcation completely. The specialist craft and trade structure was respected, but there had to be a greater degree of flexibility for the specialists to do simple tasks to progress their jobs. He maintained:-

> "We are all for some form of demarcation, but in management language we call it specialisation. We do not want the electricians to fix our plumbing and we do not want the welders to build our wooden decks.

> What we want is for an electrician to be able to drill a simple hole when he is fixing a lamp, just as any householder would be competent to do. When there is no work left for the sheet metal worker, we want to be able to train him as a plater or as a welder where there is a shortage of men." (Houston 1969 page ref.121).

Paulden described how manpower was also constrained, due to the lack of proper control and supervision, one batch of men would spend a day fitting cabins with formica walls and ceilings, later along came electricians to lay the cables behind the walls. The formica would have to be ripped out and then put back again the following day, doubling the cost of work. There were complex systems of pay differentials so that as many as 500 rates of pay were running concurrently in the Company and these too were creating problems of manpower utilisation.

> "So jealously did the men guard their differentials and guard the available work, that a main theme of union activity was a fight against changes - against changes in rate structures, against the loss of work to another type of tradesman, against the loss of an exclusive right to a certain type of job". (Paulden 1969 page ref.70).

The jealous defence of jobs by unions and the rigid demarcation principles even prevented men moving from defunct trades such as riveters, into the booming trades, and a spirit of suspicion had been fuelled by the fear of unemployment if a job was lost. Consequently, a major part of the drive to improve manpower utilisation was to remove the suspicion and fear of unemployment and replace it with trust, confidence and job security.

The principal manpower constraints at Fairfield could, therefore, be summarised as:-

(a) The problems of strict demarcation and the notion of 'one man one job' which inhibited the shipyard worker's ability to practice a trade outwith his own trade boundaries.

(b) The problems of overmanning which meant that several tradesmen had to perform their own individual specialist tasks on a job which could have been performed by one man.

(c) The problems of lost manhours, due to the shipyard workers of one trade waiting on the services of another.

(d) The problems associated with the lack of control and supervision of work, which resulted in rework and doubled the costs.

(e) The problems of complex and chaotic pay differentials which resulted in trade unions claiming exclusive rights to certain jobs and resisting the loss of this work to another trade.

(f) The demarcation principles which prevented workers moving from defunct to booming trades.

These manpower constraints were, of course, associated with the specialist craft and trade structures and many of these constraints had been embodied in the shipbuilding industries collective bargaining agreements. In effect, the specialisation requirements which were originally introduced as an aid to efficiency had become too highly structured and fragmented, and were characterised by virtually watertight compartmentalisation.

The problems of management, in trying to coordinate this, became increasingly more formidable. At the same time, the competitive condition of the industry world wide had tightened in such a way as to make this rigidity and compartmentalisation insupportable in economic terms. The division of labour had gone well beyond what the new market place would actually bear.

4. AGREEMENT AND OWNERSHIP

During the 1960's, the activities associated with industrial relations were regulated by collective bargaining agreements. These agreements were not made between the management and workers of the individual shipyards, but between the Shipbuilding and Shiprepairers National Association and the Confederation of Shipbuilding and Engineering Unions. However, employees were dissatisfied with this approach. They expressed this dissatisfaction in many different ways. These included, complaints, formal grievances, industrial disputes, absences, lack of commitment to work, and a lack of concern for quality and economic realism.

An extreme example of this dissatisfaction, cited earlier by Wilson (1972), was industrial disputes, an activity which became more and more commonplace in the shipbuilding industry of the 1960's. Indeed, by 1965, the number of days lost through strikes was, on average, some 5 times above the national average. The significant difference between shipbuilding's record and elsewhere, was on issues of job demarcation which were three times more important in shipbuilding as compared to other industries.

It was not surprising, therefore, that one of the principal aims of the 'Fairfield Experiment' was to change this poor approach to industrial relations and prove that the management and workers of the shipyard could work together and create industrial relationships that would benefit the Company, the workers and the community at large.

An important feature of this was a move to replace multi employer bargaining with company bargaining.

According to the founding Chairman:-

> "If we were to have the freedom to experiment with new ideas, it is vitally important that we should be able to negotiate with the unions in isolation from National Agreements and so re-negotiate the Rule Books." (Stewart 1968 page ref.107).

Fairfield required the freedom to negotiate with the union in isolation, to ensure that industrial relations agreements were related to the Fairfield business plans and, as such, addressed specific shipyard problems. This part of the approach could be loosely termed as seeking local ownership, to ensure that the managers and the trade unions at Fairfield concluded agreements which reflected their views and their thoughts, and related directly to their local situation. Furthermore, having previously obtained the verbal pledge of co-operation from the trade unions at National, local and shop floor levels, Stewart hoped that, in time, Fairfield the "Proving Ground", through well angled publicity, would not be regarded as an ordinary shipyard, that it would be appreciated and used by the Government as Britain's first industrial laboratory for industrial relations.

To create the correct industrial relations climate, the founding Chairman set the following objectives for the 'Fairfield Experiment'.

> Firstly, that in isolation from the cumbersome national negotiating machine and with direct communications the trade unions would co-operate with modern Management techniques in promoting higher productivity through genuine productivity and wage related agreements.

In effect this was a high pay, high productivity strategy and meant that as time went on, earnings would rise and fall in accordance with accurately measured productivity.

Secondly, that in such an environment, orders would be forthcoming to such an extent that the venture would be ready for a market quotation after a period of five years.

Thirdly, that through craft re-training and planned re-employment within the experiment the work force would be adjusted to suit the work load, the weak traditional negotiating expediency of "no redundancy" guarantees would be avoided, and in due course redundancy itself would be acceptable Nationally as a respectable feature of healthy industrial activity.

5. PARTICIPATION AND COMMUNICATION

What actually happened at Fairfield, according to Stewart, was that Government provided his enlightened colleagues with a National Laboratory within which they conducted a revolutionary experiment of national significance in many forms of industrial activity with the full co-operation of the trade unions. These experiments included trade union representation on a part-time board which contained no shipbuilders, trade union investment in equity, full time shop steward convenership, and radical changes in methods of negotiation and communications. He wrote:-

"At Fairfield we had a two-tier board system. We had a policy board of which I was part-time chairman, and on which two executives also sat. The rest were outsiders, a merchant banker, other industrialists and two leading trade unionists. This board established policy and left management to implement it.

> Now the executive management board has three trade unionists sitting in. In other words, management reached decisions after knowing what the trade unionists thought about it. So you had trade unions involved in management decisions without being responsible for them at policy and executive levels. But if there were any management troubles it was the management board that carried the can. Trade unionists were not party to those decisions." (Stewart 1971 page ref.131).

The trade unions were thus involved on the Board of Directors, they participated in the Executive Management Committee and on the Central Joint Council. These approaches to trade union participation had differing degrees of success. On the Board of Directors, for example, there were two trade union members. According to the Shipyard Director:-

> "Both members had National Executive authority and they proved excellent Directors, making as good a contribution as anyone, but it was almost entirely irrelevant that they had come from the top of a trade union rather than from, say, the top of the personnel side of a big company. This followed from the fact that they did not represent the men in Fairfield, there being eleven other unions and loyalty to a man's own union is vastly greater than his loyalty to unionism." (Blanford 1969 page ref.4).

Moreover, he pointed out that the two Directors did not work in Scotland and so they were not personally known even to the members of their own union. He further observed that the communications structure within the unions did not make it easy for these Directors to influence the rank and file in the Company or to be influenced by them.

Accordingly, it may be concluded that while senior trade union officials could make excellent Directors, their appointment had little relevance to direct participation.

Another form of trade union participation was practiced by the Executive Management Committee consisting of a General Manager as Chairman and 10 or so Executive Managers from the major departments, the Yard Convener and the Conveners of the A.E.U. and Boilermakers. This committee discussed all innovations and progress reports submitted from each of the shipyard's Executive Managers. New policies were usually submitted to the Committee in the form of a draft report for discussion.

The first few months of the Committees' life, according to Shipyard Director, were difficult. Neither side felt free to speak their mind in the presence of the other. Nonetheless, both sides benefitted from learning how the other thought and valuable advice was given by the Conveners and accepted. There were, however, problems with this approach to participation:-

> "One problem with which the Committee had to live with was that the Conveners could get information to their shop stewards and thus to the men much more quickly than Managers could reach their men through their Foremen." (Blanford 1969 page ref.5).

This particular problem had quite clear implications for the relationship between the foreman and his men and created a situation whereby the shop steward and not the foreman became the "fountain of knowledge". Further, a notable feature of the Committee was that the Conveners had a clarity about their role; a clarity which contrasted with the fogginess of Management thinking.

The Conveners saw their role as that of elected representatives who wished to know about, and to comment on, Management procedures and decisions. On no occasion did they want to decide or to take part in managing the business.

Blanford, however, acknowledged that notwithstanding the merits of the other forms of involvement and participation the most successful form to emerge from the 'Fairfield Experiment' was that practiced by the Central Joint Committee. This Council consisted of one member from each of the thirteen unions of employees in the yard and four members of management.

The Chairman, normally a General Manager, was appointed by the Management and the Secretary was appointed by the trade union members. Each union member had national executive authority. The management members were the General Manager, a member of the Main Board, the Executive Manager of Management Services and the Personnel Manager.

The Central Joint Council was credited with influencing the thinking of top management, who, through this forum, were made aware of the ideas which could be easy to implement and these which would be difficult. The trade union officials also benefited in that they came to know the top management of the Company as people, as opposed to just names and job titles. Moreover, they came to realise that if management were, in their view, making mistakes, at least the motives behind the mistakes were known and honourable.

> "The most important result was that the shop stewards and many union officials grew to consider that to exploit the mistakes of trusted managers was 'below the belt' and grew to inform managers when they thought it probable that a mistake was going to be made and so to help to avoid trouble." (Blanford 1969 page ref.5).

Thus, a trusted manager was seldom surprised by the action, or reaction of his men, since his shop steward had warned him in advance. This relationship worked both ways and became the oil which, according to Blanford, made the industrial relationships between the Management and the workforce run smoothly.

It can, therefore, be concluded that participation at Fairfield was not mainly a matter of techniques or having trade union directors. It was a result of a determination on the part of the top management to inform and to listen to the views of the workforce, their shop stewards and their trade union officials. Out of these dialogues grew understanding, and out of understanding came trust and involvement.

6. THE SHOP STEWARDS ROLE

A key feature of the Fairfield approach to industrial relations was the role of the local shop stewards, elected by the shipyard workers to represent their views in discussions with management. As individuals they were regarded by the shipyard workers as the custodians of the working practices associated with the individual trades and whose prime responsibility had been to protect the trade boundaries from encroachment by other trades.

As such, the welder shop stewards, for example, would defend the territories of the welders and ensure that other trades, such as platers, were discouraged from using welding equipment. This equipment was regarded by the welders as their "birthright" and any attempt by other trades to use the equipment to progress their work would be strongly resisted and inevitably lead to a demarcation strike.

The role of the shop steward in shipbuilding was, however, fraught with danger. He tended to be regarded by management as a 'trouble maker', a negative influence who, inevitably, was at odds with supervision and management as he bargained with them on issues associated with adverse working conditions, overtime rates, working practices and disciplinary offences.

This tended to place the shop steward at a disadvantage in terms of job security and restricted his ability to gain employment. He was one of the first to be paid off when jobs had to be shed and, normally, one of the last to be employed when work was plentiful. 'Who wants to employ a known trouble maker?' was the normal reaction from the shipbuilders.

There were regular meetings for the full shop stewards committee, and the executive committee of shop stewards. However, difficulties arose with the amount of time some shop stewards spent on their affairs, which varied from an hour a day for some to all day for others.

Investigations carried out by the Company showed that around 25 hours a month was considered reasonable, this being an average of about an hour per day. Managers and Foremen found it difficult to tackle shop stewards on this matter although those who did, according to Blanford, got results and co-operation.

Accordingly, the Fairfield approach to industrial relations included:-

a) The acknowledgement by the Company that the trade unions had a vital role to play in the industrial relations process. This demonstrated by the appointment of full time conveners and the payment of shop stewards for time spent on trade union activities.

b) The establishment of a participative approach to industrial relations, an approach in which top management informed and listened to the views of the workforce, shop stewards and trade union officials.

c) The creation of an understanding between management and the workforce, and out of this understanding came trust and involvement.

d) The introduction of clear lines of command and of communication, including the establishment of negotiating, grievance, disciplinary and other essential procedures.

The Fairfield approach to industrial relations, therefore, provided a platform for the introduction of manpower utilisation and flexibility policies.

7. CONCLUSIONS

The Fairfield approach to industrial relations was radical and revolutionary. Radical, in the sense that it afforded the trade union officials and the local shop stewards a role in managing the shipyard's change process. Revolutionary, from the point of view that it signalled a move away from the traditional centralised national bargaining arrangements to a local shipyard centred industrial relations framework.

Arguably, this move was a serious attempt by the Fairfield management to mend the industrial relations wounds that had hitherto existed between the management of the shipyard and the trade unions. These wounds inhibited co-operation and created 'them and us' entrenched attitudes that, constrained attempts to increase shipyard competitiveness at a time when uncompetitive shipyards were closing and vast numbers of shipyard jobs were being lost. Indeed, on the Upper Reaches of the Clyde no fewer than 8 of the 13 shipyards closed in the period 1957 to 1965.

The Fairfield approach, therefore, had considerable merit insofar as:-

(a) There was sufficient evidence to suggest that the national bargaining arrangements had become cumbersome and bureaucratic. The agreements produced from this forum had little by way of local identity and did not address the problems that were inhibiting Fairfield's manpower utilisation and competitiveness. Therefore, given that the national arrangement was fundamentally flawed the move to a local framework had merit.

(b) It could be argued that the move to a local industrial relations framework enabled Fairfield to adopt new working and management practices without the difficulties of having to convince shipbuilders and trade union officials nationally of the merits of the new practices. In this context a local framework was, therefore, logical from the point of view that it gave Fairfield the opportunity of breaking with tradition and rewriting the 'rule book'.

(c) Controversial though it was, the move to create on active role for the shop stewards in managing the change process had credibility. The shop stewards were the critical communications link with the shipyard workers and a powerful voice in the shipyard. Given, therefore, that the changes Fairfield intended to introduce were radical, it was logical that the shop stewards involvement and commitment was secured and their powerful voices used to support the change process.

The more cynical would argue that the Fairfield approach to industrial relations was simply management abdication. They would suggest that what really happened at Fairfield was that management gave up their right to manage the shipyard and left themselves at the mercy of the shop stewards and the trade union full time officials. Others could conclude that the Fairfield approach to industrial relations was far sighted. They could argue that the involvement of the shop stewards in the management of change although controversial was essential, given that their ownership and commitment was an integral part of the change process.

CHAPTER 7: THE SCIENTIFIC MANAGEMENT APPROACH TO MANPOWER UTILISATION AND ORGANISATION MODEL 2, PART 2

1. FLEXIBILITY AGREEMENTS

The Fairfield approach to industrial relations had provided a platform to conclude agreements that were aimed at introducing more open forms of flexible working as a means of improving manpower utilisation and effectiveness. The management at Fairfield, in co-operation with the trade unions, set out to tackle the problems of demarcation and restrictive working practices.

> "We signed flexibility and interchangeability agreements with all three major working groups. Some people outside the industry have been surprised at the apparent ease with which these agreements have been reached. It is only fair to point out that we inherited a group of badly frightened men who avoided the labour exchange queue by the skin of their teeth. Fright, though infinitely undesirable, eased the atmosphere in which to negotiate new ideas, originally, particularly our procedure and demarcation agreements." (Reid 1967 page ref.33).

The first of the flexibility agreements was offered by the boilermakers, who had put a great deal of detailed work into an agreement on the relaxation of working practices. In effect, this agreement relaxed the demarcation boundaries surrounding the various boilermakers trades. Ironically, it moved away from the Adam Smith theory of job specialisation, a theory on which the boilermaker trade structure was originally created, and moved to what Atkinson (1986) would have described as functional flexibility.

Within the concept of the (Relaxation of Working Practices) agreement, the main boilermaker trades of platers, shipwrights, drillers, welders and caulkers etc., could do the work of each other in order to progress work and, as will be demonstrated in Section 2, were trained to do this. A designated number of what was termed (R.O.W.P.) burning and welding gears were located in each work location and used as and when required. This agreement, according to John Chalmers, General Secretary of the Boilermakers, abolished demarcation between the different trades within the union.

> "It goes far beyond anything which has taken place in any other British yard. It marks the end of demarcation. It is a far reaching agreement, representing the complete relaxation of the present working practices within the steel trades in the yard." (Chalmers 1969 page ref.109).

At the time the Fairfield Glasgow relaxation agreement for steel trades was the most advanced flexibility agreement in the United Kingdom shipbuilding industry. Indeed, similar R.O.W.P. - relaxation of working practices agreement, or for short, the removal of demarcation, were subsequently bought at Fairfield from all other unions in turn for 9d. per hour, which was approximately a 6% increase in wages. The means of arriving at the flexibility agreements was through method study and the costing of benefits which would be derived from such agreements but, the implementation of the agreement partly failed since, according to Blanford (1969), only about half the forecast savings were obtained. This, because management underestimated the degree of difficulty associated with overcoming the problems of an ingrained culture where workers were unwilling to cooperate fully on removing their demarcation barriers and taking up new flexibility opportunities.

Perhaps, therefore, one of the most significant aspects of the 'Fairfield Experiment' was the realisation that getting value for money after negotiating R.O.W.P. agreements was difficult and required the undivided attention of an experienced management team who had to be specially trained and supervised. This should not have come as a surprise considering that this part of the experiment was all about trying to change the deeply and emotionally held beliefs.

Beliefs that were held by the managers and supervisors who were by products of the craft and trade structures as well as the shipyard workers themselves. Consequently, one of the lessons of the 'experiment' was that, difficult as the negotiations on a flexibility agreement were, it was not as difficult as changing the beliefs of each employee and creating an attitude in favour of the flexibility agreement.

Several important changes were, however, achieved. The most notable was the creation of a boilermaker foreman who supervised teams consisting of some or all of the many steelwork trades of shipwrights, platers, caulkers, burners and welders etc., instead of simply supervising one trade. At Fairfield, therefore, flexibility agreements were concluded between management and the shop stewards that:-

(a) Were aimed at providing cost savings to the shipyard.

(b) Relaxed the demarcation boundaries between the various boilermakers trades and provided for a relaxation of work practices between the various outfit trades.

(c) Created the multi-functional role of boilermaker foreman who supervised work teams consisting of some or all of the steelwork trades.

Getting value for money from R.O.W.P. agreements was, however, regarded as difficult and required the undivided attention of an experienced management team who had to be specially trained. Indeed, training was recognised as being a vital ingredient of transforming the aims of the flexibility agreement into positive flexibility working practices.

2. TRAINING

The founding Chairman insisted fervently that the way forward, at Fairfield, was to establish a training and retraining programme which would bring about that flexibility and the mobility of labour, incorporated into the industrial relations agreements discussed earlier.

The reality was, however, that the signing of such agreements does not, by itself, mean that shipyard workers become functionally flexible. Platers had to be trained to weld before they could practice welding skills. Shipwrights had to be trained to burn before they could practice burning skills. Training at Fairfield was regarded as a primary means by which the words of the flexibility agreements could be transformed into deeds.

The aim of training was, therefore, to retrain the workforce in the skills of trades other than their own and, as a result, to persuade the trade unions to abolish demarcation and enhance flexibility and interchangeability. The training programme undertaken at Fairfield aim was extensive and perceived by the founding Chairman as being the mechanism for the elimination of mistrust and suspicion.

> "During 1967 we handled more people in a small shipyard than all the Government retraining centres in Scotland put together. It is, of course, simply a question of education and the elimination of mistrust and suspicion by communications." (Stewart 1968 page ref.110).

Part of the Fairfield approach to changing these attitudes was to fundamentally change the way in which the shipbuilding workers and apprentices were trained.

> "As far as apprentices, our new apprentice charter, for the first time, eliminated differentials between trades, reduced the training period from five to four years and trained shipbuilding workers during the first of these years rather than specific tradesmen." (Stewart 1968 page ref.110).

The approach was aimed at broadening the apprentices training and reducing the training period. Moreover, in keeping with the Fairfield philosophy, it was hoped that by broadening apprentice training to include the skills of trades, other than their specialist trade, the counter productive attitudes to demarcation and restricted practices would be eliminated. There was a cost involved in this type of training. A Training Centre was established and staffed by instructors recruited from the shop floor on the basis of their particular skills and trained on industrial techniques.

Training programmes were established that meant the first year of the apprentices training took place in an 'off-the-job' Training Centre. As such, training fees and wage costs had to be met and given that Fairfield recruited about 100 apprentices these annual costs were considerable. In fact, the annual training fees for the apprentice was £400 and wage costs £350 per annum. This, at a time, when the annual earnings of a skilled worker was £1,200 per annum.

However, the Fairfield move to establish this type of training occurred at a time when the Government were encouraging industry to have a more active role in industrial training.

Part of their initiative involved the setting up of training boards to regulate industrial training on an industry basis. To encourage organisations, such as Fairfield's, to set up and resource training centres and to train their workers the training boards operated what could be loosely termed as 'a carrot and stick' technique. They imposed a levy on organisations, under their control, and rewarded those carrying out training, with grants. In Fairfield's case a levy equivalent to 1% of payroll was paid to their Training Board but they could reclaim this and some additional grants as a reward for training apprentices and workers generally.

Training at Fairfield was not confined to apprentices. It was aimed at improving the performance, flexibility and mobility of people irrespective of occupation or discipline. As such, tradesmen were trained in specially set up satellite 'off the job' training centres in skills of trades other than their own. Adult training instructors were recruited from the trade ranks to carry out the training process after which the shipyard workers were able to progress work in keeping with the flexibility agreement. Specially designed training programmes were arranged for managers, foremen, technicians and shop stewards. These aimed at ensuring that the Fairfield philosophy and new management techniques were fully understood.

In effect, the shipyards approach to training was aimed at ensuring that people were equipped with the skills and knowledge required to carry out their job in a proficient manner. The training included both the practical and theoretical aspects of the job and was conducted in both 'off the job' and 'on the job' situations. The Fairfield management, therefore, recognised training as a major factor of shipyard efficiency insofar as it improved the performance of the shipyards principal resource - that of its employees. As such, they incorporated training into the overall business strategy.

This strategy was underpinned by an industrial relations agreement and training was the means by which to transform the agreement into a practical reality. There was, therefore, at Fairfield, a determination to change the counter productive attitudes of the workforce and a recognition that training had an important role to play in this change process. However, it was acknowledged that training was not a process to be carried out in isolation from all other business activities. It had to be associated with business plans and aimed at improving the overall performance of the shipyard and its workers.

3. THE FOREMAN'S ROLE

The role of the foreman, as illustrated previously, was considered to be a major factor of the shipbuilding industry's traditional approach to manpower utilisation and, as such, any changes to that role were important. The creation of the boilermaker foreman brought about by the Fairfield flexibility agreement was only one of many important changes that took place in the foreman's role during the experiment.

Other changes included the move away from the right of the foreman to 'hire and fire' the shipyard workers who worked for them. This right was curtailed, due to a changing approach to job security, and the advent of a formalised personnel function. The introduction of departments devoted to the control of quality and planning meant that these activities moved from production to a more centralised support function. The abolition of the traditional piece work systems effectively removed from the foreman the control they had over the earnings of the workers and perhaps even removed the motivational carrot from the shipyard workers themselves.

Not surprisingly, therefore, there was some confusion, during the Fairfield experiment, concerning the responsibilities associated with the role of the foreman.

> "Oliver Blanford reports how wide was the variation between what management thought the foreman's job should be and what the foremen thought their job was. The foreman did not regard, as their responsibility, absence and lateness on the part of their men, they were not concerned about the cost of a job under their charge, they did not all consider it their duty to inspire leadership or team spirit or in forward estimating, yet each foreman had between thirty and seventy men under his charge." (Paulden 1969 page ref.128).

There was also some confusion concerning the overlap of responsibilities between the foremen and shop stewards, brought about by Fairfield approach to industrial relations. A central feature of this confusion was the fact that the shop steward organisation had become a powerful institution in the shipyard. They had a role in management processes including overtime selection and manning. The shop stewards were also the shipyard workers principal contact with management. It was they, rather than the foremen, who provided the shipyard workers with management information. The shop stewards were, therefore, the 'Fountains of Knowledge' and it was they who had credibility with the workforce.

The new management at Fairfield acknowledged that there was much confusion surrounding the foreman's role and this required clarification and action. As such, they firstly added status to the role by putting foremen on salaries, instead of paying them a weekly wage. They then reduced the size of the workteams to fifteen on a ship and twenty five in a workshop.

They then delegated authority and responsibilities to the foreman and ensured that all knew their objectives. Training sessions were instituted at weekends and during the working week. Moreover, it was made clear that the foremen were the main communication line from management to the shipyard workers.

Therefore, within the context of the Fairfield experiment, the role of the foreman was redefined and training in basic supervisory skills, was given to support this new role. However, notwithstanding the merits of the Fairfield managements determination to redefine the foreman's new role, the fact remained that the role of the shop stewards was an inhibiting factor and the more powerful the shop steward movement became the more it restricted the foreman's effectiveness i.e. the formal system was altered but the real politics of the situation meant that the foreman's role remained confused and low status.

The Fairfield approach to manpower utilisation, therefore, as discussed in the previous three sections, addressed several key factors:-

Firstly, it began to tackle the problems of job demarcation and overmanning by introducing flexibility agreements.

Secondly, it sought to remove the rigid demarcation principles which prevented men moving from defunct trades into booming trades.

Thirdly, it recognised training as being a vital mechanism through which agreements could be translated into deeds; as such training was regarded as the vital ingredient of organisational efficiency.

> Fourthly, it sought to redefine the role of foremen and supported them in their new role with training relevant to their job.

In addition, the Fairfield approach to manpower utilisation involved the introduction of new organisational management systems and techniques. These will be discussed in the following sections.

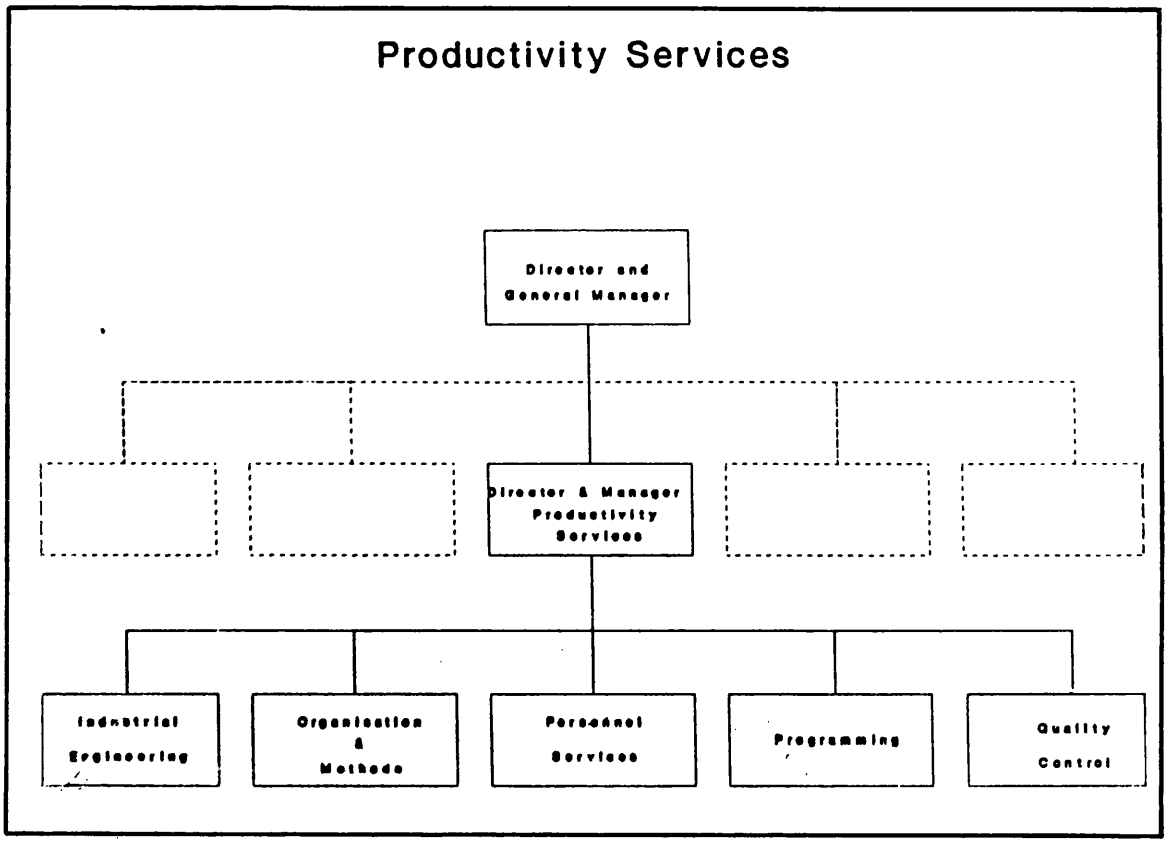
4. ORGANISATION

At Fairfield it was recognised that, in order to achieve productivity objectives and to utilise manpower more effectively, it was necessary to firstly - 'find out what to do' and secondly 'to do it'. There was, therefore, a belief that information was the lifeline of the Company and obtaining and providing information was considered a major contributory factor of effective manpower utilisation and organisation efficiency.

This belief was not new. The provision of information had long been a factor of the shipbuilding industry's approach to organisation. Indeed, the builders of iron and steel ships had created functions whose sole purpose was to obtain and provide information to secure efficiency in design, construction and the co-ordination of manpower. However, the management at Fairfield considered that a further information source was required. According to the Production Services Director:-

> "If, therefore, it is believed that the obtaining and providing of information is a major contribution to the operation of management, then it is necessary to set up an organisation which is capable of producing this information. Such an organisation is often called management services, but at Fairfield it is called productivity services." (Houston 1967 page ref.1).

The organisation structure associated with the function, is illustrated in figure 7.1.



SOURCE: *Productivity (Services 1967)*

Figure 7.1

Throughout the 'experiment' this particular function introduced management techniques new to shipbuilding. The aim was to support more effective manpower utilisation policies and to achieve productivity objectives. This was one of the major recommendations of the Geddes (1966) report, albeit that it had been introduced at Fairfield some six weeks before the issue of the report. The new Productivity Services Function incorporated five departments. Industrial Engineering, Organisation and Methods, Personnel Services, Programming and Quality Control.

The Industrial Engineering Department comprised work study, process planning, analytical estimating and value engineering, while the Organisation and Methods Department involved itself in designing and implementation information systems required by management. Personnel Services was concerned with the effective use and development of human resources, while the Programming Department was responsible for preparing overall programmes for building each of the contracts. Finally, the Quality Control Department was established to ensure that faulty work was caught much earlier and also to ensure that the final product was delivered to contract specification.

At its simplest, the purpose of the new function was, therefore, to 'gather the facts' and to 'offer solutions' to problems associated with manpower utilisation and productivity (including quality).

> "About three-quarters of the effort in solving a problem has to be put into finding the fact of the situation in a quantitative form. The remaining effort has to be put into listing possible solutions and deciding which to adopt." (Blanford 1969 page ref.10).

A great deal of time and money was spent in a quantitative approach to problems and the introduction of new management techniques to support this approach. The main technique adopted by the Productivity Services function, and in particular the Industrial Engineering Department within that function, was 'work study', a technique which had hitherto been alien to the traditional culture of shipbuilding, though in other branches of industry it had been long established and widely used.

5. SCIENTIFIC MANAGEMENT

Taylor (1911) regarded work study as a scientific approach to management and believed that greater efficiency could be achieved by adopting work study techniques and dividing work into component parts and training workers to a very high performance level in the individual parts. Taylor believed that observation and measurement, two techniques of work study, should be used to discover what constitutes a fair day's work and, thereafter, workers should be selected and trained for work best suited to them.

In a Fairfield 'context' improving organisational efficiency was certainly a principal aim of the experiment and there was an acknowledgement by Stewart that training the shipyard workers was a vital ingredient of organisational efficiency. Furthermore, the approach to industrial relations had provided a platform of co-operation between management and the trade unions under which new management techniques, such as work study, could be introduced. In keeping with Taylor's view, the introduction of work study would give shipyard workers an opportunity to earn a higher rate of pay and the shipyard an opportunity of lowering production costs.

The trade union participation in the introduction of the new management techniques involved the appointment, of 'workers representatives' who, after training, worked alongside industrial engineers on work study projects. These representatives were nominated by the shipyard workers and were the communications link between the shop floor workers, the industrial engineering practitioners and management. They could talk the new language of industrial engineering and, as a result, they could explain work study problems to the shipyard workers on the one hand and to the management and the industrial engineers on the other.

The role of the 'workers representative' proved to be a success, not only in providing a mechanism for introducing work study techniques, but also as a development post for future shop stewards, foremen and industrial engineers.

> "They proved an indispensable link and enable some far-reaching changes to be made. Inevitably a problem arose after about two years in keeping them in jobs and preventing them either seeking promotion or leaving the Company. This must be seen as a price which has to be paid, and there should be a channel of promotion via shop steward, foreman, or industrial engineer at the end of a given time. The needs to be negotiated in advance." (Blanford 1969 page ref.16).

In total, some 30 workers representatives, from a workforce of some 3,000, were fully trained in work study and planning techniques. Moreover, the extensive training programme saw 110 shop stewards and full time trade union officials and 150 foremen and senior technicians attending work study appreciation courses.

As with the approach to reducing demarcation, gaining the trust and confidence of the trade unions was a prerequisite for establishing an Industrial Engineering Department comprising of work study, process planning, analytical estimating and value engineering. Such trust was to be established by the participative approach to industrial relations and the involvement of the trade unions along side management in the Industrial Engineering Department.

The Industrial Engineering Department was resourced by 20 experienced work study practitioners from outside the Company, 72 employees recruited from the tradesmen ranks (who had hitherto been part of the craft and trade structure and who were known to the shipyard workers) and, of course, the 30 workers representatives. The objectives were:-

(a) To introduce work study.

(b) To introduce a measured daywork scheme throughout the shipyard.

(c) To build up a library of standard data for typical elements and operation.

Blanford's view was that of the three, introducing a measured daywork scheme was the most critical to management, though the other two objectives were prerequisites for the introduction of such a scheme. The measured daywork scheme would, in his opinion:-

> Firstly, provide production management with information for scheduling, manning, programming, tendering and costing.
>
> Secondly, provide feedback information to production supervisors regarding delays, technical problems and information on actual completion to production control.
>
> Thirdly, exert an influence on all personnel connected with production and other staff functions to ensure that the work routines were being carried out within the correct time scales.
>
> Fourthly, provide a financial incentive for the workers to improve productivity.

There had, of course, been previous systems of measuring work in shipbuilding. For example, electricians and steelworkers had operated under piecework systems, but the previous systems had become obsolete and ceased to have much value though, in some cases, they may have ensured that the low minimum was exceeded.

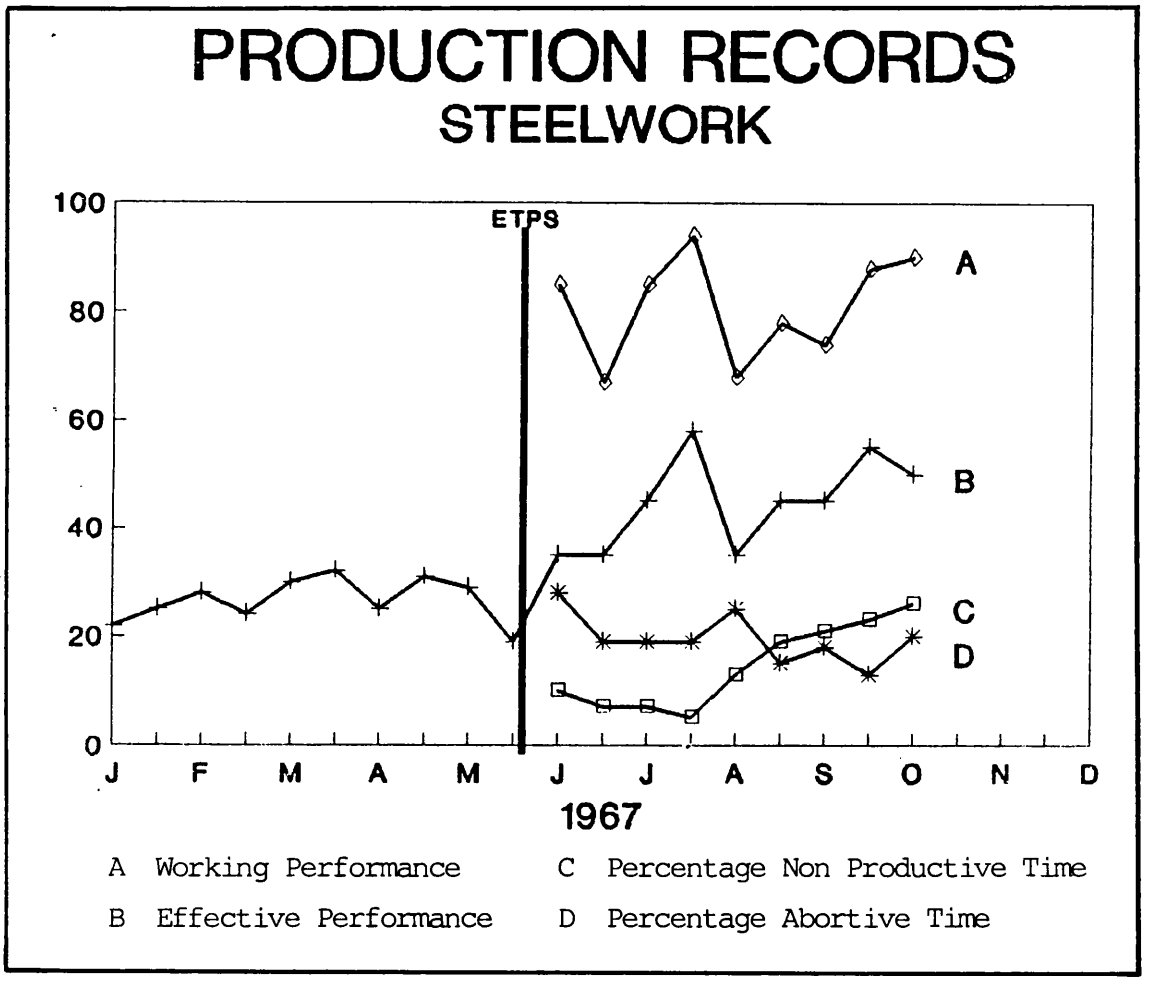
6. PRODUCTIVITY IMPROVEMENTS

The introduction of a measured daywork scheme was, as indicated previously, critical to management. However, according to the Shipbuilding Director, the high content of non-productive time, abortive work and the variety of work methods observed during time and motion studies, inhibited the process of producing standard data for a measured daywork scheme:-

> "As a result of records which were kept and of the target times, labour utilisation reports were circulated to every foreman and manager each week and collated for the main departments and for the company as a whole. These reports gave the performance while working, the performance overall and the principal amounts of abortive or non-productive time and showed that non-productive time and abortive work taken together constituted between 20 and 40 per cent of the labour cost of a ship." (Blanford 1969 page ref.20).

Perhaps for the first time, the cost of the traditional system of manpower utilisation in shipbuilding had been accurately measured! Notwithstand the fact that time and motion studies were unable to produce standard data, a measured daywork scheme was introduced. This was due to the fact that the Process Planning and Analytical Estimating aspects of the Industrial Engineering Department proved more successful. These new techniques broke the job down into sequential operations and estimated the standard time to be taken for each of the various operations. This provided the local manager and his foreman with the means of planning the work and estimated the time to be taken and the labour requirements in an appropriate and acceptable manner.

Process Planning and Analytical Estimating provided sufficient information to support more effective manpower utilisation policies, and the set productivity objectives. As a result, it was decided to introduce an estimated measured daywork scheme as a means of providing workers with a financial incentive to achieve or better the productivity objectives which had been set. The measured daywork scheme was introduced into the steelwork departments on the 15th June 1967 and by August, productivity had increased by 50% as illustrated in figure 7.2.



SOURCE: *Productivity (Services 1967)*

Figure 7.2

Similar, or higher increases, occurred in the pipeshop, machinery installation and outfitting departments. However, these figures should be treated with caution according to Blanford because:-

Firstly, there had been a serious decline in morale and productivity in the latter days of the old company.

Secondly, the figures were built up during the run-in period of the scheme so must have been subject to a number of errors.

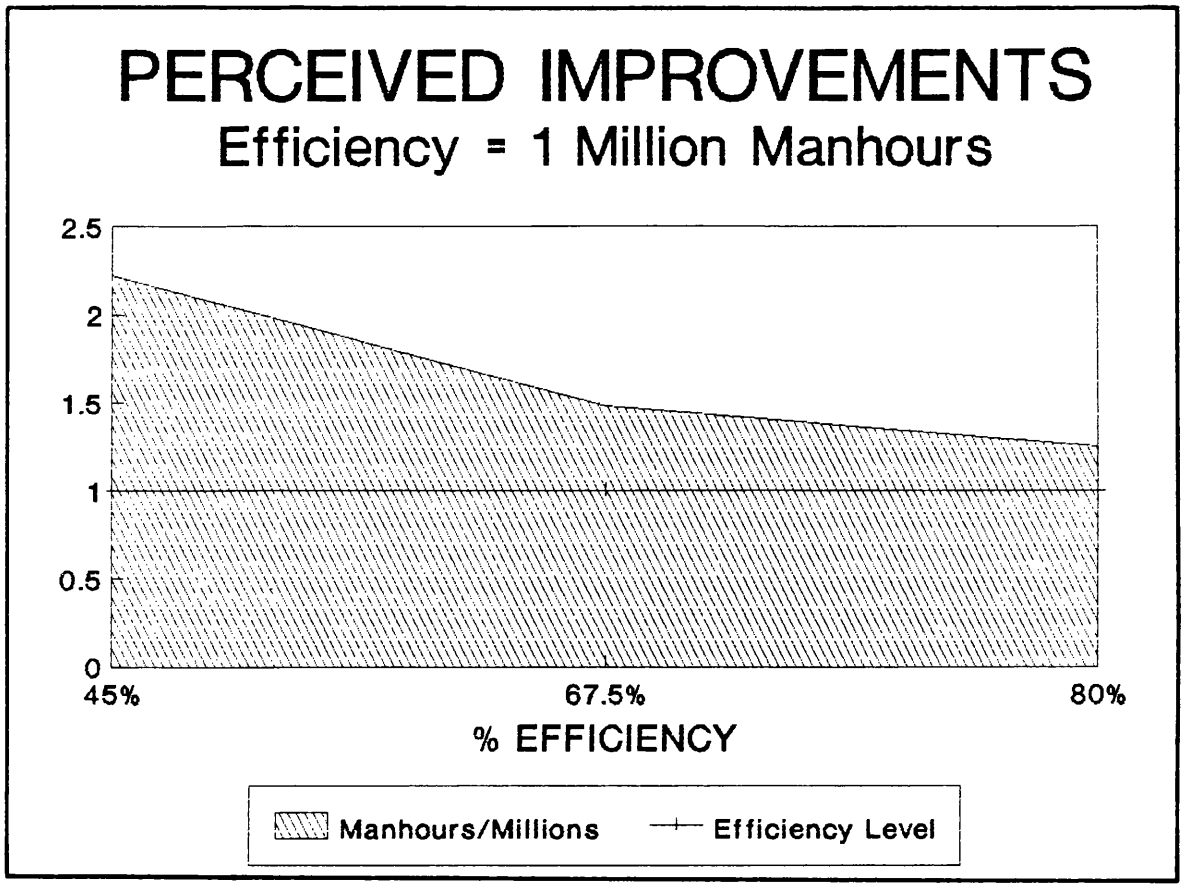
Thirdly, there was an improvement in the recording of work actually done.

Fourthly, some target dates were increased and non-productive time was more accurately recorded.

The new management at Fairfield originally estimated that in 1966 the performance level at the shipyard was about 45%. They believed that 80% was achievable. Thus they were attempting to increase productivity from the offset by 75%.

A productivity increase of 50% meant that the performance level, at the shipyard, had increased from its 45% level to 67.5% which, while short of its 80% target was, nonetheless, a considerable achievement. Translating these performance levels into manhours and assuming that at 100% effectiveness a ship at Fairfield would be built for 1 million manhour, while the Fairfield performance would be as indicated in figure 7.3

In effect the 1 million manhour ship would have taken 2.22 million manhours to build on the basis of a 45% performance level in 1966 and 1.48 million manhours on the basis of a 67.5% performance level. Thus, the introduction of a Productivity Services function did improve manpower utilisation and productivity although the exact magnitude of the improvement may be in some doubt.



SOURCE: *Bisset (1992)*

Figure 7.3

Accordingly, the main factors of the 'Fairfield Experiment' approach to organisation were concerned with the establishment of a function devoted to the introduction of new management techniques. This new function supported more effective manpower utilisation policies and the achievement of productivity objectives.

The reasons for establishing such an organisation function included:-

(a) A belief that obtaining and providing information is a major contribution to the operation of management.

(b) A recognition that its purpose was to gather facts and offer solutions on problems associated with manpower utilisation and productivity.

(c) A requirement to introduce a measured daywork scheme using a quantitative approach through the appreciation of new management techniques.

The Fairfield approach recognised that the trade unions had a major role in aspects of organisation associated with manpower and productivity. It also indicated that productivity improvements were achieved through the establishment of a productivity services function.

7. CONCLUSIONS

The Fairfield approach to manpower utilisation and organisation may be judged as a limited success. Limited, in that the duration of the 'Experiment' was restricted to two years and, therefore, the longer term benefits could not be evaluated. A success none-the-less from the point of view that productivity did substantially improve albeit from a very low point which, arguably, reflected the low level of morale, motivation and commitment of the workforce at the inception of the 'Experiment'. This limited productivity success, although insufficient to achieve shipyard competitiveness should not, however, be underestimated.

In terms of the 'Experiment' aims, it would be reasonable to conclude that:-

Firstly - the move from the national bargaining arrangements to a local shipyard based industrial relations forum allowed the protagonists to concentrate on the problems of the Govan shipyard in isolation from the industry generally. The localisation enabled the Fairfield management to rewrite the traditional rule book and introduce, by agreement with the shop stewards, working practices that encouraged manpower mobility and flexibility.

Secondly - the training process, arguably, eliminated much of the mistrust and suspicion between the shipyard work groups and was instrumental in relaxing the demarcation boundaries between the specialist trades. It should also have improved productivity directly, once complete. Training, therefore, helped to transform the words of the flexibility agreements into positive flexibility working practices, but in practice this was incomplete and the full benefits of the agreements were not forthcoming due to a reluctance of the shipyard workers to commit themselves fully to the change process that would remove the perceived job protection afforded by the demarcation boundaries.

Thirdly - the involvement of the trade union officials and shop stewards in the management of the change process enabled the Fairfield management to introduce scientific management techniques based on work study principles. Arguably, this resulted in the availability of more accurate and effective production related information and enabled management to implement a measured day work scheme, linked to productivity improvement and aimed at providing motivational incentive to the shipyard workforce.

The Fairfield Experiment moved the Govan Shipyard from the classical model to one which centrally reflected some of the key ideas of scientific management. In many ways this was a very belated step for shipbuilding since we know that the scientific management type of thinking has been present since early in the 20th century. But shipbuilding, as it was then organised in shipbuilding, was still a traditional craft based industry and, as such, work measurement, work study and related processes conflicted with the underlying production culture.

However, it would be a misrepresentation of the Fairfield Experiment to label it as (belated) scientific management and leave it at that. It was much more, in that it sought to ally the management approach to work control with a participative approach to industrial relations - an approach which was far from the original Taylorist principles of scientific management.

In terms of our conceptual framework (Chapter 3, Section 4), the drive was away from direct supervision towards greater standardisation of work processes as a means of achieving standards of work and output which the market was now demanding. This could not be achieved in a purely technical way because management was faced with a long established workforce culture based on the crafts in which the industry had been built.

In retrospect, it may have been too much to expect that such an established culture would be capable of rapid and painless change and there were, undoubtedly, stresses and strains between these forces as the experiment unfolded. Whether, in fact, the culture change would have been achieved in time and whether the participative approach would have led on to a still more sophisticated form of organisation and coordination, had the experiment had longer to run, is a matter of speculation. In the end, it was not allowed more than two years before the 'experiment' became submerged in a further organisation change and this was undoubtedly too short a time to achieve the cultural shift which would have been necessary for real progress to be made.

As it was the management, led by Stewart, had provided a new driving force in shipbuilding not so constrained by traditional management, supervision and attitudes to labour.

They offered the shipyard workers an alternative to unemployment and yard closures and an opportunity to participate in an experiment aimed at transforming the yard into a competitive unit. At the end of the experiment, however, the unions still exercised great internal power and controlled much of the work allocation, how jobs were organised and rewarded and they contributed further to the erosion of the supervisory management's authority and control of manpower supervision. This was still part of the inheritance at Govan when British Shipbuilders took over the responsibility for running the national shipbuilding industry.

CHAPTER 8: THE FLEXIBLE WORKING APPROACH TO MANPOWER UTILISATION MODEL 3 - PART ONE

1. INTRODUCTION

The third model of manpower utilisation to be examined is associated with the period when the Govan shipyard was part of the nationalised British Shipbuilding industry and covers the time frame 1977 to 1988. It is, however, important to recognised that a decade had elapsed between the ending of the 'Fairfield Experiment' where the approach to manpower utilisation was based on Model Two - 'Scientific Management' and the creation of British Shipbuilders - Model Three - 'Flexible Working'. Several significant factors occurred during this decade which contributed to a move away from the Model Two approach at the Govan yard and these included:-

Firstly - The shipyard lost its individuality and right of self determination when it was incorporated into the ill-fated Upper Clyde Shipbuilding Group. In effect, the Fairfield shipyard was returned to the fold of the shipbuilding traditionalists and this resulted in the removal of the scientific management techniques and a move away from local shipyard based industrial relations and bargaining arrangements.

Secondly - A powerful shop stewards' movement emerged. They gained a power-base in the shipyard, during the troubled days of the U.C.S., by taking over the leadership of the yard. It was the shop stewards who mobilised the workforce and the public at large through a well documented 'work-in' and, by so doing, mounted a successful campaign which resulted in the retention of shipbuilding on the upper reaches of the Clyde and saved the Govan yard from closure.

Consequently the model of manpower utilisation and organisation practiced at Govan, at the time of nationalisation, was not that adopted by Fairfield and discussed earlier as model two. It was more akin to the Model One - 'The Classical Approach' and, as such, it was similar to that practiced by the other more traditional shipyards who were nationalised in the late 1970's.

The key features of the classical approach was, of course, the concept of job specialisation and the demarcated trade boundaries. In Govan's case the features were, by the late 1970's, supported by the powerful shop steward movement whose influence, in the shipyard, had increased substantially as a result of the successful U.C.S. campaign. The Govan stewards had, after all, saved the shipyard and the jobs of all shipyard workers, including those of the management. The Govan shop stewards were, as a result, regarded throughout the nationalised industry as the role model of trade union power and authority and, as such, were a major influence that had to be overcome if changes to the manpower utilisation strategy were to be implemented.

It is also important to acknowledge that the nationalised industry was created at a time when the world shipbuilding market was in decline. From its peak of 40,000,000 gross registered tonnes in 1974, it fell to 21,181,000 and 14,040,000 gross registered tonnes of completed and new orders respectively by 1977. This market decline had resulted in shipyard closures, the detail of which was discussed previously in chapter one, and these closures had catastrophic consequences within shipbuilding communities where the direct employment opportunities nationally dropped from 290,000 in 1948 to 87,000 by 1977. Total jobs losses were even greater given that the shipbuilding industry also supported 3 jobs outwith the shipyard for every direct job.

The Labour Government of James Callaghan, concerned about the effects of the industry's decline, nationalised shipbuilding in 1977. Griffin (1978), the first chairman of the British Shipbuilding Corporation, gave the Government's reasons for nationalising the industry in the Corporation's annual report and accounts of 1977/78. He stated:-

> "It is the duty of the Corporation, in carrying out its activities, to have full regard to the requirements of national defence. As a densely populated and industrial island, Britain is virtually dependent on seaborne trade A sufficiently large proportion of this trade must be carried in British ships to prevent its control passing into the hands of the country's commercial competitors. At the same time, an efficient navy is a necessity in determining any military threat to force us off the sea. While most of the special requirements of the Royal Navy need to be met by the British Industry, all merchant ships could be built abroad. However, should foreign merchant yards ever achieve a monopoly, our ship owners would eventually be at the mercy of their competitors." (Griffin 1978).

It was, therefore, against a background of concern for the national defence, and the country's dependence on the seaborne trade, that the declining shipbuilding industry was nationalised. The prime objective of nationalisation was to improve the shipbuilding industry's competitiveness within a socially responsible framework, given the industry's locations in areas of high unemployment.

To achieve this the industry had to institute changes in its approach to building ships. These changes had to include the way in which manpower was utilised and organised.

Model three will, therefore, be concerned with these changes and developments. Of particular concern will be the policies associated with the introduction of flexible working practices, the concept of the flexible firm and the associated centralised industrial relations framework under which agreements were reached.

2. THE CHALLENGE

Bringing about fundamental but lasting change to the Nationalised British Shipbuilding Industry was, according to the Corporation's Director responsible for performance improvement and productivity, a major challenge. It was, however, a challenge that had to be taken up if the industry was to survive in the tough international shipbuilding market place. The challenge included a reappraisal of shipbuilding methods, working practices, equipment and technology.

> "The industry has for decades neglected to emulate the steady and continuous improvements in methods and technology introduced by the competition." (Vaughan 1983 page ref.127).

The consequences of this neglect was that British Shipbuilding costs were high, productivity low and delivery dates unreliable when compared to the competition. As a result shipbuilding orders were hard to come by, berths lay empty, long established and world renowned shipyards closed and large numbers of jobs were lost.

Accordingly, the challenge was to transform Britain's uncompetitive shipyards, including Govan, into a competitive UK shipbuilding industry, by bringing about improvements in performance and productivity that would enable the nationalised industry to emulate or even surpass those of the industry's competitors. By doing so sufficient contracts could be secured to enable shipbuilding to become a viable industry.

This would, of course, lead to the maintenance of a shipbuilding capacity in the United Kingdom and sustain employment in hard pressed shipbuilding communities.

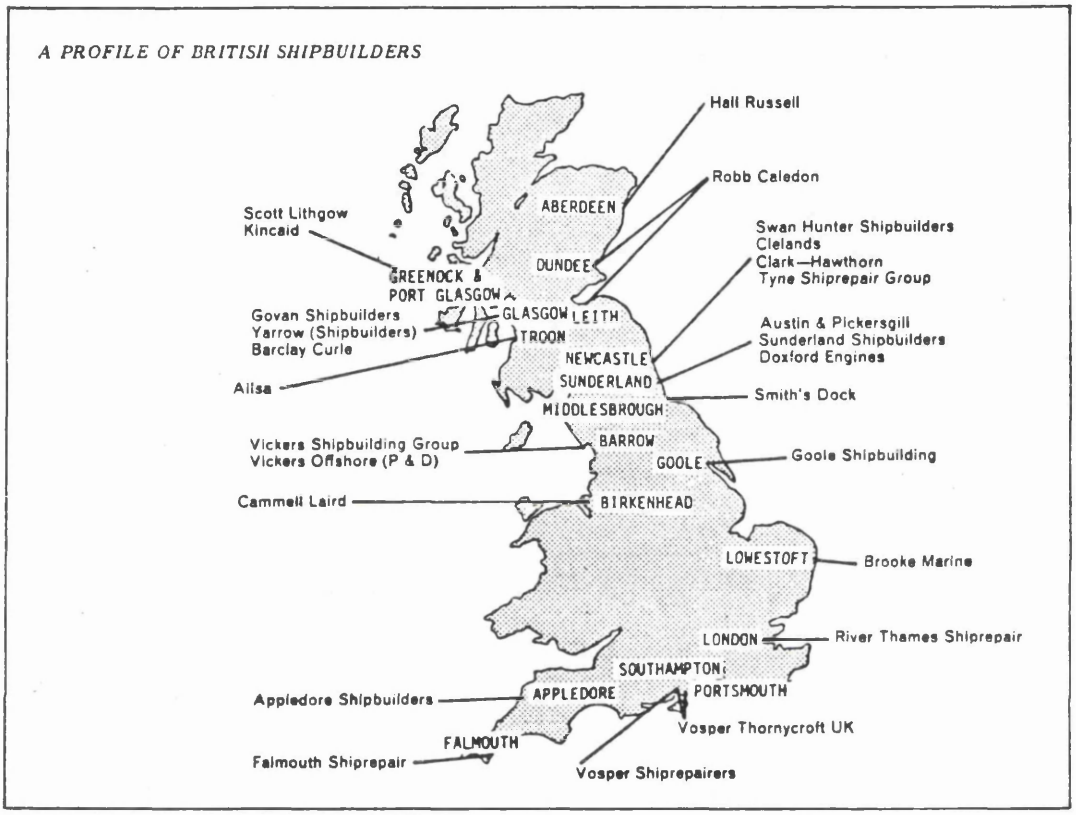
To take up the challenge a strategy, based on a major policy initiative, known as the Performance Improvement and Productivity programme, hereafter referred to as the P.I.P. programme, was established by British Shipbuilders under the direction of Dr. Roger Vaughan. Part of the initiative was concerned with what was described as 'increasing the output potential of those involved in the shipbuilding industry'. As the Shipbuilding Operations Director put it:-

> "Improving productivity involves ensuring that all aspects of a business operation which directly or indirectly effect total output potential of its employees are organised and conducted effectively." (Craig 1979 page ref.3).

Craig was underlining the important role that shipbuilding workers themselves had in the survival of the industry. The productivity part of the initiative was aimed at what could be termed as the 'people side of the business'. As such, it challenged the counter productive attitude of those involved in the industry. The restrictive working practices, demarcation, overmanning aspects of the business where the performance of people was inhibiting productivity. Of immediate concern were issues associated with manpower utilisation and flexibility, contentious issues, that had hitherto been difficult to resolve.

It was, however, recognised that there were many problems associated with implementing a programme aimed at removing manpower constraints as a means of improving performance and productivity. These problems were embedded in long established and traditional industrial set up comprising 27 previously independent companies; each with a uniqueness in terms of management style, industrial relationship and manpower policies.

These companies were not grouped together on the banks of one river. They were, as illustrated in figure 8.1, some distance apart and they were located throughout the length and breadth of the United Kingdom.



SOURCE: *Parker (1979)*

Figure 8.1

Given the distance between the companies and their previous independence, the establishment of an effective communication system to ensure a consistent application of policy was an important ingredient of the initiative. This, by itself, was of course a major challenge in an industry where the normal channels of communication tended to be via the grapevine.

Furthermore, it has to be acknowledged that the shipyards, comprising British Shipbuilders, were concentrated in areas of the country traditionally associated with high unemployment. The scale of the problem is reflected in the unemployment levels detailed in figure 8.2.

Unemployment by Region - May 1979

Travel to Work Area	% Male Unemployment
Tyneside	10.2%
Wearside	12.9%
Teeside	9.5%
Birkenhead	11.4%
Glasgow	10.2%
Greenock	10.5%

SOURCE: *Parker (1979)*

Figure 8.2

In general male unemployment was in the region of 10%. Glasgow, the area of the country associated with the Upper Clyde Shipbuilding Industry, had a male unemployment level of 10.2%. This at a time when the national unemployment level was 6%.

Given that part of the initiative challenged the traditional working practices and the status of the restrictive craft and trade structures, at a time when unemployment levels were high, opposition to the initiative was expected from the trade unions, particularly at local individual shipyard level where the shop stewards traditionally defended trade demarcation boundaries to protect the jobs of their departmental members. Overcoming, these and the many other problems associated with setting up and implementing this ambitious, but nevertheless, contentious initiative was certainly a major challenge. However, it was, as indicated previously, a challenge that had to be taken up if the shipbuilding industry in the United Kingdom was to survive.

A key factor of the challenge would, therefore, appear to be gaining the support and commitment of all those involved in the industry. Real support and commitment for the individual aspects of the P.I.P. programme, as distinct from merely paying lip-service to it. A recognition by those involved in the industry that this was a way forward - a way of halting the decline. An acknowledgement from the initiators of the P.I.P. programme that the support and commitment was dependent on:-

> Firstly - ensuring that the productivity inhibitions, including those associated with manpower, were identified and that the management, at local shipyard level, were firmly committed to implementing positive plans aimed at removing the inhibitions and thereby increasing productivity and shipyard competitiveness.
>
> Secondly - creating a good industrial relations mechanism whereby changes and policies associated with the removal of the shipyard's inhibiting factors could be incorporated into industrial relations agreements prior to implementation. This industrial relation mechanism to have proper communications, consultations and negotiations procedures.
>
> Thirdly - recognising that improving productivity would not be achieved unless all of the people employed in the shipyard's business, at all levels and in all departments, fully understand what the changes mean to them and their role in the change process and work together.

In many ways, therefore, the challenge which British Shipbuilders had to face up to was similar to that which faced the architects of the Fairfield Experiment - the counter productive attitudes of the shipyard workers, demarcation, inefficient working practices and, of course, poor industrial relations.

The principal difference was the scale of the National operation as compared to the single shipyard Fairfield operation.

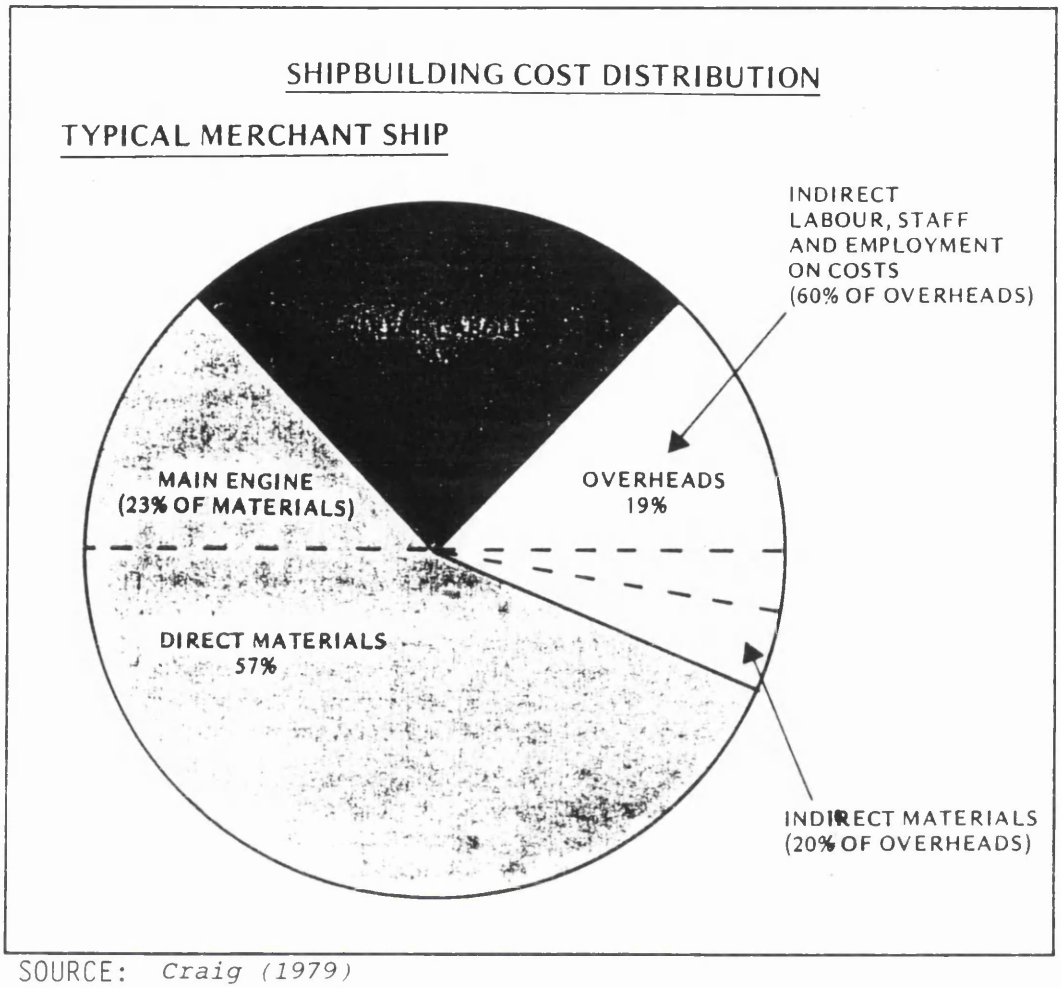
3. THE STRATEGY

Transforming long established and uncompetitive British shipyards into a vibrant, modern and competitive United Kingdom shipbuilding industry was, as previously indicated, the major challenge of the British Shipbuilders strategy, as reflected by the P.I.P. programme. A challenge made all the more complex by the fact that the shipyards had their own distinctive traditional values and attitudes. Some were operating with outmoded equipment and antique belt driven machinery and most were constrained by a restrictive approach to manpower utilisation and flexibility.

The aim of the strategy was to fundamentally change the nature and character of British shipyards sweeping away the cobwebs of neglect, inefficiency and inactivity and by doing so reduce the costs of building ships. In terms of cost competitiveness, the P.I.P. Director had the view that the strategy had to bring about a reduction of between 10-15% in shipbuilding costs immediately and a further 20% in the medium term, to enable British Shipbuilder's to compete effectively in the international market place:-

> "It is vital to mount a prolonged aggressive and successful attack on costs in order to minimise the impact of lower prices and generate reserves during times of higher prices." (Vaughan 1983 page ref.114).

To mount such a strategical attack it was necessary, according to the P.I.P. Director, to understand that traditionally shipbuilding costs are broken into three main elements - materials, labour and overheads - as illustrated in figure 8.3.



SOURCE: *Craig (1979)*

Figure 8.3

The individual cost elements are not independent and a saving in one of the elements could quite easily create additional costs elsewhere. For example, if by negotiating a significant reduction is achieved in the price of material and, as a result, the supplier decides to sacrifice the quality of the product, additional labour costs could be incurred, due perhaps to rectification work.

The P.I.P. Director stressed that the focus of the strategy would be determined by a thorough examination of shipbuilding costs. This was introduced against a background of what was described as a 'structural approach to cost reduction'. By introducing it against such a background the Director was not suggesting that traditional business management methods of cost reduction were inappropriate or unimportant to shipbuilding.

On the contrary, he pointed out that they were important, but in the past the traditional methods had been unintelligently applied.

> "Unless a coherent and comprehensive approach to the problem is adopted cost reductions will not be achieved." (Vaughan 1983 page ref.114).

The strategies were, therefore, aimed at reducing shipbuilding costs and consisted of:-

a) A Preparatory Stage during which prime areas of potential economies, including those associated with manpower resourcing and utilisation throughout the nationalised shipbuilding industry, were scrutinised by the centralised P.I.P. department.

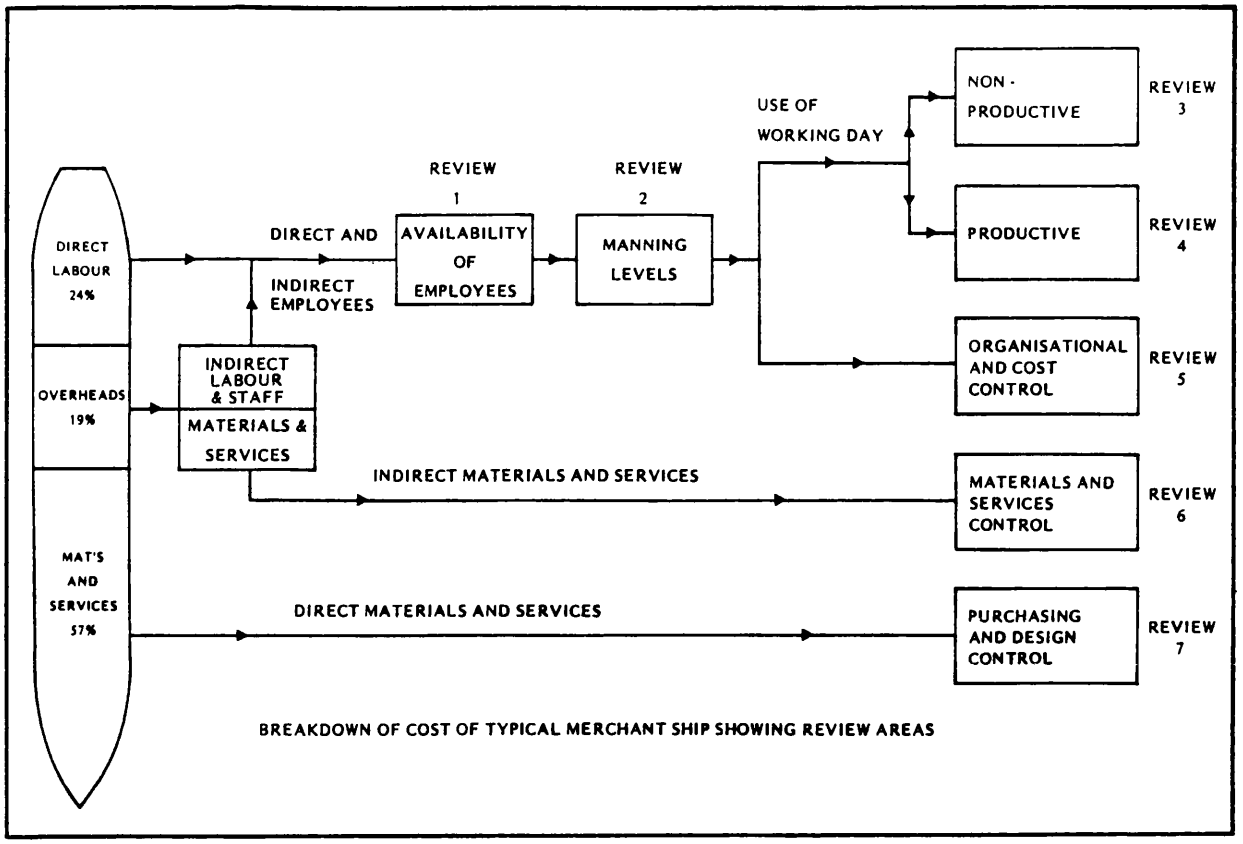
b) An Examination Stage, a detailed examination of all areas of shipbuilding costs and the establishment of project groups. Consideration was given to costs associated with marketing, design, facilities methods, industrial relations, manpower utilisation flexibility and management.

c) An Industrial Relations Stage whereby industrial relations agreements were concluded that embodied initiatives that were identified from the examination and were aimed at improving productivity.

d) An Implementation Stage that included detailed training programmes aimed at ensuring that the shipyard workers had the skills and knowledge required to support the initiatives.

The seven areas of review identified during the preparatory stage for examination are illustrated overleaf in figure 8.4.

MERCHANT SHIP REVIEW AREAS



SOURCE: *Craig (1979)*

Figure 8.4

Significantly, several review areas were associated with manpower. Areas of the business where the potential of the industry's people was being constrained. As such, part of the strategy was concerned with removing these manpower constraints, as a means of realising this potential. Accordingly, the adoption of effective manpower utilisation and flexibility policies, free of manpower constraints was, therefore, certainly an aim of the strategy with the survival of an economically viable United Kingdom shipbuilding industry the principal goal.

4. MANPOWER EXAMINATION

One of the prime aims of the strategy was to improve productivity as a means of reducing shipbuilding costs by realising the full potential of the industry's people.

As such the establishment of an effective process to identify the industry's manpower constraints was a priority.

The P.I.P's coherent and comprehensive approach of sub-dividing what was termed as 'production weaknesses' into review areas was just such a process. Certainly, the 'production weaknesses' were the industry's problem areas, and many were associated with constraints that inhibited manpower utilisation. Consequently they were exactly the areas where the removal of constraints could lead to productivity improvements and cost reductions.

The approach, therefore, appeared to offer a convenient means of breaking these problems into manageable parts or projects. Groups made up of the centralised P.I.P. function and selected senior managers, drawn from the industry, were established for each project. They were supported by production engineering and industrial engineering techniques, that were not completely alien to the industry and were, as indicated previously, used during the 'Fairfield Experiment'. The P.I.P. approach also encouraged a careful and analytical examination of the industry's problems and afforded an opportunity of proposing solutions which could lead to improved efficiency. The Shipbuilding Operations Director was quoted as having said:-

> "The objective of all must be the same. The efficient organisation of all resources within British Shipbuilders for the economic building of ships to satisfy the customer; on time; at a competitive price; to the required quality." (Craig 1979 page ref.17).

Perhaps the problems associated with, what was termed as the 'use of the working day', serves to demonstrate the Shipbuilding Operations Director's point that efficient organisation was a major constituent of economic shipbuilding.

Inefficiency was evident in the organisation of British Shipbuilders human resources and this restricted the number of hours available for productive use. This was due to the high levels of non-productive time, the typical causes of which are illustrated in figure 8.5.

NON-PRODUCTIVE TIME

Average Time lost per Yard	(Mins)
Morning and Afternoon breaks	23
Late start—Early finish	47
Idle time within employees control	31
Normal base to work station	26
Waiting time	21
Adverse weather conditions	17
Correction of errors	12
Others	8
Total	185

Three hours five minutes

SOURCE: *Craig (1979)*

Figure 8.5

In many ways shipbuilding had become an industry of lost and waiting time. People lost time due to late starts and early finishes at the beginning and end of their shifts. They lost time travelling to and from their work place and they waited on the services of others before they could progress their job. In total 1 hour 26 minutes were lost daily, simply getting shipyard workers to and from their jobs. 52 minutes lost waiting on the services of others and some 47 minutes per day lost due to the weather and quality problems.

All of this time was lost during the normal working day. In fact, 3 of the 8 hours per day was regarded as non-productive. This, of course, had major implications on the number of manhours taken to build a ship. Unproductive manhours were an added cost of shipbuilding. As such, they were a major influence on the high shipbuilding costs, and low productive rates which were placing the future of the United Kingdom shipbuilding industry in doubt.

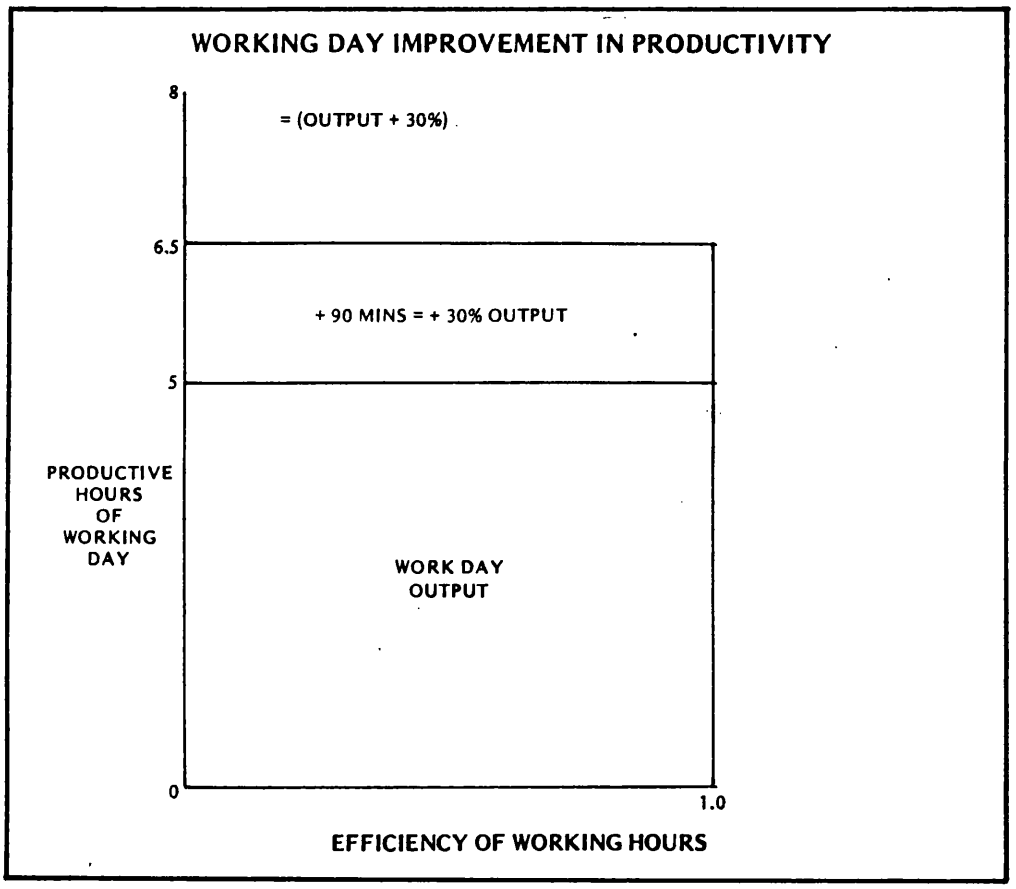
In addition to the non-productive time lost during the working day, the shipbuilding production process was, as previously discussed, disrupted by poor time keeping, late arrival and early departure from the workplace and by absenteeism. Unpunctuality and absenteeism had long been a problem in British shipbuilding. Indeed, Woodcock (1971) cited earlier, indicated that 42% of shipbuilding employees were being paid less than their normal basic hours i.e., they worked less than their full basic hours. The figure was far in excess of any other industry and almost double the rate of manufacturing generally.

This problem was not confined simply to the employees who were not punctual or absent. It had a knock-on effect on others. Platers could not carry on their work until they were reallocated a welder to service them. People could not get material out of the store until such times as the storeman arrived or alternative arrangements were made for the release of stores material. Erectors could not lift the steel units without the craneman. All of these contributed to a reduced output and poor productivity and there seemed little doubt that productivity improvements could be found in these areas. The Shipbuilding Operations Director's view was that the improvement would be at least one hour per day.

Further, it was recognised that two other factors were contributing to the industry's poor productivity, they were:-

> Firstly, the difficulties in maintaining a steady flow of information to employees at their place of work.
>
> Secondly, time lost, due to inclement weather, particularly on the uncovered berths, during ship construction.

According to the Shipbuilding Operations Director, a further half hour per day was being lost due to these constraints. He pointed out that, taken together, one and a half hours per day was lost due to these factors. As such, the removal of the constraints associated with these manpower utilisation problems could bring about a 30% productivity improvement and a saving in shipbuilding costs of 10%. This was, of course, based on the perception that only five production hours were available during a normal eight hour day as illustrated in figure 8.6.



SOURCE: *Craig (1979)*

Figure 8.6

The Shipbuilding Operations Director was, therefore, indicating that by increasing the number of hours available to production from 5 to 6.5 hours per day this would increase the output of the workforce by 30%. The efficiency of the working day would, therefore, be increased and the result of this increased efficiency would be a reduction in the number of hours required to build ships. Quite apart from this, 1.5 hours out of 8 per day were still being lost from the processes associated with building ships.

A number of other constraints to manpower utilisation were identified. These included working practices, flexibility, manning levels, retraining, accidents and overtime controls. The shipbuilding Operations Director wrote:-

> "Traditional working practices in an industry as old as shipbuilding are deeply entrenched and though custom and practice have achieved the force of precedent, whereas, many of our efficient competitors overseas have not been in shipbuilding for so long and consequently have a more flexible attitude." (Craig 1979 page ref.40)

U.K. Shipbuilding working practices and customs had been painstakingly built up over decades. They were an integral part of the industry's craft and trade structures, created when labour was divided and demarcation lines set over a century ago. Ironically, as indicated previously, by Mortimer (1973) they were created as a means of improving productivity. However, they were now regarded as a constraint to effective manpower utilisation and flexible working. Breaking down these traditional working practices and the trade demarcation lines was, of course, a fundamental prerequisite of flexible working.

This was not altogether a new approach to shipbuilding indeed, much progress had been made during the 'Fairfield Experiment' where the move to more open forms of functional flexibility was supported by an industrial relations agreement and underpinned by an extensive retraining programme.

However, Fairfield was the exception within the nationalised industrial framework and throughout the United Kingdom shipyard workers and shop stewards vigorously defended their traditional working practices and trade demarcation lines as a means of protecting jobs. Any encroachment on these was normally met with resistance and in many cases industrial disputes.

Shipbuilding was renowned for demarcation or "who does what" disputes the principal reason for disputes and strikes in shipbuilding.

Another of the industry's manpower problem areas, identified as a result of the P.I.P's coherent and comprehensive approach, was the high number of accidents which occurred in the shipyards. Indeed, Goldie (1983) indicated that, in a Govan context, 30,091 people visited the shipyard's ambulance rooms during 1983, for treatment, as a result of injuries sustained at the workplace. Most were treated "on site" and the average time lost was 30 minutes per visit. Others sustained more serious injuries and required external treatments where the time lost was measured in days and weeks rather than minutes.

The manpower examination, therefore, revealed that the British Shipbuilding Industry had many constraints that were inhibiting manpower utilisation and, thereby, adversely affecting productivity and competitiveness. These included:-

(a) The organisation of the working day and the restrictions this placed on the number of hours available for productive use. Three out of eight hours were used unproductively.

(b) Statistics indicated that 42% of shipbuilding workers worked less than a full week. The problems related to unpunctuality and absenteeisms were not simply confined to the workers engaged in absenteeism but also had a knock on effect on others whose work was disrupted.

(c) Difficulties in maintaining a steady flow of information to employees at their workplace and time lost due to inclement weather and particularly on uncovered berths during ship construction.

(d) Deeply entrenched customs and practices which encouraged demarcation and restrictive working practices and discouraged flexible working and attitudes.

(e) A poor safety performance which resulted in high numbers of accidents and consequential manhour losses which, in the Govan shipyard, was reflected by the 30,091 people who visited the shipyard's medical centre during 1983.

In some instances to remove these inhibiting or constraining factors involved a challenge to the traditional working practices and this was recognised as contentious. However, given that a more open approach to flexible working was regarded as essential, the challenge had to be taken up.

5. ATTITUDES AND RESISTANCE

Arguably, one of the biggest challenges of the P.I.P. programme was overcoming the resistance shipbuilding workers had towards changing their highly valued traditional working practices and customs. They may well have recognised that they were partly responsible for the industry's poor productivity but changes, particularly those which challenged the specialist craft and trade structures, were resisted rather than welcomed.

In reality company viability was set aside when Joiners and Sheet Iron Workers disputed who was responsible for hanging ceilings. Cost competitiveness was stood down when shop stewards argued that newly installed machines be manned on the basis of manning levels set over half a century ago when machines were belt driven.

The root cause of this resistance and what has previously been described as the 'shipbuilding workers counter productive attitudes' was, as indicated earlier, suspicion and fear, suspicion that the changes will lead to job losses and a fear that the job losses will lead to unemployment. Indeed, Paulden (1969) cited earlier, suggested that strict demarcation was a means of jealously guarding jobs. Not only between unions but also between trades. Inside the same union 'one man one job' had been the slogan for 150 years - shipwrights could not drill a hole, blacksmiths were not allowed to weld. In fact, all trades had strict limitations on what they were permitted to do.

Consequently, it was acknowledged that any move to remove the manpower constraints associated with the industry's restrictive craft and trade structures, as a means of bringing about a more open approach to flexible working, would be resisted nationally by shipbuilding workers and their shop stewards. This notwithstanding the fact that such a move was made at the Govan shipyard during the 'Fairfield Experiment'.

To overcome the perceived resistance from the shop stewards, at shipyard level, British Shipbuilders preferred option was to conclude an industrial relations agreement which integrated the productivity improvement plan, by means of centralised collective bargaining, Kelly (1988) wrote:-

> "A new corporate strategy aimed, inter alia, to overcome shop steward resistance by centralising industrial relations policy which replaced 168 bargaining units with one central unit." (Kelly 1988 page ref.298).

This was seen as a way of increasing the influence of national union officials relative to the shop stewards and was intended to bring about a more disciplined approach to resolving problems during the difficult times which the industry had to face.

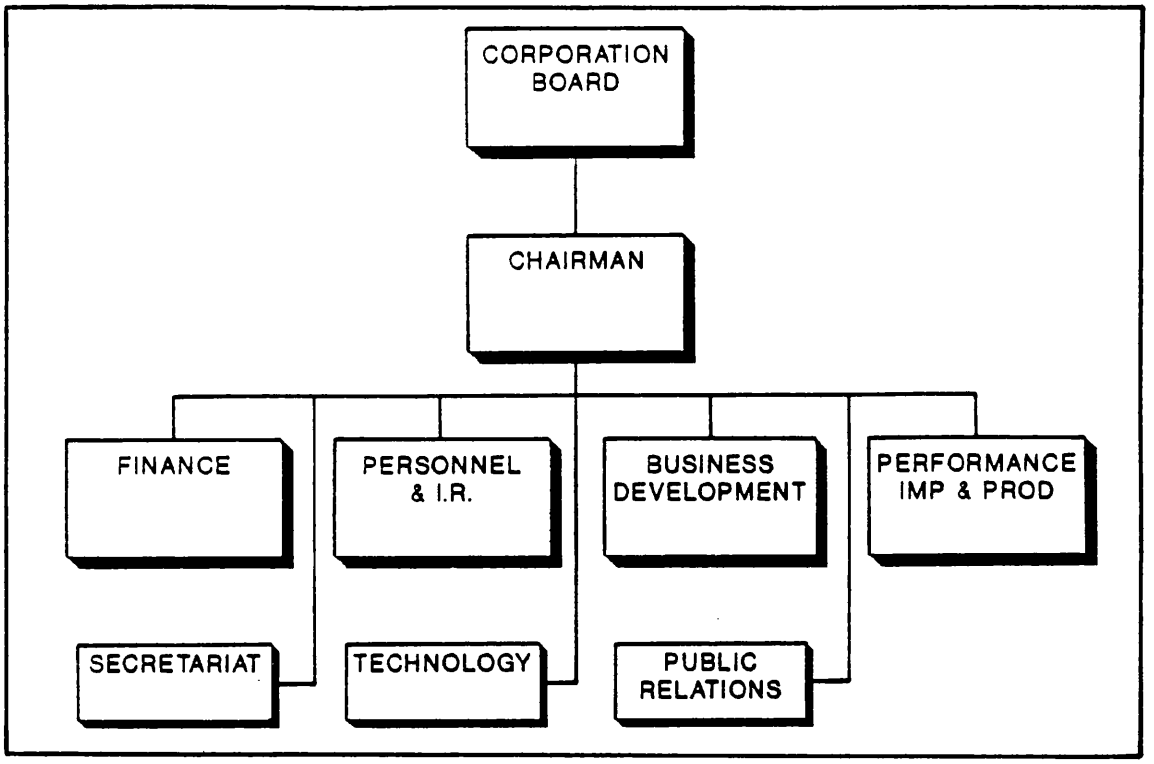
In centralising collective bargaining British Shipbuilders recognised that their subsidiary companies had distinctive management styles, different industrial relations agreements, terms and conditions of employment, customs and practices and interpretations of national agreements. As such the move to centralise collective bargaining could be regarded as part of an overall policy of centralising the industrys organisation and decision making processes. This strategy aimed at what Mintzberg (1988) would describe as achieving standardisation and uniformity of policy implementation and application throughout the industry.

One of the principal advocates of this type of strategy, was Robert Aikinson, Chairman of British Shipbuilders in 1980. He wrote:-

> "It was clear that there would be advantages in such an organisation supported by a central departmental structure." (Aikinson 1980 page ref.8).

Basically this took the form of moving the industry's major departments, including those associated with finance, industrial relations and productivity improvement, to the central headquarters. In total seven major departments, illustrated in figure 8.7, moved to centralised control.

CENTRALISED ORGANISATION STRUCTURE



SOURCE: *Atkinson (1980)*

Figure 8.7

In reality, centralisation of organisation ensured that authority for the industry's major decisions, including those associated with productivity improvements, lay with British Shipbuilders executive. This was, of course, a major power shift away from the individual shipyards to the centralised executive. It reduced the autonomy of the shipyards insofar as the centralised departments were vital to the viability and operational success of the shipyards. Centralisation aimed at standardisation of approach was, therefore, part of a strategy aimed at overcoming resistance at the individual shipyards to policy implication and application. (Such resistance could well come from the shipyards' senior management.)

It ensured that British Shipbuilders executive had the authority to determine industry policy and the power to ensure that policy was implemented with a degree of commitment and consistency in all shipyards. This authority extended to the appointment of the senior managers, at individual shipyard level, to carry out policy implementation and application.

The centralised collective bargaining part of the strategy was aimed at overcoming shop stewards resistance to changes, and to bring about a more consistent approach to industrial relations, and the implementation and application of policy. Such a strategy, therefore, removed the 'ownership' of industrial relations agreements and policies from the local shop stewards and placed ownership with the national trade union officials.

6. AGREEMENTS AND INITIATIVES

The major initiatives, in terms of manpower utilisation and flexibility, taken during nationalisation, were aimed at removing many of the industry's manpower constraints that were prohibiting people from realising their full potential and, as such, were contributory factors of the industry's poor productivity.

To the shipyard worker restructuring was simply another way of saying that more shipyards were to close and more jobs were being lost. In such circumstances, changes to working practices and customs were more liable to be resisted rather than welcomed. However, given that the removal of manpower constraints was regarded as vital to the future viability of the shipbuilding industry the restrictive working practices and customs were challenged.

According to a British Shipbuilding Corporate Director:-

> "I talk about changes in working practices. By this I really mean a fundamental relaxation which will allow flexibility and interchangeablility particularly between boilermaker and outfit trades. I know that such trades will never be completely flexible but provided a man is capable of doing a job and has had the training to do it we would expect to get an agreement on that point." (Rice 1983).

An electrician could weld his own hangers, and drill his own holes, rather than wait for other tradesmen to do these tasks for him. Provided a man was capable of doing the job and he has had the necessary training, he should not be restricted by traditional working practices and customs from doing the complete job himself. The type of fundamental relaxation Rice was proposing required the support of the trade unions and had to be incorporated into an industrial relations agreement.

In many ways Rice was proposing a strategy similar to that adopted at Fairfield during the "experiment" and described previously. Both challenged the traditional specialised craft and trade structures by introducing a more open approach to flexible working. The business plan aimed at improving manpower effectiveness and shipyard competitiveness, as expressed in the P.I.P. programme was integrated with industrial relations policy and underpinned by an extensive retraining programme.

An important factor at Fairfield, however, was the company's approach to industrial relations. Within the setting of the Fairfield industrial relations environment the trade unions supported the business plan and their role was a central feature of the change process. As such, the Fairfield approach had a local identity it was supported by the shop stewards and through them by the shipyard workers.

British Shipbuilders had, of course, established their own forum to discuss contentious industrial relations problems and initiatives. It differed from Fairfield insofar as it lacked local identity and the mechanism set up by the nationalised industry was aimed at by passing the local shop stewards as a means of avoiding resistance. The British Shipbuilding Executive and the national trade union leaders, however, believed that they had established a meaningful forum where the national trade union leaders, as distinct from the local shop stewards, had a major role in the industry's change process. The Shipbuilding Negotiating Committee Chairman declared in 1983:-

> "This will be the fifth year that we endeavour to continue the philosophy. Events will prove whether we can or not but it is our view that our contribution to facing the problems of the industry has never been properly acknowledged and, in some cases, never understood. However, it is still the view of the S.N.C. that centralised collective bargaining is still the major crutch of a sick industry." (Hepplewhite 1983).

The plan was resisted by shipyard workers who prompted the shop stewards to mandate their national trade union leaders to take industrial action unless British Shipbuilders substantially changed their attitude. A motion passed at a Delegate Conference in 1983 stated:-

> "The membership throughout the industry pledge full support to the S.N.C. for any action called for up to and including total occupation or all out strike action. Finally, in view of the decisiveness of our members decision, there is no need for any further Delegate Conferences to be convened on this issue unless there is a substantial change in the attitude of British Shipbuilders." (Ferry 1983).

Negotiations associated with the Productivity Improvement Plan were protracted in that they lasted seven months. However, they were concluded without recourse to industrial action and the Plan was integrated with industrial relations policy. This, after some alteration, and by means of the nationalised industry's industrial relations forum - centralised collective bargaining. Kelly (1988) wrote:-

> "The Productivity Improvement Plan was integrated with industrial relations policy. Changes took the form of greater functional and numerical flexibility as well as retraining.

> Stemming from the March 1979 corporate agreement (Phase 1) in wage restructuring, harmonisation and productivity, these industrial relations changes were incorporated into the phase 5 agreement of January 1984." (Kelly 1988 page ref.298).

In his opinion, the phase 5 agreement constituted a determined attempt, by British Shipbuilders, to 'grasp the nettle' by radically altering their work practices and methods of organisation. It also secured a recognition from the trade unions that management had the right to determine more flexible working arrangements.

Accordingly, the Productivity Improvement Plan was incorporated into an industrial relations agreement and major initiatives, related to numerical and functional flexibility, were introduced. These initiatives were prominent features of Atkinson's (1986) model of the flexible firm discussed earlier.

In terms of numerical flexibility, a shipyard would operate with what was called a "core group" of employees supported by a 'peripheral group' who may or may not be employees. The peripheral group would be generally temporary, short term employees or sub-contractors engaged on appropriate contracts and conditions of services for periods required to meet production demands or peaks. They provided numerical flexibility insofar as they were hired when needed and fired when the job was finished.

The 'core group', on the other hand, were the permanent employees, supported with appropriate rewards, including implicit guarantee of job security, training, pensions, holiday entitlements. These employees were valued by the company because of their skills and by virtue of training, were functionally flexible; tradesmen who carried out the skills of trades other than their own. In addition, they would carry out tasks normally associated with semi skilled employees.

Semi skilled employees themselves would be interchangeable throughout the shipyard. As such they could, for example, be transferred from their traditional helping functions to tasks associated with crane driving, forklifting - tasks that were performed by other semi-skilled workers.

Consequently, the Productivity Improvement Plan sought to tackle many of the industry's manpower constraints and, in particular, the areas where productive time was lost, as a result of one tradesman waiting for the services of others. It also tackled the industry's cyclic problems by introducing numerical flexibility. In addition to temporary employees and sub-contractors, this part of the initiative included a provision to lay-off core workers during difficult times. It also included provisions to transfer core workers between shipyards, introduce shift working and balance the labour force during times of production peaks.

Balancing the labour force was a particularly interesting provision, in terms of the cyclic nature of shipbuilding, insofar as it meant that when there was insufficient work for a tradesman, in his own department, he could be transferred to any other department in the shipyard. As such, it partly addressed the problems highlighted previously, the laying off of steelworkers when the ships were launched and recruiting outfit workers to complete the vessel.

Concluding the phase 5 agreeement did not, however, by itself, contribute to improving productivity or reducing costs. The words of the agreement had to be transformed into deeds in the individual shipyards and this was dependent upon:-

> Firstly - the commitment of managers, supervisors and shipyard workers to the Productivity Improvement Plan.

Secondly - the establishment of effective industrial relations, communication and consultation processes to clarify any contentious issues and enable the implementation of the changes covered by the agreement.

Thirdly - the establishment of effective training programmes to underpin the agreement and to ensure that all employees fully understood the implications of the Productivity Improvement Plan and their part in it. This including a programme aimed at transforming specialist craftsmen into functionally flexible craftsmen.

The major manpower initiatives taken by British Shipbuilders did, of course, involve more than eliminating waiting and 'lost time'. They also involved supporting the industry's people with modern plant and equipment, new technology and systems. A common feature of all initiatives was the role and contribution of training, itself a determining factor of industrial efficiency and international competitiveness.

CHAPTER 9: THE FLEXIBLE WORKING APPROACHES IMPLEMENTATION PLANS MODEL 3 - PART 2

1. FLEXIBILITY TRAINING

Two important principles characterised British Shipbuilders move to implement more open forms of flexible working incorporated in their industrial relations agreement. They, were firstly, the role of training in the change process and secondly, the importance of maintaining safe working practices. Indeed, the agreement stated:-

> "To ensure the full implementation of the terms of the agreement the necessary training or retraining shall be given. Training needs must be identified and the relevant training programmes devised. Employees shall be provided with training sufficient to enable them to carry out the particular task or tasks required. Any work performed by the individual shall be subject to his/her competence to do the job. Both parties recognise the importance of covering all aspects of safe working practices and health protection in the implementation of this agreement." (Phase Five 1984).

The individual shipyards were, therefore, committed to the concept that a tradesman could carry out the tasks of trades other than his own only when he had been adequately trained and was familiar with the safety implications of his extended skills. As such, training programmes aimed at increasing the skills and knowledge of the individual craft, non-craft workers and, indeed, their supervisors and managers were established. These following detailed training analysis conducted in the individual shipyards.

At Govan Shipbuilders, the former Fairfield Shipyard, this type of training approach was familiar, given that a similar approach was adopted during the 'Fairfield Experiment'. The training analysis there was, according to the Personnel Director at Govan, conducted by senior managers and agreed with the departmental managers and supervisors:-

> "We could not implement such a profound change in working practices unless the will to make it work was present both in the managers and in the men and women of the workforce. It is one thing to get the agreement signed but it was another to put it into practice. What we did, was to have the senior management agree with managers and supervisors the calibre and duration of training necessary to extend the capacity of tradesmen. We did not seek miracles, but if you have an efficient tradesman and you extend his horizon say by 20 per cent, 30 per cent, then the Company is going to benefit and certainly his job satisfaction is going to increase." (McCann 1985 page ref.11).

At Govan Shipbuilders, the involvement and commitment of the shipyard management was recognised as a critical aspect of the change process. We tend to support that which we create. As such, the departmental managers and the supervisors participated in the training analysis. They identified the additional skills that their workers required to improve efficiency. For example, the analysis indicated that Platers required training in welding and burning skills to improve their performance, to enable the platers to progress their own work rather than wait for the service of other tradesmen.

The training programme was not aimed at producing "shipbuilding jack of all trades". It was a process aimed at extending the skills of tradesmen by about 20 per cent, enabling tradesmen to service or support themselves. The programme was, therefore, not intended to train the tradesman to be fully competent in all four specialist trades. Platers were simply trained to tack weld and to remove obstructions in way of fairing. They were not trained to weld butts to X-Ray standards, nor were they trained in the full range of burning and gouging skills of the caulker/burners.

The process of involvement and commitment practiced at Govan extended to include the local trade union representatives and shop stewards. The Personnel Director said:-

> "Once this analysing of training needs was completed, Trade Union reaction was sought. The response was encouraging. There was genuine interest shown by their members in extending existing skills and learning new skills and, of course, if you have a skilled man with, perhaps, ten years of shipbuilding experience, his ability to graft on new skills is quick and impressive. So the shop stewards were able to reflect this interest and agree the major training programme implicit in such an undertaking." (McCann 1985 page ref.11).

In fact, the training programmes identified, as a result of the analysis, were extensive. In some instances, the shop stewards suggested that their departmental members receive more training than originally identified by management. More than 50% of the tradesman in the shipyard required to have their skills extended, even the younger tradesmen, including those who had been trained under S.I.T.B. policies. Yet these policies had aimed at, what Fielding (1969) described earlier as, 'training the industry's craftsmen of the future to be more versatile and adaptable'.

Accordingly, after long and protracted discussions and negotiations, the phase 5 Industrial Relations Agreement was underpinned by an extensive training programme.

As an example of what was involved, the training established for the boilermakers or steelwork tradesmen is illustrated in figure 9.1.

INTERCHANGEABILITY AND ACROSS GROUP TRAINING
"STEELWORKERS"

QUESTION	TRADE GROUP	Plating	Welding	Buffing	Burning	Shipwright	Drilling		
1. The total number of employees who have been trained in skills additional to their trade skills :-	Platers		47	51	57	11			
	Welders	58		124	44	5			
	Caulkers / Drillers	10	55	5	39		9		
	Shipwrights	20	64	20	30				
	Total	88	156	200	170	16	9		
2. Total number of employees now using their new skills :-	Platers		36		8				
	Welders	12		60					
	Caulkers / Drillers			5			3		
	Shipwrights	12	56		6				
	Total	24	92	65	14	–	3		
3. Total percentage of employees now using their new skills :-		35·29%	55·42%	32·50%	8·24%	–	33·3%		

SOURCE: *Gordon (1985)*

Figure 9.1

As indicated previously, not all of the 657 steelworkers employed in the shipyard received training. Some had latent skills that they had acquired during the Fairfield Experiment, others received skills in addition to their specialist trade skills during apprentice training. The detailed training analysis revealed that 54% of the steelworers had training needs and the programme addressed the shipyard worker's individual needs. Figure 9.1 is a 'snap shot' of the training covered for the individual trades and indicated that platers, for example, required to acquire skills in burning, welding, buffing and shipwrights work. Not all platers required the same additional skills.

The instructors appointed to carryout the training were selected from the craft ranks. They were chosen on the basis of their individual skills by the managers and their appointment was agreed with the shop stewards. Welders were selected, trained in instructional techniques and, thereafter, trained platers, caulkers and shipwrights to tack weld. Caulker/burners trained welders, platers and shipwrights in burning skills and so on.

In this way ownership of the training programme lay with the Govan shipyard, as distinct from the centralised British Shipbuilder organisation function and the training was an attempt to remove demarcation lines at the yard. This was achieved with the assistance, support and commitment of the shipyard managers, foremen, shop stewards and the shipyard workers themselves.

One measure of the effectiveness of the training was, perhaps, illustrated by the number of employees practicing their extended skills. A one off activity sampling, taken one month after completion of the training programme, revealed that, on that particular day, as illustrated in figure 9.1, the number of those who participated in the training programme, practicing their newly acquired skills was, generally, in excess of 30%.

Functional flexibility and interchangeability was, of course, not confined to the steelwork trades. It was aimed at outfit tradesmen and ancillary workers and, as such, extensive training programmes were mounted for these workers. The activity sample, once again revealed that, in general, the number of employees practicing their newly acquired skills was well above the 30% mark.

The programme, for the outfit trades, is illustrated in figure 9.2.

INTERCHANGEABILITY AND ACROSS GROUP TRAINING
"ENGINEERING"

QUESTION	TRADE GROUP	Welding	Burning	Electronics	Plating	Turning / Milling	Instrument -ation	Gland Packing	Drilling
1. The total number employees who have been trained in skills additional to their trade skills :-	Engineers	59	58	13		46	29	42	
	Boilermakers		13		8				7
	Pipeworkers	10	17			7	14	12	
	Electricians	19	16			5	25	57	
	Total	88	104	13	8	58	68	111	7
2. Total number of employees now using their new skills:-	Engineers	6	6	4		13	6		
	Boilermakers		13		8				7
	Pipeworkers	10	17			1	9		
	Electricians					5	25	57	
	Total	16	36	4	8	19	40	57	7
3. Total percentage of employees now using their new skills :-		18·18%	34·62%	30·77%	100 %	32·76%	58·82%	51·35%	100 %

SOURCE: *Gordon (1985)*

Figure 9.2

The flexibility training programme, at Govan shipbuilders, had, therefore, realised the ambitions cited earlier by the Personnel Director, insofar as the horizons of shipyard workers who participate in training had been extended by over 20%.

2. SAFETY EDUCATION

A prerequisite of a tradesman being able to carry out the tasks of trades, other than his own, was that he had been adequately trained in the safety aspects of his extended skills. The Shipbuilding Operations Director stressed the desirability of this type of training, both in terms of economic and humanitarian grounds. Efficiency in safety performance was just as important as efficiency in productivity:-

> "It is vital that everyone concerned with improving productivity and performance is aware of safety and recognises that accidents do not happen but are caused. Accident prevention is desirable on economic grounds but absolutely essential on humanitarian grounds. Efficiency in safety and health is as important as efficiency in productivity and performance." (Craig 1979 page ref.55).

Accidents, particularly the high level of accidents cited earlier by Goldie (J. 1983) were an integral part of the industry's poor productivity. Vast numbers of people lost productive time travelling to and from the ambulance rooms. They lost time travelling to hospitals and they lost days, weeks and, in some cases, months due to serious injuries sustained in the shipyard.

At Govan Shipbuilders the link between safety performance and productivity improvement was recognised. Indeed, an ambitious Health and Safety educational approach was established in 1984 to support the company's extensive flexibility training, insofar as it ensured that shipyard workers were adequately trained in the safety aspects of their extended skills. However, the educational approach was aimed at more than this. Its aim was to reduce accidents by influencing the complacent attitude that shipyard workers had to health and safety. The Personnel Services and Safety Manager said:-

> "We were attempting to raise the level of safety awareness in the shipyard and change the attitudes of workers who appeared to believe that a consequence of building ships was that, people would be injured, maimed and killed." (Yuill C. 1985).

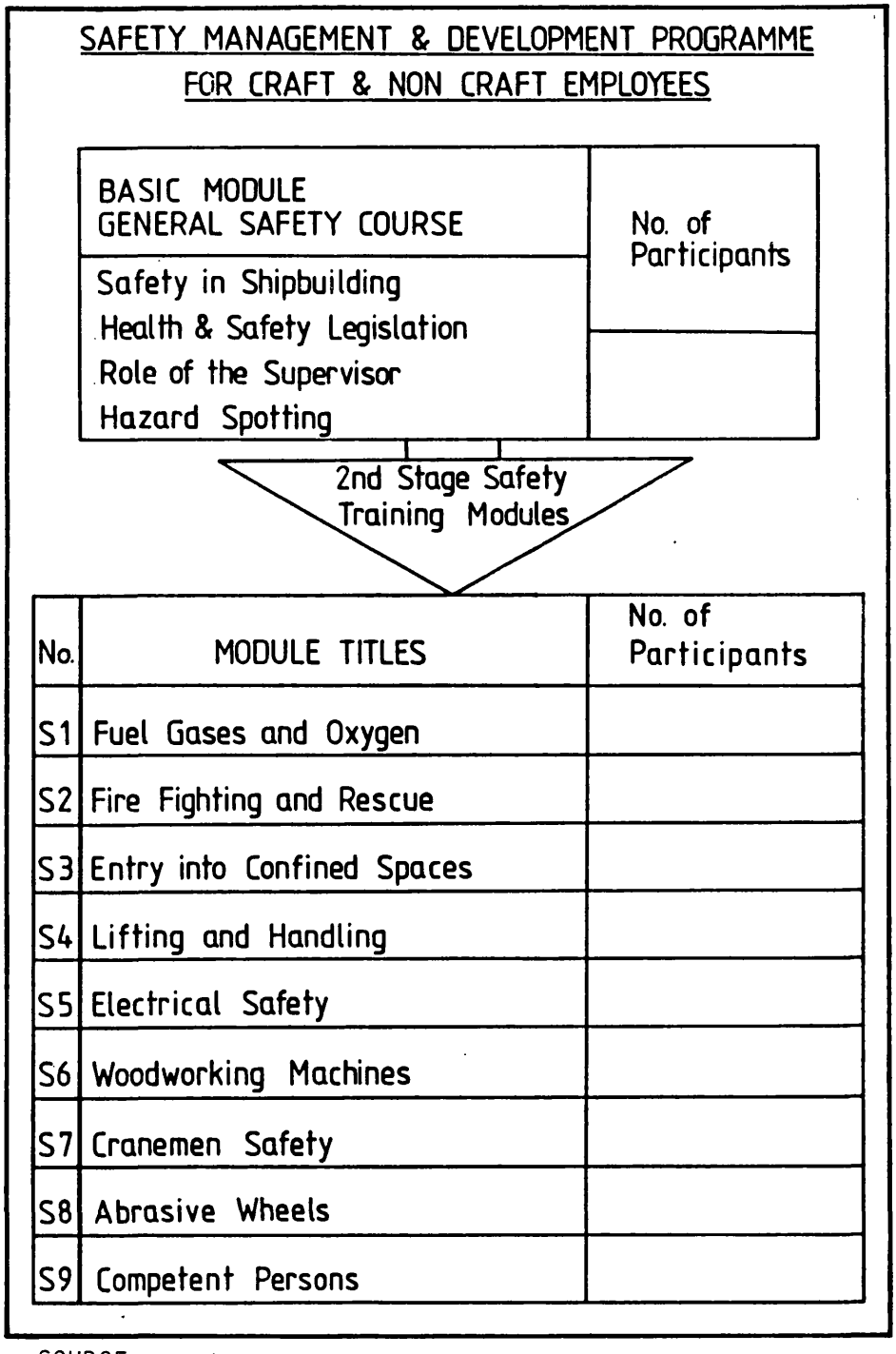
The Govan shipyard's safety performance was poor. Accidents were a result of firstly, unsafe ways of working on hazardous activities and secondly, working with substances, equipment and materials that were threats to health. Consequently, prior to establishing the educational programme the accident creators were identified. Safety arrangements aimed at eliminating them were devised. These were the corner-stone of the educational programme.

For example, accidents occurred as a result of unsafe working practices associated with burning on board the vessels. The most common cause was the failure of the burners to remove their burning torches and hoses from tanks and confined spaces at the end of working shifts. The result of the omission was that oxygen and fuel gas escaped from the torch or hoses. This created an oxygen enriched atmosphere and was normally fatal for the returning burner, or any other employee, using a naked light in the confined space.

Accordingly, the use of fuel gases and oxygen was identified as a hazardous activity. A safety arrangement setting out a safe system for the use of fuel gas and oxygen was devised. The education ensured shipyard workers engaged on this activity were trained to work in accordance with the safety arrangements. The arrangements were also issued to the workers as information and instruction documents. This ensured a common standard of work conduct and, in effect, was 'standardisation'.

The safety educational programme recognised that as a result of the flexibility training tradesmen, other than caulker/burners, would carry out the skills of burning. These tradesmen were unfamiliar with the dangers. The education ensured that they were trained to fully understand the safety implications of using fuel gases and oxygen, this before they practiced their newly acquired skills.

Indeed, safety education was extended to include employees who already had the skills but had never been trained in the safety aspects of their job. The caulker burners, the pipework burners, shipyard workers had been, in some instances, practising these skills for 25 years and were attending their first safety education course.



SOURCE: *Yuill (1985)*

Figure 9.3

Almost every tradesman and semi-skilled worker, in the shipyard, participated in safety education which, as indicated previously, supported the flexibility training and was also aimed at influencing the shipyard workers poor attitude to safety. Again by way of illustration an extract from the safety educational programme is shown in figure 9.3. As indicated, a number of safety modules were developed. These were aimed at ensuring that employees were familiar with the safety arrangements associated with their 'core' and extended skills.

The shipyard workers took part in firstly, the basic module aimed at influencing their poor attitude to safety and secondly, the stage 2 module appropriate to their core or extended skill. For example, the plater attended the basic module and the S.1. stage 2 module, associated with fuel gases and oxygen, prior to practising his extended skill in burning. The impact of this approach was stunning in that there was a major reduction in the number of accidents and there were no accidents directly related to employees practising their extended skills unsafely.

The annual medical report for 1984 confirmed this, by indicating that the number of employees visiting the ambulance rooms had been reduced from 30,091 in 1983 to 8,404 in 1984. As such, less time was being lost from production, as a result of accidents, and the link between efficiency in safety performance and efficiency in productivity and performance were established.

3. SUPERVISORY/MANAGEMENT TRAINING

A major feature of Govan's move to implement the British Shipbuilders Productivity Improvement Plan, as incorporated in the Phase 5 Industrial Relations Agreement, was the participation and involvement of the industry's supervisors and managers in the training process.

This was, of course, a departure from the industry's traditional approach to supervisory/management training. However, given that the supervisors and managers did not participate in the creation of the Productivity Improvement Plan and were not involved in the process of incorporating the Plan into an industrial relations agreement, it was considered important that they fully understood the Plan and their role in any change process.

Shipbuilding, as indicated previously, traditionally had a complacent attitude to this type of training. Indeed, the vast majority of supervisors received little, by way of formal training, either on or after appointment. They were products of the craft ranks, who had hitherto been part of the restrictive craft and trade structures and whose appointment was usually followed by what has previously been described as a "weekend miracle". Yet supervisors were regarded as the vital link in the organisation and management process. This was a view he shared with the Chairman, of the Robens Commission on Health and Safety, who said:-

> "The supervisor is the direct link between management and men. He, therefore, has the most important role to play. One of the ills of industry is the lack of information given to people who most require it. This induces frustration which, in turn, destroys interest, effectiveness and relationships." (Robens 1972).

In shipbuilding the supervisor, as indicated earlier, provided the vital link in the organisational chain, the link between the designers and the makers, the managers and the managed, to keep the production process moving effectively. The link provided by the supervisor was like any other in a chain. It required to be oiled and maintained, by effective information and by the training process.

At the Govan Shipyard the supervisors involvement in the training process included:-

Firstly, their participation in information, giving training sessions on the phase 5 agreement.

Secondly, the identification of the training required to transform their specialist workers into multi-skilled and functionally flexible craftsmen.

Thirdly, their participation in training courses aimed at increasing their skills and knowledge.

The supervisors initial involvement in the training process was their participation in information giving training sessions, aimed at ensuring that they fully understood the implications of the phase 5 industrial relations agreement and their role in its implementation and application. These training sessions were supported by specially prepared training material, slides, handouts and videos, materials that were prepared centrally by the headquarters staff and distributed to the individual shipyards. The aim was to ensure a consistent application of policy.

Fuelled with this information the supervisors then identified the training required to transform their specialist workers into multi-skilled and functionally flexible craftsmen. Transforming the specialist workers into multi-skilled craftsmen had major training implications for the supervisors themselves, particularly those whose working knowledge was restricted to their specialist trade background. To supervise groups of multi-skilled craftsmen the supervisors required to extend their working knowledge. As such, they required training.

The training programme established for the steelwork supervisors is illustrated in figure 9.4.

AREA SUPERVISION: - STEELWORK

QUESTION	TRADE GROUP	No of Supervisors	AREAS OF TRAINING: WELDING	PLATING	BURNING	PLANNING	ACCURACY CONTROL		
1. The total number of Supervisors who have been trained in skills additional to their trade skills:-	Welders	12	12	12	12	12	12		
	Platers	18	18	18	18	18	18		
	Caulker/Burners	9	9	9	9	9	9		
	Shipwrights	8	8	8	8	8	8		
	Total	47	47	47	47	47	47		

2. Total number of Supervisors now using their new skills and operating as Area Supervisors:-	Welders	12	The total number of employees who are covered by Area Supervision:-	All Steelwork working groups operate under a Steelwork Sup'r.	718
	Platers	18			
	Caulker/Burners	9			
	Shipwrights	8			
	Total	47		Total	718

3. Total percentage of Supervisors now using their new skills and operating as Area Supervisors:-	100%	The total percentage of employees covered by Area Supervision:-	100%

SOURCE : *Gordon (1985)*

Figure 9.4

The aim of the training programme was to transform the specialist trade supervisors into area supervisors, responsible for multi-skilled work groups in pre-determined work areas. As such, a supervisor whose specialist trade background was a plater, could be responsible for a work group practicing the skills of the welder, plater, caulker/burner and the shipwright.

As illustrated in figure 9.4 the training programme ensured that steelwork supervisors had a working knowledge of all steelwork trades and, in addition, had an understanding of planning and accuracy control techniques. Area supervision was a concept that was not confined to steelwork. It was also aimed at outfit and ancillary departments. Therefore, training programmes were organised for the supervisors in these departments.

By way of example, the training programme established for the engineering supervisors is illustrated in figure 9.5.

AREA SUPERVISION - ENGINEERING

QUESTION	TRADE GROUP	No of Supervisors	AREAS OF TRAINING: ENGINEERING	PIPEWORK	ELECT.	WELDING	BURNING	PLATING	
1. The total number of Supervisors who have been trained in skills additional to their trade skills:-	Engineering	13	2	11	9	10	10	10	
	Pipework	13	7		8	9	9	9	
	Electrical	8	6	8		8	8	8	
	Boilermakers	1				1	1	1	
	Total	35	15	19	17	28	28	28	

2. Total number of Supervisors now using their new skills and operating as Area Supervisors:-			The total number of employees who are covered by Area Supervision:-				
	Engineering	7		Composite Grp. Working.	156		
	Pipework	6					
	Electrical						
	Boilermakers						
	Total	13		Total	156		

3. Total percentage of Supervisors now using their new skills and operating as Area Supervisors:-	37.14%	The total percentage of employees covered by Area Supervision:-	44.69%

SOURCE: *Gordon (1985)*

Figure 9.5

An important feature of the supervisory training programmes was the fact that the instructors were appointed from the supervisory ranks. They were selected on the basis of their individual working knowledge and trained in instructional techniques. For example, the pipework supervisor delivered a pipework training programme. This ensured that engineering and electrical supervisors had a sufficient working knowledge to supervise a multi skilled work group who practiced pipework skills amongst others.

In this way, the ownership of the supervisory training programmes lay with the supervisors themselves. They created the programmes and supported them to such an extent that trade rivalry gave way to competition. Pride in their individual trade ensured that the instructors presented their trade skills to best effect. The result was that the content of the programme and the standard of delivery was regarded, by those who participated in the training, as being of the highest order.

One measure of the effectiveness of the training programme was, perhaps, illustrated in figures 9.4 and 9.5. These figures reveal that 100% of steelwork supervisors were practicing the concept of area supervision, while the number of engineering supervisors operating on an area basis was 37%.

Accordingly, the supervisory training programme at Govan Shipbuilders realised the ambitions cited earlier by the Personnel Director, insofar as the horizons of the supervisors were extended by over 20%.

4. SAFETY MANAGEMENT EDUCATION

At Govan Shipbuilders, the supervisors involvement in training processes extended beyond that discussed earlier. Their involvement included participation in a safety management education programme established in 1984.

Govan was, of course, an integral part of the nationalised British Shipbuilding industry, an industry the Chairman of the Shipbuilding Negotiations Committee described as sick. Many of its ailments or ills were self inflicted. Indeed, according to Robens (1972), one had a direct link with the industry's poor safety performance. He suggested that one of the ills of industry is a lack of information given to the people who require it most, such as supervisors who were regarded as vital links in the organisation and management process and who became frustrated due to the lack of information. Robens had the view that this frustration led to apathy which was dangerous in terms of Health and Safety.

> "The most dangerous result of frustration is apathy followed by a counldn't care less attitude. Would we not agree that this is dangerous particularly in the area of safety?" (Robens 1972).

The supervisors were the vital link in the organisation and management process. Their complacent attitudes to health and safety was directly related to the lack of information they had hitherto received on the health and safety aspects of their job, adversely affecting their safety performance and those of the workers they supervised. Consequently, the safety management education programme was established as an information giving training process and had three principal aims. They were:-

> Firstly - to identify the role of supervisors in the management of health and safety.
>
> Secondly - to reduce accidents in the shipyard by influencing the complacent attitudes that supervisors had to health and safety.
>
> Thirdly - to support the supervisory/management training programme by ensuring that the supervisors were adequately trained in the safety aspects of extended skills.

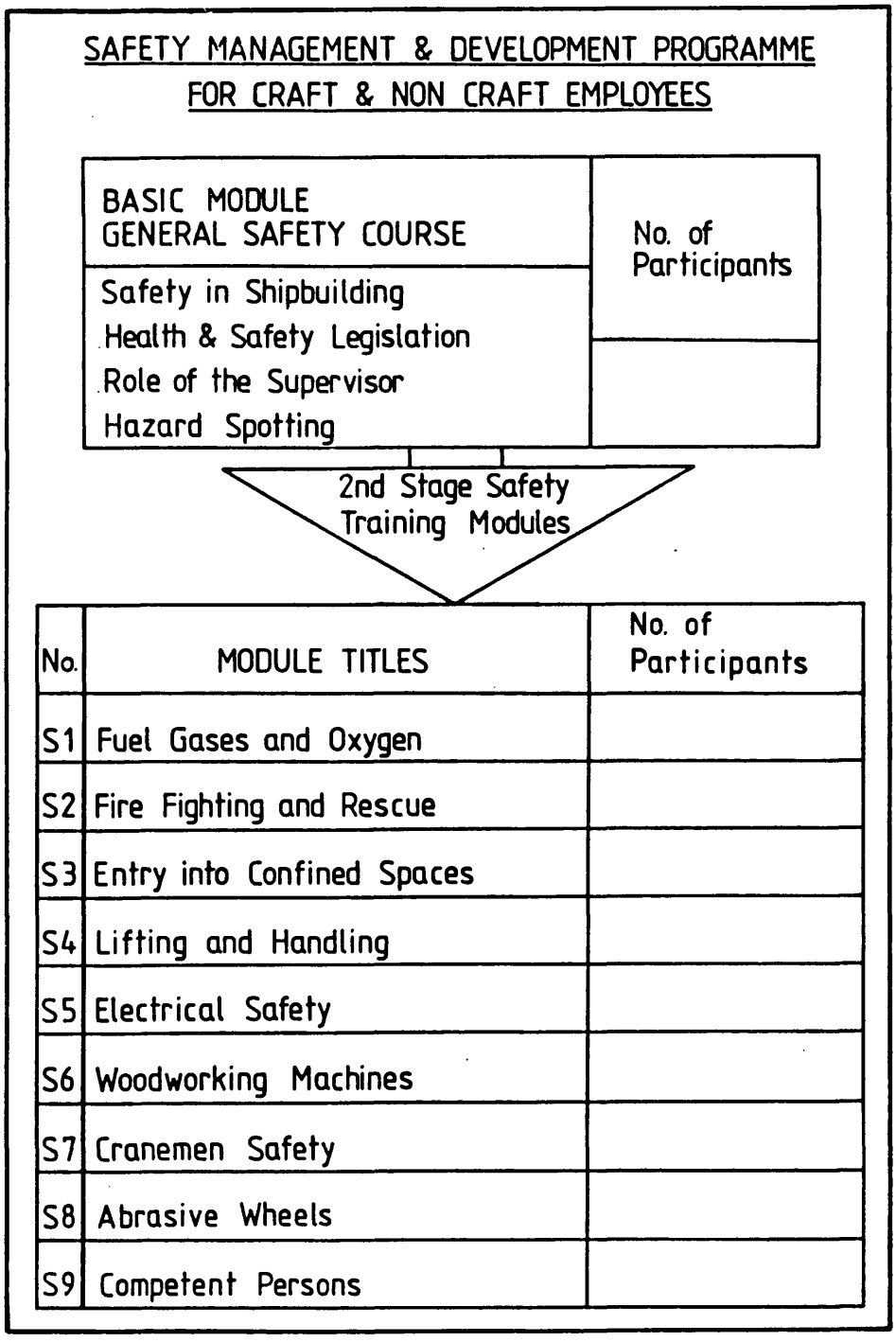
The extensive educational programme was structured in two stages. The initial stage was aimed at 'role identification' and influencing attitudes. Stage two was aimed at increasing safety knowledge.

'Role identification' was considered by the creators of the programme as being significant. The Personnel Services and Safety Manager indicated that this was a central feature of the drive to improve safety performance:-

> "We recognised that the initial stage of influencing the company's safety performance was to establish a far more dynamic health and safety policy.

This laying down arrangements, duties and responsibilities allocated to all levels of management to ensure the healthy and safer working on all activities within the company." (Yuill 1985).

An extract from the safety management educational programme is illustrated in figure 9.6.



SOURCE: *Yuill (1985)*

Figure 9.6

By allocating responsibilities and accountability to each and every member of management from the Managing Director to the first line supervisors, it was possible to assess the real chain of responsibility for every safety failure. As such, individuals could be held accountable for accidents, injuries and even fatalities sustained at the workplace.

The supervisors, in particular, had a vital role to play in ensuring the health and safety of employees in that, they were regarded as accountable for whatever happens within their sphere of control. They had to ensure that the jobs allocated to the workers were safe to do, that the environment in which the work was to be carried out was healthy and that the employee was protected with appropriate safety equipment and the methods adopted to do the job was free from risk.

The words of the policy had to be transformed into deeds. A key factor of this transformation was the safety management education programme. The initial stage of this programme, as illustrated earlier in figure 9.6, was the supervisors participation on 'information giving' in training workshops. Safety mangement workshops constructed in such a way that the supervisors were able to:-

Firstly - identify their role in the management of health and safety. A role which was defined in the company health and safety policy and was vital to the company's safety performance.

Secondly - identify the hazardous activities under their control. Activities which were accident creators when carried out unsafely.

Thirdly - identify the safety arrangements required to ensure that the hazardous activities could be carried out safely. The safe system of work required for their work areas.

Fourthly - identify the safety training needs for themselves and the employees in their work areas. The training required to give a working knowledge and understanding of the safety systems.

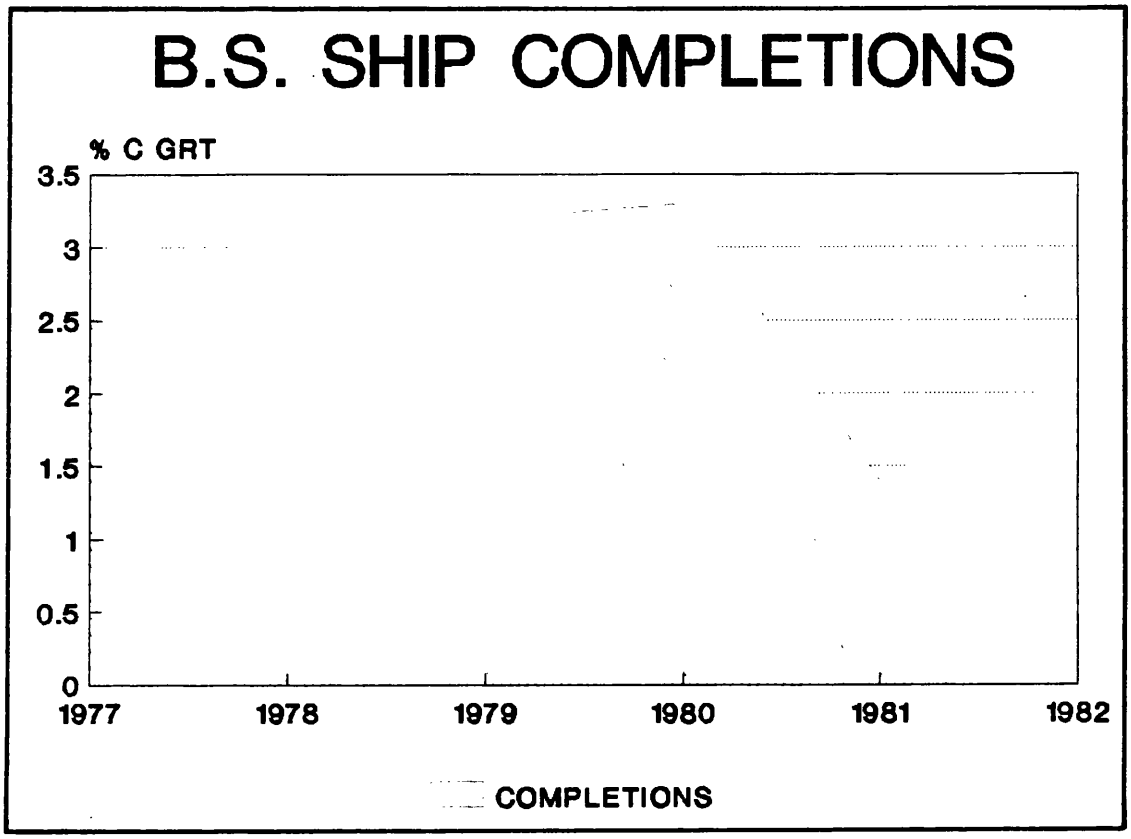
The workshop therefore provided the supervisors with an effective 'information giving' forum, in the sense that the supervisors were firstly provided with information on their role, duties and responsibilities and secondly, they participated in a process whereby the hazardous activities, safety arrangements and training requirements associated with their work areas were identified.

5. COMPETITIVE REALITIES

Arguably, the prime object of the British Shipbuilders strategy was to improve the industry's competitiveness within a socially responsible framework given the industry's location in areas of high unemployment. The expectation was that, by so doing, sufficient contracts would be secured to ensure that the shipbuilding industry would become viable.

To achieve shipyard competitiveness, British Shipbuilders introduced a centralised P.I.P. programme with the principal aims of reviewing areas of shipbuilding costs, including those associated with manpower and implementing, within the setting of an industrial relations agreements, initiatives that would bring about economies. The reality was, however, that the architects of the P.I.P. initiative had an uphill task. The shipbuilding industry was severely hit by recession in terms of world demand for merchant ships. This recession affected shipbuilding well into the 1980's and exacerbated an underlying decline in the United Kingdom shipbuilding capacity. Indeed, the British Shipbuilding share of a declining world market, as indicated by Lloyds, slumped from 3.49% in 1979 to 1.8% in 1982.

British Shipbuilders, therefore, failed to secure sufficient contracts to ensure that their shipyard and workers were fully employed. In fact, ship completions declined significantly as illustrated in figure 9.7



SOURCE: *British Shipbuilders Figure 9.7 (1983)*

This decline was reflected in both shipyard closures, and very large measures of job losses and this dramatically affected the morale, motivation and commitment of the workers and management in the remaining shipyards. The labour force of the nationalised British Shipbuilding Corporation, fell from 87,000 in 1977 to 33,000 at the beginning of 1986.

How long can we keep our jobs, was regarded a more appropriate theme than 'how can we improve competitiveness'. As a result, at shipyard level in Govan, both the management and the workforce paid lip service to the P.I.P. programme. They did not openly reject it but their efforts to comply with its aims were reflected more by way of the local actions associated with the training and safety initiatives than by the removal of restrictive working practices and overmanning.

By April 1986, Govan Shipbuilders Limited was one of only 5 remaining merchant shipyards left within British Shipbuilders and, although, generally considered to be one of the United Kingdom's most efficient yards, they too, had suffered major and increasing financial losses and losses in both capacity and jobs, throughout the period of nationalisation.

The loss of capacity included the closure of the shipyards formerly known as Alexander Stephen and Charles Connell, and a consequential reduction in the workforce from 5,300 in 1978 to 2,300 in 1986. Accordingly, the P.I.P. programme did not achieve its competitive objectives insofar as:-

(a) British Shipbuilders share of a declining market slumped by almost half - from 3.49% in 1979 to 1.8% in 1982, due to the high costs of British built ships and the uncompetitiveness of the shipyards.

(b) Insufficient contracts were secured to maintain the shipbuilding capacity. Shipyards closed and by 1980 only 5 uncompetitive and loss making merchant shipyards remained in British Shipbuilders and the management morale motivation and commitment of the workers at these yards was at a low ebb. 1986.

(c) Massive job losses incurred during nationalisation devastated the industry. The number of employees dropping from 87,000 in 1977 to 33,000 at the beginning of 1986, and still further to below 10,000 when the warships returned to the private sector. All this was in spite of the 'socially responsible' framework under which the corporation operated.

The simple reality was that the P.I.P. programme did not transform the uncompetitive British Shipyards into a competitive shipbuilding units. The individual shipyards, even Govan, the most efficient of the surviving yards, continued to operate as unprofitable loss making units.

6. CONCLUSIONS

It could be concluded that British Shipbuilders' plan to transform the nationalised shipyards into viable shipbuilding units recognised the competitive importance of the industry's people and, in particular, the policies and practices adopted to utilise them. This is demonstrated by the fact that one of the principal aims of the plan was to realise the full potential of the industry's employees' as a means of improving productivity. By implication this suggests that the strategists at British Shipbuilders acknowledged that the industry's manpower potential was being inhibited and constrained and, as a result, shipyard viability and competitiveness was being adversely affected. The adoption of a strategy that linked manpower utilisation with shipyard competitiveness, therefore, had considerable logic given that shipbuilding was a highly labour intensive and uncompetitive industry with a history of manpower problems. The strategy takes, as its start point, the view that in the highly competitive shipbuilding market place, the division of shipbuilding manpower and the concept of job specialisation, protected by strictly demarcated trade boundaries, was a flawed approach to effective manpower utilisation and organisation.

Supporters of the British Shipbuilders approach would argue that it was focused and structured; focused in the sense that the centralised P.I.P. department focused in on seven areas of shipbuilding costs, including several where manpower utilisation was being inhibited by the strictly demarcated trade boundaries and structured from the point of view that the coherent and comprehensive approach:-

Firstly - subdivided these seven areas into manageable parts that were examined by groups of specialists whose aim was to identify economic improvements that would remove uncompetitive inhibitions and constraints.

Secondly - concluded industrial relations agreements that incorporated moves to more open forms of trade and numerical flexibility. The, context for this was a centralised industrial relations mechanism that avoided local resistance by by-passing the shop steward movement in the individual shipyards.

Advocates of the approach would argue that in terms of manpower utilisation the examination of manpower policies and practices did reveal several areas where manpower was being inhibited and constrained. They could also point out that the industrial relations agreements concluded between British Shipbuilders and the national trade union leaders were progressive and provided opportunities to introduce more open forms of flexible working into shipyards that were uncompetitive and constrained by demarcation, overmanning and restrictive working practices.

The manpower utilisation model developed by British Shipbuilders could, therefore, be described as a Flexible Working Model. It takes its start point as the specialist craft and trade structure and seeks to improve the coordination of work by adding additional skills to the job specialists, to provide the specialist with greater mobility and introduce functional flexibility of the type described by Aitkinson (1985).

Arguably the functional flexibility enabled the specialist platers to progress their own work by welding and burning rather than waiting on specialists from these trades to service them and thus elimination of this waiting time increased manpower efficiency.

However, it could be argued that the more open forms of flexibility introduced under British Shipbuilders extended to include those described as numerical and it could be reasonably assumed that the concept of model three was based on Aitkinsons (1985) Model of Flexible Firm.

The more cynical, however, would argue that the approach had all the hallmarks of the 'ivory tower' syndrome. It was high centralised with little involvement from the local shipyard management or the workers. Indeed, the whole purpose of the centralised industrial relations forum was to avoid local involvement or resistance from the trade union representatives and management at shipyard level. As a result the proposals for change embodied in the agreements, could be regarded at local level as alien and imposed from on high.

It could also be argued that the aim of realising the full potential of the industry's employees was little more than a pipe-dream given that the period of nationalisation was synonymous with shipyard closures and job losses. In fact, as illustrated earlier, the number of people employed by British Shipbuilding shipyard fell from 89,000 to 10,000 during a decade of state ownership. This could only have a damaging effect on the morale, motivation and commitment of the industry's employees and, as if to make matters more difficult, the agreements to close shipyards and shed jobs were incorporated into the same agreements that were aimed at realising the full potential of the industry's employees.

PART FOUR

Developing and Implementing Manpower Utilisation Policies at Kvaerner Govan Limited

PREFACE

Part Four provides an analytical account of the industrial relations processes and action programmes adopted by Kvaerner Govan Limited, to develop and implement manpower utilisation policies and facilities initiatives aimed at transforming an uncompetitive shipyard into a viable shipbuilding operation.

Initially, the aim of the work is to put into a 'descriptive format', the thoughts and theories related to Kvaerner's acquisition of the shipyard and the strategy adopted by them to achieve viability. In particular, we will be concerned with the thinking related to 'manhours' and their importance to the overall strategy of achieving shipyard competitiveness. This comprises Chapter 10.

Secondly, in Chapter 11 the aim will be to put into an analytical framework the context in which the shipyard's traditional working practices constrained manpower utilisation and created situations where manhours and manpower were lost. The purpose is to describe and quantify the restrictive nature of the working practices and manpower inhibitions in the Govan yard.

Thirdly, in Chapter 12, the aim is to demonstrate the uniqueness of the shipyard's traditional and prevailing industrial relations process and practices and to provide some explanation for the shipyard workers' attitudes and behaviour with regard to changes in working practices and values. The merits of the alternative industrial relations framework introduced by Kvaerner, will also be considered. The purpose here is to analyse the strengths and weaknesses of the industrial relations process, in terms of its ability to improve manpower utilisation, efficiency and shipyard

Fourthly, Chapters 13 and 14 will aim at putting into a descriptive and measurable framework the context in which the Kvaerner Govan action programmes improved manpower utilisation effectiveness and shipyard competitiveness. Emphasis is placed on the shipyard's improved productivity and increased efficiency as reflected by the reduced manhour content of Govan built ships. This will be detailed in section six of Chapter 14. In particular, this evaluation will concentrate on the four ships L.P.G. construction programme.

In effect, the improved manhour efficiency and the ability to secure orders, based on that efficiency, are the 'two acid tests' of effectiveness of the Kvaerner Govan strategy and, indeed, the 'range of actions' incorporated in their contentious and far reaching action programme.

CHAPTER 10: THE KVAERNER STRATEGY

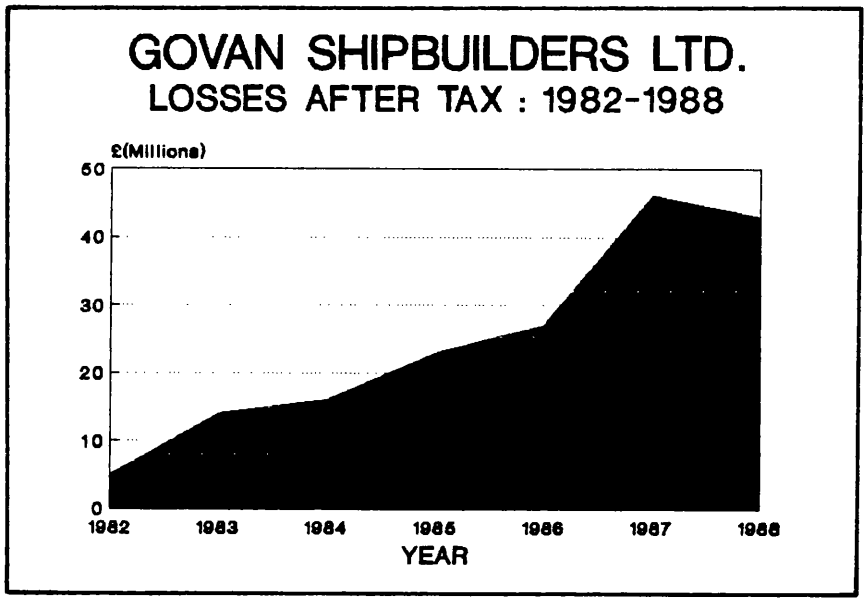
1. INTRODUCTION

August 1988 is an important date in the history of Upper Clyde shipbuilding. The Kvaerner Group, Norway's largest privately-owned commercial enterprise, bought all the assets of Govan Shipbuilders, the largest merchant shipbuilder in Great Britain, and the last remaining merchant shipbuilder on the upper reaches of the River Clyde.

The Group, whose enterprise embraces production, sales and engineering companies in more than 50 countries world wide, are active in the fields of mechanical engineering, offshore deliveries, pulp and paper technology and shipping. They had also a long and profitable association, lasting for more than a century, with the Norwegian shipbuilding sector which ended in the early 1980's. Their decision to purchase Govan, therefore, marked a return to an industrial sector familiar to them and in which they had extensive knowledge.

However, when Kvaerner took over the Govan shipyard, they did not acquire a smooth running, well organised and profitable shipbuilding operation. Quite the contrary; they, in fact, took over a shipyard that, although considered to be 'the jewel in the crown' of the state owned British Shipbuilders had nonetheless contributed mightily to their high losses. Indeed, in the previous nine years Govan had more than its share of the state industry's £1.8 billion of subsidy. Yet even this large influx of funds had not turned what was an unprofitable shipyard into a viable operation. Kvaerner were aware of this, but were taking a strategic decision in the light of market forecasts - perhaps a risky venture, but small in comparison with Kvaerner's assets (£270 million), especially given the asking price.

Govan Shipbuilders, in fact, incurred losses throughout its period of nationalisation and these losses steadily increased. So much so, that by 1988 the shipyard losses, as illustrated in figure 10.1, were in excess of £40 million. This loss was based on an annual trading figure of approximately the same amount.



SOURCE: *Draegebo (1990)*

Figure 10.1

On the positive side the Clyde based yard had an excellent reputation for building some of the world's best ships. The workforce were highly skilled and malleable, demonstrating this by their ability to continually produce a product mix of vessels ranging from passenger vessels to product tankers. This range of ships required different balances of skills and resources to be deployed and, therefore, tested both the skills and malleability of the workforce.

The problem, insofar as Kvaerner was concerned was, therefore, not one of producing quality ships at Govan, it was simply that the shipyard could not build quality ships at profit and had not done so for the past three decades. Kvaerner clearly believed they could turn the shipyard around and back to profitability but this would not be achieved overnight.

A time horizon of 2 to 3 years was more appropriate given that the yard needed re-investment and a re-organisation of work process. The good quality workforce were inflexible and badly organised by a poor and highly bureaucratic management. Bruce (1990), Industrial Correspondent of the Glasgow Herald, perhaps helps to identify the source of the problem and the legacy which Kvaerner inherited when they aquired Govan.

> "When Norwegian Industrial Group Kvaerner took over Govan Shipbuilders, Scotland's largest merchant yard in 1988, it inherited 50 years of restrictive practice, demarcation between trades which just stopped short of civil war and a management which was top heavy with bureaucracy." (Bruce 1990).

The perception left by Bruce's comments was that shipbuilding workers, be they managers or craftsmen, still appeared to place their traditional values and restrictive working practices high on their agenda. They might well recognise that these practices have been partly responsible for the industry's decline and unprofitable position but changes were more liable to be fought rather than welcomed. This was in spite of the many flexibility agreements concluded during the past three decades during the 'Fairfield Experiment' and the British Shipbuilders Productivity Improvement programme.

Negotiated agreements on demarcation and restrictive practices had not led to real improvements in manpower utilisation due, perhaps, to the industry's inability or reluctance to implement the industrial relations agreements for a sustained period. Herein was one of the British Shipbuilding Industry's major problems, that of 'attitude', a trait that could be regarded as the shipbuilding workers "Achilles heel". Their 'self destruct button' generally triggered when someone was asked to do a job which traditionally had been carried out by someone of another trade.

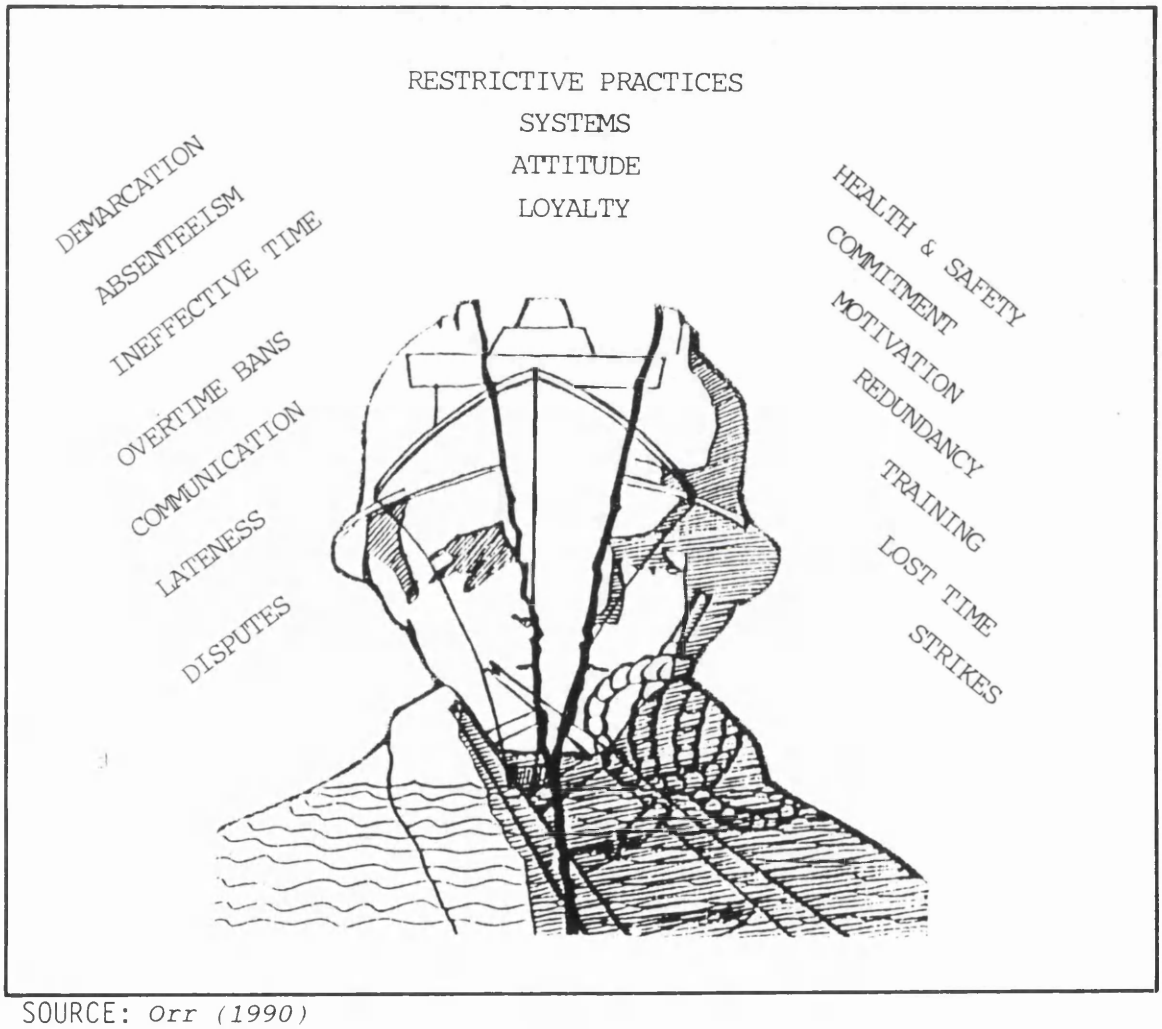
Company viability was set aside when platers and caulkers disputed who was to operate a particular burning machine. Competitiveness was stood down in the interest of overmanning newly installed machinery on the basis of manning levels set three decades previously. This workforce culture had been bred into the current generation of Govan Shipyard Workers. It ultimately derived from the insecurities of employment which had plagued the industry on Clydeside for half a century - excluding the 1940's. Destructive though the attitudes and work practices may have been, the reaction was, nevertheless, understandable. The strong community identity of the Clydeside workforce and the strong craft traditions had led to the belief that employment in shipbuilding, and in the Govan yard in particular, was a kind of right. That belief giving rise to the view that if ships could not be built profitably, so be it: Government support and subsidy would provide the protection to keep the loss making shipyard afloat.

Kvaerner's acquisition of the yard meant that this type of thinking and the culture associated with it had to change if Govan was to achieve the profitability objectives. The culture could not be changed overnight. Kvaerner first had to demonstrate to the workforce that they meant business and were here to stay. They had to build confidence in the yard and give a clear signal that they could provide the employment security which had been so lacking. Only these conditions could lead to a change in culture and a willingness to go along with - or even to accept reluctantly - the changes in work organisation and traditional values that would be required.

As it was profit had become a pipe-dream in shipyards where ineffectiveness accounted for as much as 50% of productive time and absenteeism levels reached 22%.

There have, of course, been many other reasons put forward to explain the ineffectiveness of the shipbuilding industry. Some were associated with, what could be loosely termed as, the 'people side' of this highly labour intensive industry and could, therefore, be within the internal control of the individual shipyards and their employees. Figure 10.2 illustrates some of these reasons.

AREAS OF MANPOWER INEFFECTIVENESS



SOURCE: *Orr (1990)*

Figure 10.2

The root cause of these problems could be summed up in two words - excessive manhours. The simple fact was that Govan and the United Kingdom shipbuilding industry at large took somewhere in the region of two to three times the number of manhours as did their European or Far East competitors to build a ship.

This situation not only added to the direct cost of the ships but limited the utilisation of the fixed assets and increased overhead costs per unit of output. Delivery times also became unreliable. Consequently, the Govan shipyard and the industry generally was uncompetitive in the international market place and had been so for decades.

2. LOGIC

This section sets out to explain why Kvaerner took the plunge in acquiring the Govan yard and how it believed it could overcome the problems of long standing non-profitability, so as to convert the yard into a profit-making unit in the wider Kvaerner organisation. Govan's legacy of uncompetitiveness prompted a view that logically the only way that the profit conscious Norwegian International group could make money out of their new acquisition was to close the yard and sell off the assets. Some of the Govan employees no doubt saw the acquisition this way and this may have strengthened their resolve to preserve their traditional ways of working, their acquired work culture.

Kvaerner's logic, however, was somewhat different. They regarded the acquisition of the Govan shipyard as a unique opportunity to re-enter, in a positive and profitable manner, the shipbuilding market place, which the Norwegians long regarded as being a core industrial sector of their business operation. They had a long and profitable association with shipbuilding for over a century. That association ended in the early 1980's when they closed their Norwegian based shipyards, a policy decision based on the fact that in the depressed shipbuilding market, the shipyards were no longer generating profits.

However, by 1988 market research findings, based on the status of Kvaerner's own shipping fleet and the status of the world shipping fleet in general, indicated that by the mid 1990's the shipbuilding market would be on the upturn. Ship owners would, according to the Kvaerner research, have to replace their aging fleets with more technology based and safety conscious and high added value vessels. Ships that would be required to transport ever more sophisticated cargos and serve a rapidly changing shipping market.

Kvaerner recognised the business opportunity that this perceived shipbuilding upturn presented, particularly given the potential shortage of shipbuilding facilities available world wide due to the closure of so many shipyards over the past two decades. This capacity shortage, coupled with the increased demand for new vessels could, in Kvaerners view, create a builders market forcing ship prices up and thus provide profitable opportunities.

To the Norwegian group, the choice of Govan as the shipyard from which to launch the re-entry was considered logical in the sense that:-

(a) It was a shipyard of the correct size and type with work in progress and, importantly, was available for purchase at the reasonable price of £6.3 million. Financial arrangements were also available to complete the work in progress on a cost plus basis and to meet restructuring, redundancy and retraining costs, thus providing a protective 'lead in' period for the new owners.

(b) It was a British based merchant shipyard with access to European community subsidy funding equivalent at the time of the acquisition to 27% of ship costs and favourable shipbuilding mortgage facilities.

This would give the Govan yard a positive advantage over the Norwegian shipyards and yards in other non E.C. countries who did not have such funding.

(c) It had a highly skilled workforce and access to a large labour market of former shipyard workers who had the skills and ability to produce high technology based vessels with high added value.

(d) The wage rates at Govan were equivalent to only 60% of those prevailing in Norway. This even though productivity levels might be low, the wage cost advantage was one that could be harnessed if more efficient working could be achieved.

Govan, therefore, was a modest acquisition for Kvaerner, with protective financial guarantees which were important to the future well being of the yard. These included a cost-plus workload guarantee that ensured the workforce had a sufficient workload for at least one year and meant that all losses incurred on this workload would be picked up by the nationalised British Shipbuilders. This one year workload also gave Kvaerner a lead-in period that could be used to assess and restructure the shipyard.

Among other factors that encouraged Kvaerner to make the commitment was the fact that British Shipbuilders had agreed to meet the costs of the restructuring programme. These included the costs associated with redundancies as the yard adjusted its labour requirements to meet the demands of the competitive commercial environment, and the retraining costs associated with increasing the skill base of the workforce to meet the requirements of the market place in terms of high technology vessels.

Again the availability of a 27% E.C. subsidy provided another form of guarantee. Kvaerners aim was to build ships competitively and profitably at the Govan shipyard. The reality was that Govan had a legacy of unprofitability, was uncompetitive at the time of the take over and could not attract profitable orders. To assist shipyards such as Govan secure vitally needed contracts during transition periods, the European Community provided considerable subsidy funding.

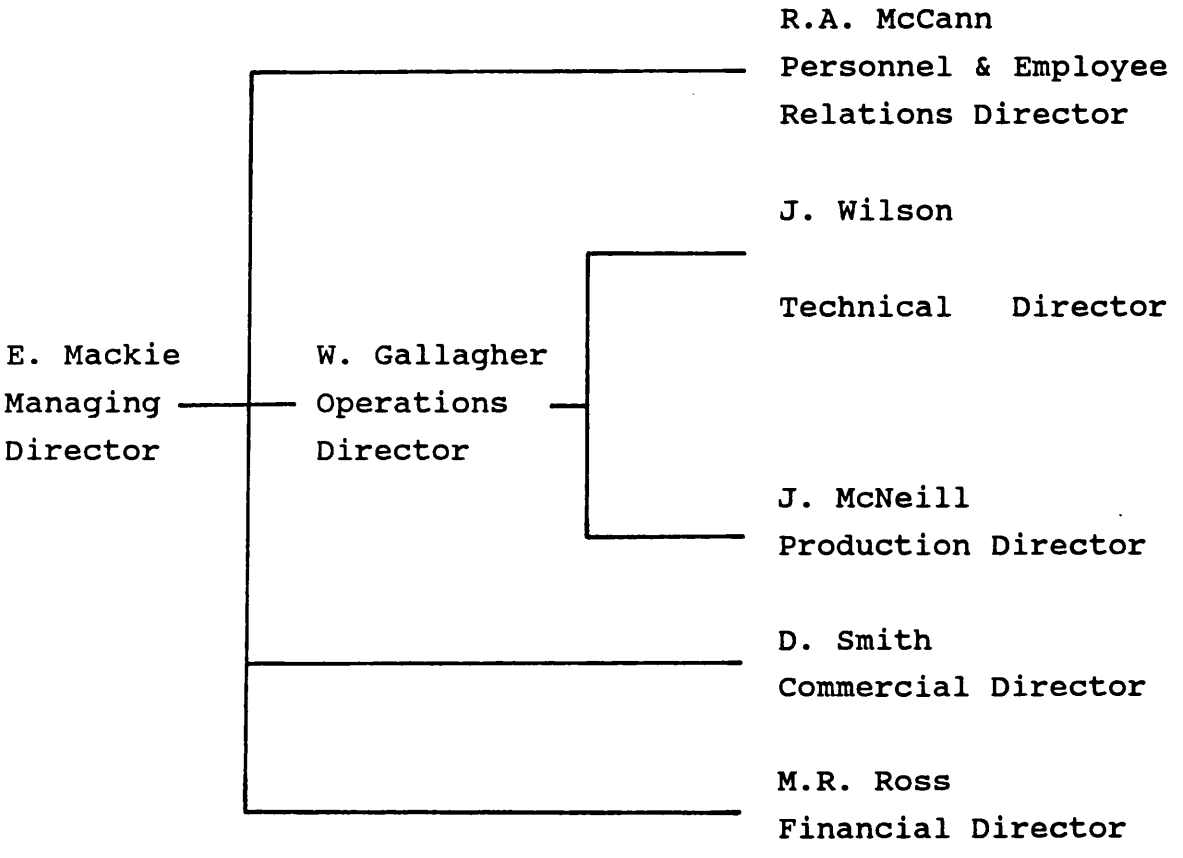
In Govan's case this funding was equivalent to £13.5 million on a £50 million vessel and was aimed at enabling them to bridge the competitive gap between themselves and their profitable competitors. This type of financial assistance would, of course, be vital to the new owners, particularly in securing initial orders and during the difficult transition stage.

There was, therefore, a clear set of reasons for the Kvaerner Board's decision to acquire the Govan yard: market, wage costs, EC subsidy, a basically sound yard (though needing investment) and a labour force capable of quality output. Nevertheless, it has to be said that if the decision had been taken only 2-3 years later, an 'East European' yard might well have proved equally attractive. But the timing was right for Govan.

The Norwegian based executives of Kvaerner had, therefore, provided the local management of their new acquisition with a framework of financial guarantees that would assist in the process of transforming the uncompetitive Govan shipyard into a competitive Kvaerner Govan Ltd. Responsibility for this transformation, at local level, rested with the local Board of Directors at Govan, who were in place at the time of the take-over.

Their composition is illustrated in figure 10.3.

Local Board of Directors



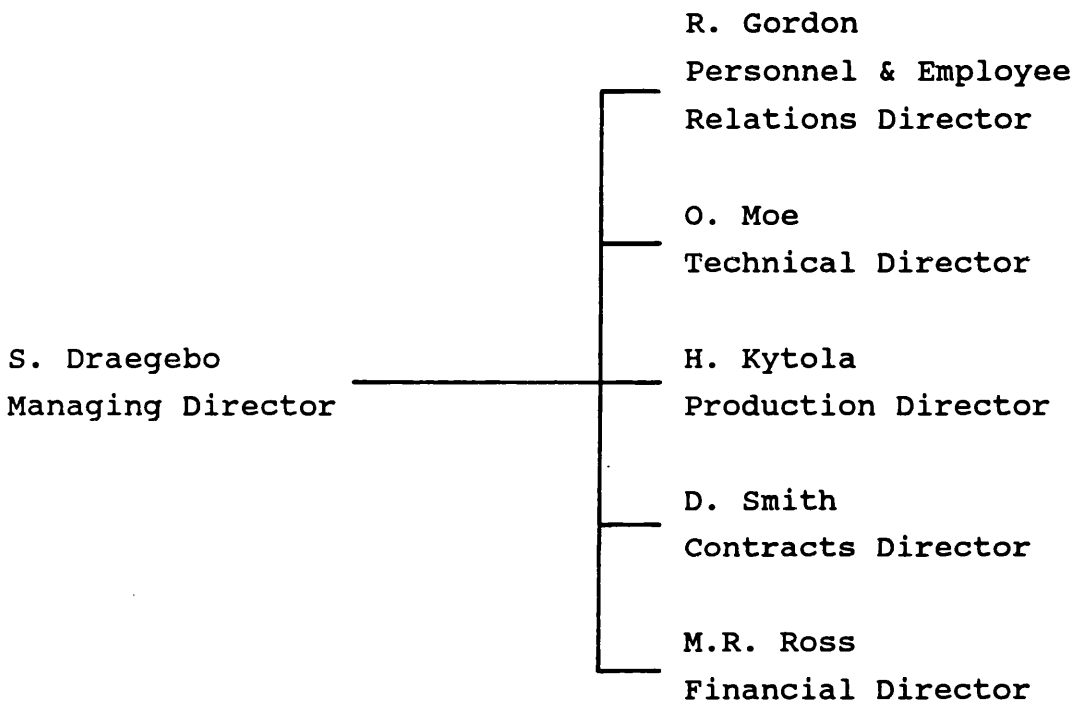
SOURCE: *Gordon (1992)*

Figure 10.3

This Board remained in place for the duration of the 'lead-in' stage and were responsible for the completion of the workload which Kvaerner inherited from British Shipbuilders. Twelve months after the take-over, however, the Managing Director, Mackie (1989), indicated that the local board had major difficulties with the processes associated with transforming the shipyard from its uncompetitive state. Indeed, he suggested that little progress had been made and the yard's performance had deteriorated during the lead-in period.

The lack of progress in tackling the problems which had to be overcome, prompted the Kvaerner main board to change radically the compensation of the Local Baord of Directors at Govan. The composit of the new board is illustrated in Figure 10.4

LOCAL BOARD OF DIRECTORS



SOURCE: *Gordon (1992)*

Figure 10.4

Five of the directors in post at the time of the take-over, including the Managing Director, had left the company. Only the Contracts and Financial Directors remained. Four new directors, the Managing Director, Technical Director, Personnel and Employee Relations Director and the Production Director were appointed.

The new Managing Director, a Norwegian by birth, was brought from America. He had extensive international shipbuilding experience, having previously worked in Europe, the Far East and American shipyards.

He also had experience of the shipbuilding support industry having worked for an organisation whose prime responsibility was to introduce modern plant and equipment into shipyards. The new Managing Director appointed the other three new directors and specified their individual and collective responsibilities for the processes associated with transforming the shipyard. Initially, he seconded, from Kvaerner, a Norwegian Technical Director, who had an extensive knowledge of high technology based ships and whose prime responsibility was to restructure the technical function of the organisation to ensure that Govan had the ability to produce technical information for the high technology ships on a cost effective basis.

Thereafter, he appointed from within the company, a Personnel and Employee Relations Director, who had extensive knowledge of the company, the trade union movement agreements, working practices, and U.K. employment legislation. This was considered as a key appointment by the Norwegians, since extensive changes in manpower practices were considered essential and resistance from the powerful trade union movement was expected to be strong. The new directors' prime responsibility was to develop and implement manpower utilisation policies and initiatives, which would improve performance by reducing lost productive manhours and eliminating manpower constraints.

Finally, the Managing Director appointed a Production Director who was, by birth, Finnish and who had previous shipbuilding experience at the high technology end of the market in both Western and Eastern European shipyards. His prime responsibility was to restructure the production organisation to ensure that the shipyard could produce the high technology ships competitively. At the end of this board replacement and restructuring there was a new team selected for its expertise and experience, specifically relevant to the problems known to exist in the Govan shipyard.

An integral part of the strategy process was the involvement role of the shipyard managers and supervisors, the first opportunity many had to expressed their views. This was an important characteristic of the Kvaerner approach insofar as it enabled the managers and supervisors to identify and quantify the factors which were, in their opinion, contributing to the high numbers of unproductive manhours. Many of the managers quantifying these inhibiting factors using latent industrial engineering skills gained over two decades previously during the 'Fairfield Experiment'.

The strategy adopted was, therefore, essentially a Govan creation and recognised that a solution to Govan culture and inbred manpower problems could not be imposed by the Norwegian company. The solution had to be found by those employed in the shipyard under the direction of the local board of directors.

Kvaerner corporate management in Norway did, however, have some involvement in the strategy process in the areas of product direction and the provision of the necessary finance to support the investment and restructuring programmes. They also had a critical role in monitoring the shipyards performance and for this purpose an alternative reporting arrangement was established by the local board. These reports were linked to the strategies implementation and, in particular, the action programmes aimed at improving productivity and competitiveness. They were intended to offset criticism associated with losses during the years 1990 to 1992.

The reports gave corporate management an indication of the effectiveness of the actions in terms of their ability to recover hitherto lost productive manhours. They set out in measurable terms the improvements in action areas such as working practices, Health and Safety performance and absenteeism and relating these improvements to the reduced number of manhours taken to build ships at Govan.

3. THE STRATEGY

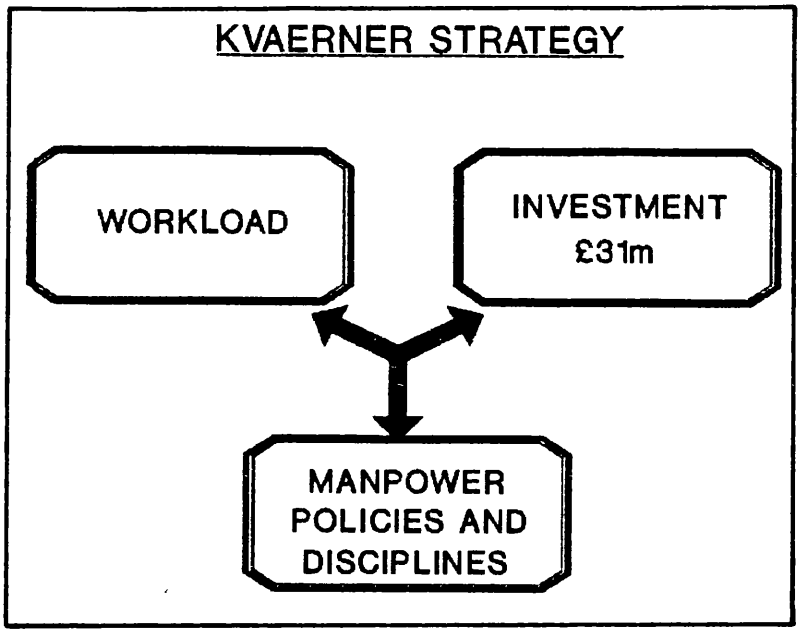
The strategy adopted by Kvaerner Govan and supported by the main board of Kvaerner acknowledged that 'excessive manhours' was a major feature of the shipyards uncompetitive situation. It also acknowledged that the manhour content of Govan ships were influenced by the plant, equipment and facilities available in the shipyard and the manpower policies practiced by the Govan workers. The simple logic behind the strategy was based on the fact that approximately 65% of the ships costs were expended outwith the shipyard. These costs were associated with the purchase of the main engine, pumps, valves, steel etc. Costs that all shipbuilders had to incur and, given the potential purchasing power of the international Norwegian group, they were purchases that could be made at no financial disadvantage to Govan.

Only about 35% of the ship costs were actually spent in the shipyard and these were largely associated with manpower costs. It could be suggested that it is, in fact, the number of manhours taken to assemble the 'bought in' parts that the shipbuilder sells to the customer.

At Govan the number of manhours taken to assemble the 'bought in' material was twice that of the shipyards competitive international competitors. These competitive shipyards utilised their manhours more effectively, most of their paid manhours were devoted to the building of the vessel, with very few, if any, devoted to unproductive activities. This contrasted with the Govan situation where 50% of the manhours were lost due to unproductive work. These additional hours had to be paid for.

The Kvaerner strategy aimed at developing manpower policies and initiatives would reduce by 50% the number of manhours taken to build a ship: in broad terms from 2 million to 1 million manhours per ship.

The strategy illustrated in figure 10.5 had three interlinking component parts a workload, investment plan and manpower policies (including the training and development of the human resources) all of which were related to achieving competitiveness by reducing the manhour content of Govan ships.



SOURCE: *Gordon (1991)*

Figure 10.5

The first part of the strategy was product based and had a strong parent company involvement. It was concerned with providing the shipyard with a workload that would provide the workforce with stability of product and job security. This part of the strategy was particularly important since the shipyard hitherto did not provide security of employment and appeared to have no sense of product strategy in an increasingly competitive market.

The yard had not had a steady product to build over the previous decade. The workload range continually changed - from coal carrier to passenger ship - back to container vessels; all ships with quite different mixes of skills and levels of sophistication.

The result was that Govan Shipbuilders was constantly on a new learning curve. No sooner had they ironed out the problems of building one new type of ship than they were changing direction and building an entirely different type of vessel. This contributed to the shipyard's uncompetitiveness, depriving the shipyard of the benefits which could be derived from a single product range, the 'sister ship effect' whereby learning gained from the first ship could be passed on to future ships of a similar type.

By placing an initial workload of four similar ships at Govan, Kvaerner demonstrated an acute sense of product strategy knowledge. They selected a product they were familiar with and had previously built profitably in their Norwegian operation: a product which was the mainstay of the Kvaerner shipping fleet and was in an expanding market segment.

The principal overall aim of the four similar ship order was, of course, to achieve the sister ship benefits but Kvaerner were looking for much more than this. Their view was that a four ship order and a three year work programme would demonstrate to the workers at Govan that the Norwegian owners were not asset strippers and they had, in fact, a long term commitment to the yard, providing the workforce with a sizeable workload and secure employment.

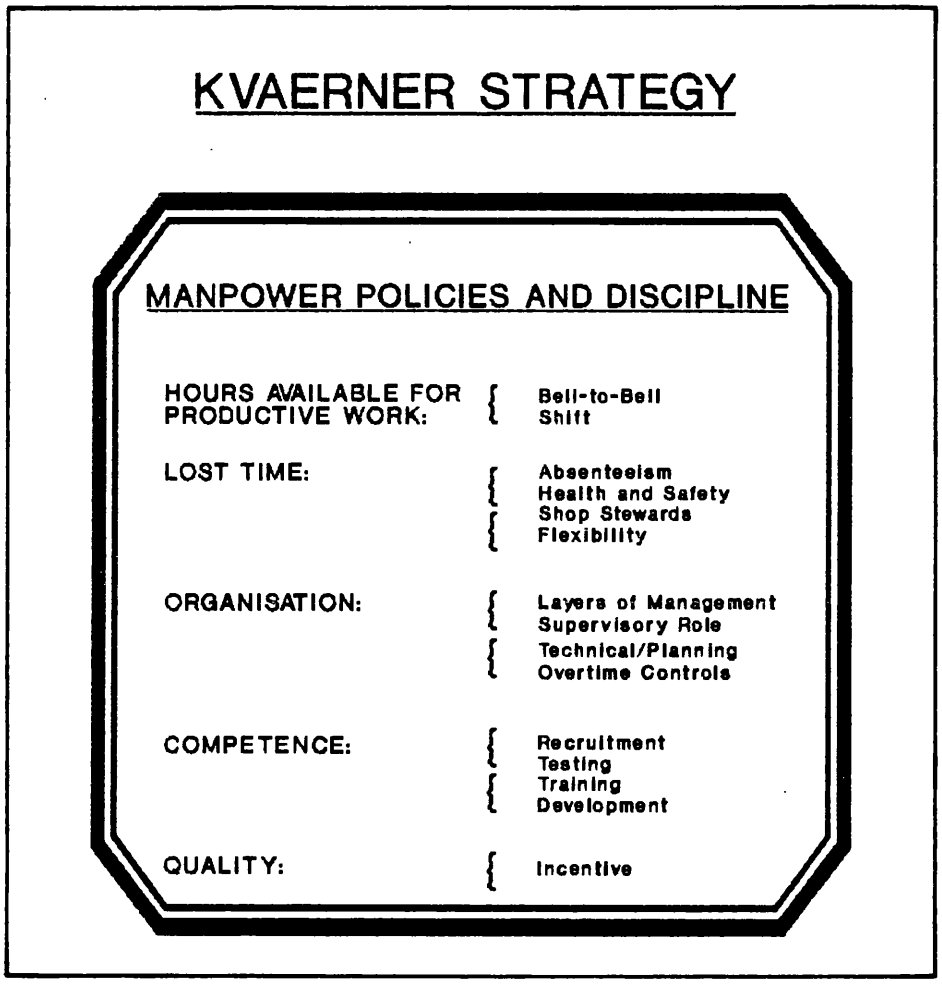
At Govan as job losses had become a regular occurrence. Indeed, the shipyard appeared to have been in a constant state of redundancy since nationalisation with the workforce, at Govan, cut back from 5,300 to 1,350 during state ownership. This created a lack of job security which clearly had an adverse effect on the workers' morale, commitment and attitudes. The planned 3 year workload provided the time frame required to implement the two other parts of the strategy.

Responsibility for parts two and three of the strategy were allocated to the local directors on the basis of their individual expertise with the Managing Director devoting his energies to part of the strategy associated with plant, equipment and facilities and the Personnel and Employee Relations Director spearheading the part associated with manpower policies.

Part two was aimed at ensuring that the Govan workers, in the knowledge that their jobs were safe, were supported by facilities and equipment at least the equal of those of the competition. This was a recognition that manpower utilisation at Govan was being inhibited and manhours were being lost because of a lack of modern quality equipment and a poor working environment.

An investment programme, funded to the tune of £31 million underpinned this part of the strategy. A major feature of this was the construction of a large assembly hall where steel units, approximately five times larger than those normally built in the fabrication sheds, could be constructed.

The establishment of this new facility ensured that much more of the ship could be constructed under cover, thus reducing the number of manhours lost due to inclement weather conditions. The benefits of constructing much larger units indoors included easier supervision of labour, more accurate planning, production control and quality performance and the ability to support the production process more readily with modern techniques and equipment. Without doubt, the most difficult part of the strategy to implement was part three, the various aspects of which are illustrated in figure 10.6.



SOURCE: *Gordon (1991)*

Figure 10.6

It dealt with the people side of the business; the work ethic and human resource disciplines; the way people worked and how they were organised and managed; the relationships between the workers and the union representatives and between the representatives and the company; the competence of the people; all areas of the business where manhours were being lost and manpower utilisation was being restricted. The details of this part of the strategy will be subject to future discussions and analysis.

Accordingly, the Kvaerner strategy was in three parts and designed to transform an uncompetitive shipyard into a viable operation by:-

(a) Providing a workload that offered the shipyard workers a stable product and job security.

(b) Demonstrating to the workforce that the Norwegian owners, Kvaerner, had a long term commitment to the Govan shipyard.

(c) Providing the workforce with facilities and equipment at least the equal of the competition.

(d) Implementing manpower policies and disciplines that maximised manpower utilisation.

The central theme, running through all the component parts of the strategy, was to restore competitiveness and profitability by reducing the number of manhours taken at Govan to build ships.

4. CONCLUSIONS

It could be argued that similar initiatives aimed at improving the facilities and manpower aspects of the business had previously failed to resolve the problem of Govan's uncompetitiveness when they figured prominently in the British Shipbuilder Productivity Improvement Programme. However, there were fundamental differences between the British Shipbuilders and the Kvaerner Govan approaches.

The British Shipbuilders approach took place within a framework of a depressed shipbuilding market place and a perception that there was an over capacity of shipbuilding facilities in the United Kingdom. The approach was strongly centralised. Decisions on products, facilities and manpower strategies were made at headquarters and, thereafter, imposed on the individual subsidiaries with little or no involvement at local shipyard level. This produced strategy problems which gave rise to a distinct lack of commitment when it came to implementation at shipyard level. Arguably the result was that at Govan little changed in terms of shipyard competitiveness, as demonstrated by the legacies of shipyard losses and inefficiencies inherited by Kvaerner.

The Kvaerner approach was different. It took place within the framework of a projected upturn in the shipbuilding market and a conviction that there were profitable opportunities for competitive shipyards. This approach had a strong degree of decentralisation with decisions on facilities and manpower strategies, in particular, being made locally in the shipyard. Ownership, commitment and economic reality were three important characteristics of the Kvaerner approach. They sought to create ownership and gain commitment by involving those employed at Govan in the strategy development and implementation processes. This involvement brought with it a responsibility for the shipyards future and a knowledge that if competitiveness and profitability could not be achieved then Govan would suffer the same fate as the unprofitable Norwegian shipyards.

It could, therefore, be argued that the strategies of British Shipbuilders and Kvaerner Govan had little in common other than the fact that both regarded facilities and manpower practices as being two of the shipyard's principal inhibiting factors. They differed insofar as they were set within contrasting frameworks and the approaches adopted were at variance in terms of their views on ownership, commitment and economic reality.

CHAPTER 11: KVAERNER GOVAN'S ANALYSIS OF UNPRODUCTIVE MANHOURS

1. THE SOURCES

The reality of the Govan shipyards uncompetitive situation was, perhaps, summed up in Clydesider (Issue No.17 1990) where it was stated:-

> "We currently take 2 to 3 times as many manhours than, say the Danes, to build a ship. It is essential to recognise that, if we are to compete in the international market place we must, at least, regain these lost manhours."

Lost manhours, in a Govan context, were not manhours that had simply gone missing and could not be accounted for. They were manhours that were not being used productively - manhours paid for by the company but were not contributing directly to the building of the ship.

The task of identifying the sources of lost manhours was delegated to the employees who were responsible for managing the shipyard, the managers and supervisors at Govan who had 'inside knowledge' of what was actually happening in the yard. This team of managers (the Lost Time Action Group) were reflective of all functions within the shipyard production, technical, personnel, financial, planning and quality functions, was established. In general, the sources identified by the team, in their initial analytical stage, could be structured under four broad headings:-

(a) Concessions - manhours that the shipyard management saw fit to 'give away'.

(b) Performance - manhours that were lost due to an inability or lack of commitment to perform well in certain areas of the business.

(c) Organisation - manhours lost due to constraints that were inhibiting the shipyard's ability to organise its manpower effectively to suit the product or the competitive market place.

(d) Lost Manpower - manhours that were lost from the production process due to the high levels of absenteeism and non attendance.

The second stage of the process, which will be discussed in detail in the proceeding sections, was concerned with quantifying these unproductive manhours. This, however, was not an entirely new experience at Govan. The shipyard did quantify the unproductive manhours associated with trade union activities, inclement weather, waiting time on their manhour recording system. This system operated on manpower returns submitted daily by the foremen, and recorded the productive and unproductive hours of each shipyard worker. Although limited, this information at least provided a start point. In circumstances where no prior information existed quantitive research was carried out using observation techniques such as 'activity sampling'.

2. LOST MANHOURS - CONCESSIONS

Ironically, many of the shipyards manhour losses were concessions, by-products of industrial relations agreements adopted during nationalisation and as part of the Fairfield Experiment. These included major manhour losses in the normal working day, many due to negotiated concessions associated with late starting and early stopping times and breaks for tea.

The extent of the manhour losses associated with these concessions was illustrated in Clydesider (Issue No.17 1990).

> "One of the most common reasons for loss of time is the break-up of continuous work pattern - up to as much as one and a half to two hours per day are now lost around starting and stopping time and for tea."

Shipyard workers did not commence productive work at the proper starting time nor, indeed, did productive work end at what was termed as the stopping time. The perceived starting and stopping times for dayshift was 7.50 a.m. to 12.15 p.m. and 1.00 p.m. to 4.35 p.m. However, 5 minute time concessions, at the beginning and end of each shift, had been negotiated between British Shipbuilders and the S.N.C. during nationalisation, to enable the shipyard workers to clock in and to clock out. Moreover, a tea break had been established in the morning with the time set at 9.30 a.m. to 9.45 a.m. and, once again, the 5 minutes time concessions prevailed on either side of the break.

The actual situation, reflecting 'custom and practice', accepted by the management and the trade unions in the shipyard was much worse. Further concessions were associated with travel time to amenities areas, time allocated to enable shipyard workers to put on working equipment, time to travel from the amenity areas to the workplace. These further concessions meant that some 20 minutes were lost at the start of the working day.

The tea break was not a 15 minute stoppage but a mid morning breakfast which stretched to 35 minutes and, in some cases even longer. Workers left their places of work and queued at canteens for some considerable time for their hot filled rolls. They returned to their work places late, after the extended break.

The level of these concessions are illustrated in figure 11.1.

START AND STOP TIMES

	PERCEIVED		NEGOTIATED		ACTUAL	
	Times	Hours	Times	Hours	Times	Hours
Shift Start	7.50am		7.55am		8.10am	
Tea Start	9.30am	1.40	9.25am	1.30	9.20am	1.10
Tea Ends	9.45am		9.50am		9.55am	
Lunch	12.15pm	2.30	12.10pm	2.20	12.05pm	2.10
Shift Start	1.00pm		1.05pm		1.10pm	
Shift Ends	4.35pm	3.35	4.30pm	3.25	4.20pm	3.10
TOTAL PRODUCTIVE		7.45		7.15		6.30
TOTAL LOST TIME		0.15		0.45		1.30
OVERALL TOTAL		8.00		8.00		8.00

SOURCE: *Briggs (1989)*

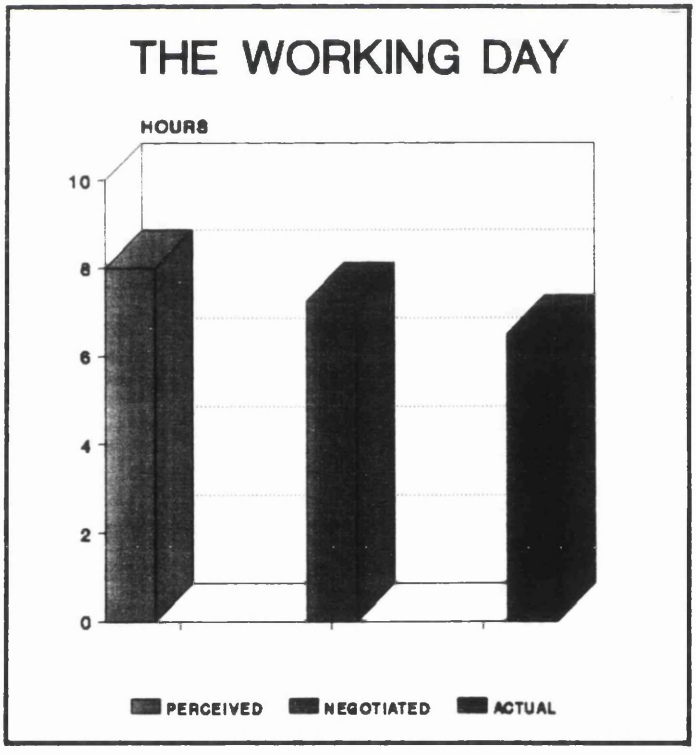
Figure 11.1

Furthermore, significant time losses occurred before the lunch break as a result of concessions granted to ensure that no matter where the worker was located in the shipyard, he had sufficient time to leave his place of work, wash up and travel to the main exit gate before the official stopping time. Even after lunch there were time concessions to clock in and prepare for work.

Well before the end of the working day productive work had wound down. Concessions had been granted to enable tools to be returned to stores, protective and working clothing to be removed, washing up and clocking off.

Moreover, in order to avoid crushing at the clocking stations, some of which were located at the exit gate, the stations were open 8 minutes before the official stopping time so that the workforce could clock out. Most of the workforce, therefore, left the yard, on pay, at least 5 minutes before the official end of their working day.

The official 8 hour working day was, therefore, a myth. Negotiated time concessions had reduced this to 7 hours 15 minutes with 45 minutes devoted to other activities. The actual situation in the shipyard was, however, much worse. Custom and practice had ensured that only 6 hours 30 minutes were utilised for building and no less than 1 hour 30 minutes every day was taken up by other activities. All of this was significant, in terms of lost manhours, as illustrated in figure 11.2.



SOURCE: *Briggs (1989)*

Figure 11.2

Given, therefore that the shipyard workers worked an 8 hour day, Monday to Thursday, and a shorter 7 hour day of which 2 hours were lost on Friday. The best estimate of management was that only 31 hours out of the normal 39 were available for productive use. However, there were managers who believed that the manhours lost were underestimated. They indicated that further losses occurred, particularly during ship construction when the shipyard workers had to make their way to and from their workplaces on the ship, via gangways. They estimated that the number of manhours lost was around 11 hours per week.

The shipyard workers at Govan had handicapped themselves. By utilising working hours for activities other than building ships, they had handed the shipyard's international competitors a tremendous advantage. The number of manhours lost was illustrated in Clydesider (Issue No.17 1990):-

> "Last year 190,000 production hours, or 20% of the working day, was lost as a result of ineffective time. The magnitude of the problem is, perhaps, best illustrated by pointing out that 190,000 production hours is equivalent to closing the yard for 4 weeks."

This was not the only activity where concessions had resulted in the loss of large numbers of manhours. In addition to the negotiated holiday entitlement of 25 annual days and 8 public days, the shipyard workers at Govan had, what was termed, concession days. These concession days were negotiated, as an 'extra', in the late 1970's, at the time of the Heath Government when wage increases were constrained. In reality, they were, three further days holiday taken at a time suitable to the worker and paid for by the company. Some 40,000 production manhours were lost as a direct result of workers simply taking their 3 days off work and an untold number of additional manhours were lost as a result of delays which occurred when the workers were off.

Furthermore, arising from the Fairfield Experiment, the shop stewards, in the Govan Yard, were paid for the manhours devoted to trade union activities and duties. A noble concept, given the industry's industrial relations problems of the mid 1960's. However, over two decades on, the shop stewards had become a powerful institution in the shipyard. Their numerical strength had grown to 70, a large number of whom were devoting the full working day to trade union activities. At times they were an immovable force and changes to traditional working practices would only happen with their approval notwithstanding the progressive flexibility agreements negotiated by the national officials.

Their power and strength was established as part of the Fairfield Experiment, when, in order to improve industrial relationships, the shop stewards participated in management processes and were paid wages in full for the time spent on trade union duties. Their power base was enhanced during the U.C.S. work-in and during nationalisation. Indeed, the shop steward movement were the major 'attitude' formers in the yard. It was they who were the vital and, in some cases, the only communications link with the shipyard workforce. They arranged regular meetings during normal working hours, paid for by the Company and providing the shop stewards with an opportunity to express their views and opinions on issues such as working practices, manning levels and overtime working, in many instances, contrary to those of management.

The shop stewards' power was such that management were discouraged from having similar meetings with the workforce to put over their point of view. The shop stewards regarded this form of communication as being their exclusive domain. This was, of course, fairly standard practice in British industry in the 1970's but began to break down in the 1980's as management began to make more direct approaches.

Even attempts to take those more direct approaches through the introduction of 'team briefing' during nationalisation were ineffective at Govan and petered out through a lack of shop floor response and a lack of management commitment to what was perceived as a British Shipbuilders imposed concept, i.e. a centralised policy which had no local sense of commitment or ownership.

A major factor of Govan's industrial relations communication was the fact that it was the shop stewards' opinion that the workforce were first and foremost trade union members, not employees of the Company. They, as trade union representatives, considered themselves to be the major influence in determining the pace and nature of change that would take place in the shipyard. They were engaged in joint regulation, in an extended sense, with involvement in the management process. This was where management had to make a major impact and win back their role of pace setters, if it was to succeed in making the yard profitable.

The number of manhours lost due to trade union related activities had grown alarmingly. Clydesider (Issue No.17 1990) reported:-

> "With just under 2,000 employees, including temporary workers, on the payroll, there is a strong feeling that the number of trade union representatives and the time spent on trade union activities is excessive. The magnitude of this problem is that last year over 50,000 production manhours were taken up by trade union related activities."

This was equivalent to one working week.

In summary, the number of manhours lost due to concessions and identified through 'activity sampling' and actual manhour recordings included:-

(a) 190,000 manhours or 20% of the working day lost simply getting the shipyard workers to and from their workplace.

(b) 40,000 lost manhours associated with concession days granted in addition to holidays.

(c) 50,000 lost manhours taken up by trade union related activities.

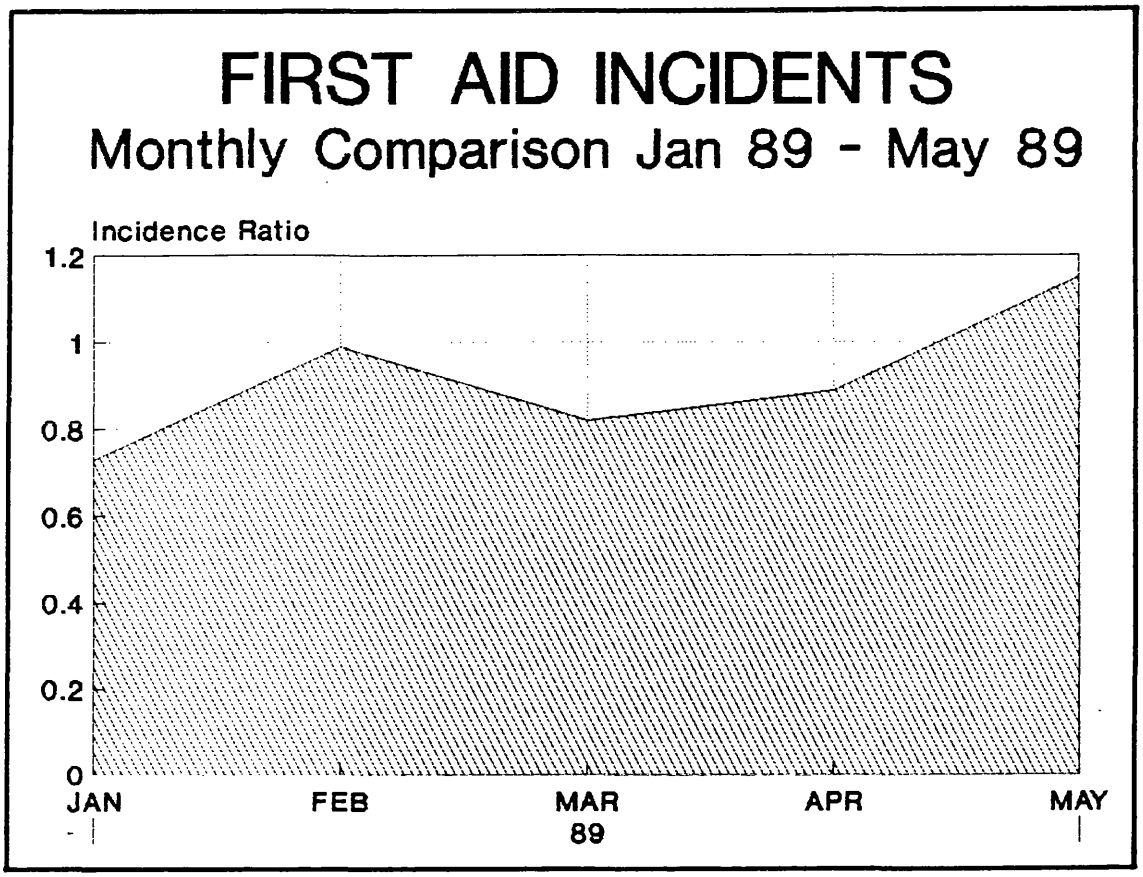
In total, therefore, over a quarter of a million manhours or 12.5% of the manhour content of Govan built ships were accrued through concessions.

3. LOST MANHOURS - PERFORMANCE

Lost manhours at the Govan shipyard were not simply confined to those associated with concessions emanating from industrial relations agreements. Manhours were also lost due to poor performance, and in particular, poor performance in areas of the business associated with health and safety, quality and the application of flexibility agreements. Health and Safety performance had long been a major cause for concern in the Govan shipyard. Building ships was a hazardous activity; many of the substances used during construction were health threats and shipyard workers often adopted systems of work that were regarded as unsafe.

Performance at the Kvaerner Govan yard , as measured by the number of manhours lost due to minor 'first aid type' incidents and man days lost due to the more serious accidents, was considered poor and an inhibiting factor in terms of competitiveness; despite what appeared to be a successful improvement initiative launched by the shipyards' management of 1984, and discussed earlier in chapter 9.

However, the improvements emanating from the initiative were not sustained, as illustrated in figure 11.3.



SOURCE: *Goldie (1989)*

Figure 11.3

Indeed, during the early part of 1989, the number of 'first aid type' incidents increased on a month by month basis. For the period January to May 1989, the 'incident ratio' revealed that there was one first aid incident per month for every shipyard worker. The estimated average time loss per incident was 1/2 hour, the time taken to travel from the workplace to the Medical Centre, treatment, and the travel time back to the workplace.

Given a labour force of 2,000 employees, approximately, 1,000 manhours per month were lost due to minor first aid type incidents. Moreover, over the same period of time, the number of man days lost due to the more serious type of accidents was also on the increase. The monthly incident ratio for what was termed as lost time accidents was established as 0.3 man days per shipyard worker.

With a labour force of 2000 employees, approximately 4,800 manhours were lost monthly as a direct result of serious accidents. Overall the consequences of Govan's poor health and safety performance was that 12,000 manhours were being lost annually as a result of first aid incidents and a further 57,600 manhours were being lost due to serious accidents.

Other reasons were put forward at Govan for lost manhours due to poor performance. The most obvious were those associated with major quality problems. An example of this is cited by the Production Director and relates to the welding of special steel during the construction of ship number 301.

> "The construction of the first L.P.G. carrier has meant that everyone involved in production has had to adopt higher standards of workmanship. This inevitable learning curve has not been without problems. At the start of construction we were having problems with welding and had to take tank sections onboard even though X-Rays were not complete. We had to carry out a lot of repairs which held us back." (Kytola 1990)

The Production Director was pointing out that the workmanship was not being carried out to the highest standards - standards that, in the past, were synonymous with Clyde built products. The workmanship of the welding was substandard. It had avoidable faults - slag inclusions, spatter, undercut and porosity, the type of faults that were easily detected by X-rays and which a competent and committed welder was capable of avoiding when depositing the weld metal. As a result of this substandard workmanship, large numbers of weld repairs were carried out. Poor quality welds had to be removed prior to weld repair. This time consuming process took at least 2 to 3 times more manhours to complete than the original weld. It not only held back the completion progress of the vessel but added substantially to its costs.

The Managing Director stated:-

> "Tremendous difficulties were suffered with defects of up to 60% on the hull of 301." Draegebo 1991).

The reality of this level of rework was that some 300,000 manhours were added to the cost of building the ship, due to poor performance associated with welding.

Poor performance was also evident in the application of flexibility agreements. Indeed, Bruce (1990) quoted earlier wrote:-

> "When Norwegian Industrial Group Kvaerner took over Govan Shipbuilders, Scotlands largest merchant yard in 1988, it inherited 50 years of restrictive practices and demarcation between trades which just stopped short of civil war." (Bruce 1990)

Despite over a decade of national and local agreements aimed at introducing flexible working, manhours were still being lost due to shipyard workers waiting on the services of others to carry out tasks they were capable of performing but were restricted by demarcation or departmental rules from doing. Platers and shipwrights waited while burning and welding equipment was drawn from the store, connected up and taken to them at their workplace. Caulkers left their place of work, queued up at stores to have their grinding wheels changed. Welders waited while their exhaust and ventilation trunks were moved and, stagers had to be in attendance every time a hydraulic lift was in operation. These were tasks that were within the scope of the national and local flexibility agreements, tasks that the individual craftsman could carry out themselves and thus avoid waiting time and the consequential manhour losses.

There was no good reason why the caulkers, for example, had to leave their workplace twice per day to have another shipyard worker remove and replace a grinding stone. It was a task the caulkers were perfectly capable of performing themselves at their workplace.

However, the caulking department, at a union meeting controlled by their shop steward, had 'ruled' that this was not their job. The result of this, according to Briggs (1990), Chairman of the Lost Time Action Group, was that every caulker in the shipyard lost approximately 2 hours per day in changing the grinding stone. 120 caulkers between them lost approximately 240 manhours every day on 4,800 manhours every month, due to a "departmental rule" which restricted caulkers from changing their own grinding stone.

In summary, manhours lost due to poor performance included:-

(a) Approximately 69,600 manhours lost per year due to the shipyards poor health and safety performance.

(b) Almost 300,000 manhours lost on ship 301, due to poor performance associated with welding quality.

(c) An anticipated manhour loss of almost 57,600 on just one example of poor performance related to the application of flexibility agreements.

These losses, at the very least, were equivalent to over 400,000 manhours or 20% of the manhour content of Govan built ships. Importantly, however, they were recoverable manhours, since the level of performance could be positively influenced by training and changes of attitude and commitment.

4. LOST MANHOURS - ORGANISATION

As indicated previously, in Chapter 10, when Kvaerner took control over the Govan shipyard they did not acquire a profitable well organised shipbuilding operation. Among the problematic issues were shift working patterns, the overtime working arrangements and even the bureaucratic organisational structure.

These problematic areas were perceived as being areas where manpower constraints could be identified and where manhours were being lost. They were, however, difficult areas to quantify, in terms of manhour losses but, nonetheless, effectiveness in these areas was regarded as a vital ingredient of organisational efficiency and viability. One such problem, that of shift working, is explained by the Production Director:

> "If we are seriously in the business of building ships we have to deliver to cost and on time. Lost delivery time costs enormous amounts of time and money and today's contracts are won and lost on timely delivery. Therefore, to keep this yard thriving the introduction of a back shift should not be regarded as an alien concept. Indeed, a three shift working system is very well known in industry throughout Britain and Europe." (Kytola 1990).

Shift working at Govan was not organised to suit the demands of the production programme or the sophisticated construction requirements of an L.P.G. vessel:

> "To build and delivery L.P.G. carriers to cost and in time on the current programme, requires an output weekly of 660 tonnes of steel. Currently, this target figure is still to be achieved and there has, therefore, been slippage in the programme." (Kytola 1990).

The situation described above related to the 3 year work programme associated with the building of the four L.P.G. Carriers and largely came about because there were bottle-necks in the preparation - that is the burning process associated with cutting steel and the manufacturing of panels and webs.

The immediate answer, according to the Production Director, was to organise the shift working patterns in a manner more suited to the demands of the production programme thereby increase production through-put. His view was that a double dayshift or a three shift working arrangement with an equal number of workers on each shift, would solve the problem and enable Govan to meet its programme and delivery dates. This would enable manpower, plant and equipment to be utilised more effectively, with the shipyards facilities fully manned 5 days a week for 16 or 24 hours a day.

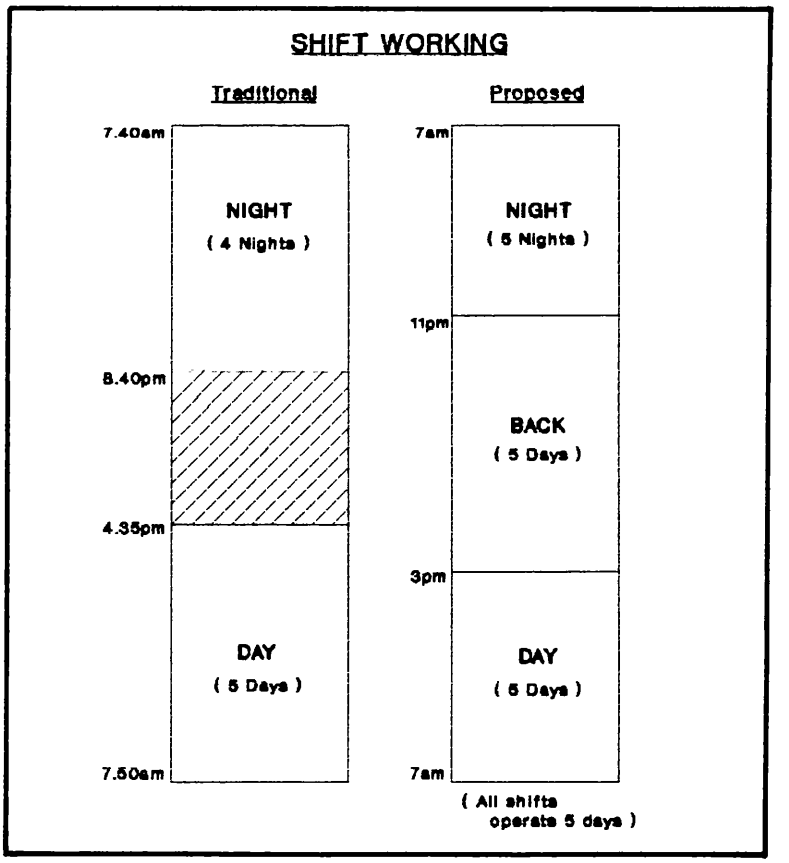
However, this at Govan was an alien concept and meant breaking from the traditional shift working arrangements of a numerically strong dayshift supported by a much smaller night shift. This traditional arrangement had been developed to suit the shipyard workers and put in place more than two decades ago. It operated on a voluntary basis. Dayshift was worked over 5 days while nightshift, manned by volunteers, operated on a 4 night basis. Nightshift had the advantage of affording the shipyard workers a long weekend, which began on a Friday morning and ended on a Monday. Nightshift workers also had an additional payment. Production Director.

There was a gap of 4 hours 5 minutes between the end of dayshift at 4.35 p.m. and the commencement of the nightshift at 8.40 p.m. This gap was perceived to create two further organisation problems:-

> "It is important to remember that this type of ship has a high requirement in terms of welding standards. Continuous monitoring and prompt feedback on the quality status of welds and other problems is essential." (Kytola 1990)

To ensure that these high welding standards were achieved, a monitoring and feed-back system involving the X-Ray process had to conform to stringent health and safety legislation which prohibited shipyard workers from entering the work areas where X-Rays were being taken.

As such, this process had to take place at "quiet times", when the work areas were free from shipyard workers. Under the traditional shift working arrangements, illustrated in figure 11.4, the only time available for X-Ray was the gap between the current shifts.



SOURCE: *Bisset (1991)*

However, the gap between dayshift and nightshift constrained this monitoring and feedback process. Firstly, there was insufficient time between the shifts to enable the welds deposited by the dayshift to be X-Rayed and the results fed back to nightshift. This meant that the monitoring and feed-back process fell behind at the welding continued for days and, in some cases, weeks before the quality status of the welding was known. Defective weld metal, however, continued to be deposited by welders who were unaware that their techniques or equipment were faulty.

The 60% weld repair rate on ship 301, as previously discussed, was partly due to the unsatisfactory shift arrangements. Furthermore, the delay in feeding back the results of X-Rays meant that work progressed to another workplace. As a result the welding equipment, staging and ventilation systems removed from the workplace, after the initial welding, had to be returned in order that weld repairs could be carried out. This additional task added manhours to the building of the ship.

Moreover, the traditional shift working arrangements presented further organisation problems:

> "Since most of the planning and work preparation is done during the dayshift it would be difficult to communicate plans and targets to the nightshift. Currently they communicate through a means of messages which do not clearly convey the urgency or complexity of particular problems between shifts." Kytola (1990).

His view was that the traditional shift working system did not allow the supervisors on each of the separate shifts to communicate effectively. They could not discuss, on a 'one-to-one' basis, targets and work schedules and, according to the Production Director,, this created confusion and, as a result, manhours were lost.

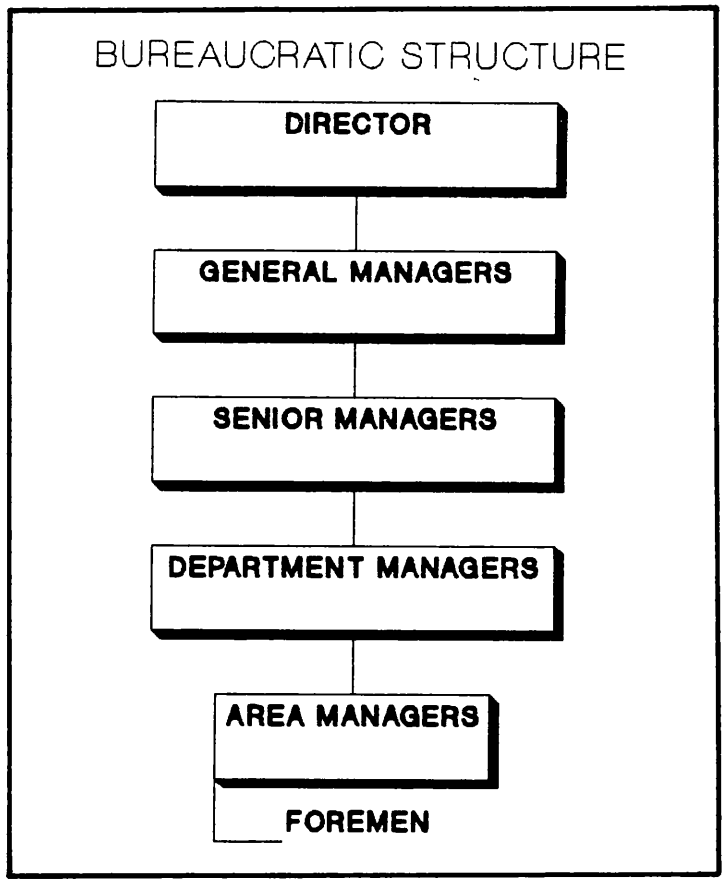
Some problems were also evident in the organisation of overtime working. For some time overtime, in some areas of the shipyard, was organised on a rota basis by the Trade Unions. The practice was most evident in the steelwork areas where, for instance, one particular department operated four separate rotas. As such an operator, coming from one rota, could refuse to carry out the tasks associated with another rota.

> "A burner could not, during overtime, carry out the tasks of a caulker or buffer, all of which was contrary to the flexibility agreements." Clydesider (Issue No.17 1990).

Moreover, the operators who controlled the rota, on behalf of the trade unions, refused to supply production managers with the name of the employees who were due to turn out on overtime. Consequently, the management at the shipyard were unable to prepare work in advance, due to the fact that those turning up for overtime could well be from another part of the shipyard. The skills and competence of the workers were unknown factors to their overtime supervisors and the workers themselves were, in some cases, unfamiliar with the complexities of the work to be undertaken.

As a result, time was lost sorting out and allocating the workers to suitable jobs. Workers travelled from one end of the shipyard to another for midweek overtime, while at weekends they reported to unfamiliar supervisors and to an unfamiliar work area. They searched for equipment to carry out their overtime work. Furthermore, managers and supervisors were unsure how many workers to expect, given that they did not have the names of the employees. Accordingly, the organisation of overtime at the shipyard, was problematic and an unquantified number of manhours were being lost.

Problems of organisation were not confined to those connected with shift working and overtime. Inefficiency and manpower constraints were also attributed to the bureaucratic organisational structure, which was perceived as having an inhibiting effect on the performance of the shipyard managers and foremen and in their relationships with the shop stewards and the shipyard workers. This was partly due to the move throughout nationalisation to a centralised form of organisation and decision making and partly due to the bureaucratic management structure in the shipyard where four tiers of managers operated between the Production Director and the foremen. This structure is illustrated in figure 11.5.



SOURCE: *Bisset (1992)*

Figure 11.5

A consequence of this bureaucratic structure was that communications from the top downwards were restricted and ineffective.

Confusion existed in managerial job roles and the decision making process resulting in managers and foremen being unsure of their job responsibilities and levels of decision making, particularly those associated with industrial relations and budgetary control. All of this contributed to a lack of authoritative management.

Furthermore, the managers and foremen were often bypassed by the powerful shop stewards movement who dealt with directors and senior management on industrial relations rather than through the recognised procedures. As a result, managers and foremen were ill at ease when dealing with shop stewards. They were never quite sure when they were being bypassed or when their decisions would be overturned by their seniors and they did not perceive themselves to be accountable for the financial implications of their work areas.

The bureaucratic organisational structure was, therefore, problematic and ineffective. It inhibited the performance of the shipyard managers and foremen and adversely affected communication. There were, therefore, at least three key aspects of organisation which were problematic, shift working patterns, overtime working arrangements and the bureaucratic organisation structure.

In summary, management analysis had identified several aspects of organisation in the shipyard which were problematic and contributing to lost manhours and constraining manpower utilisation. These problematic areas inhibited the shipyard efficiency and were major factors of Govan's uncompetitiveness:

i) Outmoded shift working patterns.

ii) Unions control of overtime working allocations by rota.

iii) A bureaucratic management structure, leading to inefficient decision taking.

iv) Underlying these, a power base in the hands of the shop stewards who controlled communications and were capable of by-passing supervisory and middle management by dealing directly with senior management.

5. LOST MANPOWER

The Govan shipyard had a further factor which was dramatically affecting its competitiveness, a factor that could be summed up in two words 'lost manpower'. Every working day large numbers of workers, at Govan, did not turn up at their workplace. The level of absenteeism or non-attendance of employees, for scheduled work, reached a peak of 22.6% in 1989.

> "As recently as 1989 absenteeism was rife in the shipyard running at an alarming 22% which based on a labour force of 2000 meant around 440 employees were not at their work every day - thus creating havoc with production schedules." Clydesider (Issue No.25 - 1991).

Ironically, much of the additional cost was again incurred as a result of industrial relations agreements concluded during nationalisation. These included agreements aimed at what was termed as "harmonising the conditions of employment between staff and hourly paid employees". A major feature of the harmonisation process was the introduction of company sickness payment schemes for hourly paid employees. Negotiated sick pay was provided for in the national agreement. This operated along side the SSP Scheme and National Insurance Sickness Benefit Scheme.

The theory behind the schemes, introduced in 1982, was that the manual hourly paid employees should have the same privileges as staff employees. As such, they too should receive company sick pay during periods of illness and sickness, in addition to that provided under the terms of the state sickness payment scheme.

The financial support from the company scheme was related to the employee's length of service. For example, employees with service levels of between 6 weeks and 1 year, received company sick pay for 8 weeks. Employees with service of between 1 year and 5 years were supported for 18 weeks, while those with over 5 years service had a 26 week support period.

Under the terms of the 1982 scheme, according to the General Secretary of the S.N.C., Ferry (1986), financial support to sick employees was equivalent to 1/3 of normal earnings. In addition to company sick pay, employees also had benefits available under the state scheme which, according to the Chairman of the Shipbuilding Negotiating Committee, accounted for a further 42.3% of normal weekly pay.

> "The worker gets £42.25 less national insurance contributions plus £13.70 child benefit (i.e. £52.15.) That is 42.3% of normal weekly income. However, family expenditure does not drop, indeed, it might rise - as rent, rates, food fuel and light have still to be paid for". (Hepplewhite 1985).

In effect, hourly paid employees received 75.3% of normal basic earnings during periods of absence due to sickness and 33% of these costs were met by the shipyard. These were, of course, additional costs which had to be incurred by the uncompetitive and loss making shipyard, associated with activities other than those related to the actual building of the ship.

Notwithstanding this, Hepplewhite argued that even this level of financial support was insufficient to relieve the hardship and insecurity encountered by shipyard workers absent due to sickness. He proposed to British Shipbuilders, during the 1985 negotiations, that improvements to current sick pay arrangements should include:-

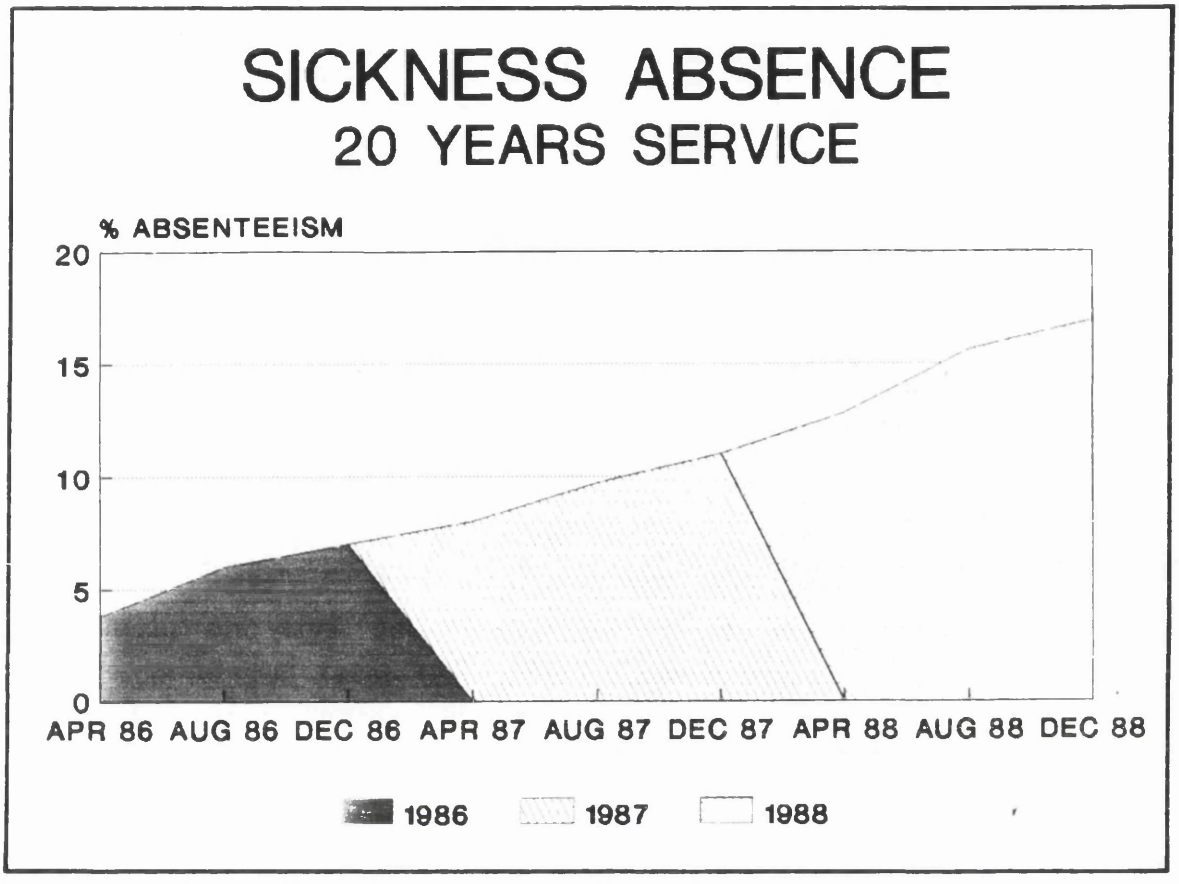
> Removal of qualification period.
>
> Payment of sick pay from the first day of absence.
>
> Extension of entitlement periods towards the T.U.C. objectives of 26 weeks at full pay and 26 weeks at half pay.
>
> Change in the basis of calculation of negotiated sick pay to ensure that workers are no worse off when sick. That will mean including in the formula not only basic pay but also shift pay, bonus, overtime and other payments.

These proposals, while unacceptable in the format suggested by Hepplewhite, formed the basis of changes made to the sick pay scheme as part of the 1986 Phase 8 national agreement which stated:-

> "With effect from 1st April 1986, all manual workers with 20 years continuous service and above, shall be included in the staff sick pay scheme and receive full pay, less S.S.P. for benefit periods prescribed locally."

At Govan some 15% of the manual workforce moved to staff sick pay scheme which offered full pay for 26 weeks and half pay plus S.S.P. benefits for a further 26 weeks.

This move heralded a marked increase in absenteeism, as illustrated in figure 11.6.



SOURCE: *McGoogan (1991)* *Figure 11.6*

The absenteeism level of hourly paid employees, with 20 years or more service, was 3.8% at the inception of the scheme in April 1986. The level steadily increased and, by December 1988, absenteeism within this group of employees had reached 17%. This was at a time when the general level of absenteeism throughout the Govan shipyard, as discussed previously, had reached 22.6%.

The introduction of sick pay schemes for hourly paid employees in 1982, and the subsequent improvements of 1986, relieved the hardship and insecurity encountered by these shipyard workers, but it brought with it a marked increase in absenteeism levels and added considerably to costs.

By the end of 1988, the weekly cost of supporting sick pay, according to the Clydesider (Issue number 21 1990), was equivalent to 1.26 hours pay per employee. Based on the current manpower hourly rate of £5.81, this would indicate that the then weekly costs for a labour force of 2000 employees was £14,643.24 and the annual costs a remarkable £761,448.

It would, of course, be unwise to suggest that all of Govan's absenteeism problems were by products of the attractive sick pay schemes - of course they were not. However, the fact remains that the shipyard was severely handicapped by high levels of absenteeism which meant that, in terms of 'lost manpower' 440 employees were not at their work every day.

Production schedules were, of course, affected and replacement labour had to be recruited, to progress work in the absence of the 440 employees, at additional costs. The competitive situation in the yard was clearly adversely affected by this growing burden and another area of manpower utilisation spotlighted as in need of urgent reform.

6. CONCLUSION

Arguably, the analytical review conducted by the Managers and supervisors was critical and meaningful. Critical, in the sense that it provided the foundation on which future actions on industrial relations processes, manpower practices and policies would be structured. Meaningful from the point of view that it identified and, in many cases, for the first time quantified, in terms that could be easily understood by the shipyard management, the manpower factors which were inhibiting the shipyard's competitiveness.

The analysis, therefore, served to bring home, to those responsible for managing the shipyard, the critical reality that Govan was operating in a tough international market place under a self imposed handicap. The situation was akin to a boxer entering the boxing ring with the handicap of one hand tied behind his back. In Govan's case the handicap was the high number of unproductive or lost manhours highlighted by the analysis. In effect, this meant that the Govan shipyard, like the boxer, was only operating at 50% efficiency level and given this degree of handicap, the chances of success were literally zero.

The analysis could also be described as demonstrative insofar as it revealed what was really going on in the shipyard. For the first time the manpower factors inhibiting Govan's competitiveness, were broken down and analytically appraised by those responsible for managing the shipyard. What emerged was a complex of factors involving technical deficiencies in the shape of weld quality, trade union regulations of what should have been managerial duties, failures of communication and communication systems, work patterns ill organised for the prevailing technology and competitive market requirements, a poorly organised, top heavy management structure and crippling absenteeism.

Cynics could, of course, argue that the shipbuilding industry had long known the manpower factors which were inhibiting competitiveness and had really done little to change the situation. They could support the argument by pointing out that British Shipbuilders, as part of their 'Productivity Improvement Programme', were only one of many organisations who, over the past three decades, had produced such information. The result of these efforts and the Govan shipyard's management commitment to do something about these inhibiting factors is amply demonstrated by the financial losses incurred regularly by Govan and the legacies of uncompetitiveness and inefficiency inherited by Kvaerner.

The process of identifying the sources of unproductive and lost manhours would not, by itself, transform the uncompetitive Govan shipyard into a viable and competitive shipbuilding unit. It was merely the start point. But it was on this very point that the Kvaerner analytical analysis differed from those previously carried out in shipbuilding. Their analysis was carried out by the shipyard managers - the managers who had 'inside knowledge' of what was actually happening in the Govan yard and whose whole purpose in carrying out the analysis was to to 'do something about' the inhibiting manpower factors. Thus the management analysis of local yard practice was the foundation of the process which helped isolate a set of action areas.

There was certainly plenty of scope for such an efficiency increase insofar as:-

(a) An increase in productivity efficiency of up to 12.5% could, in theory, be achieved by ending the concessions granted by those who previously managed the shipyard. On the basis of the descriptive analysis of section two, new manpower policies could be introduced that would impact on the manhour losses associated with concessions and also re-balance the distribution of authority between the shipyard management and the shop stewards.

(b) Efficiency could be increased by levels up to 20% by improving performance in Health and Safety, weld quality and the application of flexibility agreements. Performance could be improved and attitude and commitment positively influenced by training and management actions.

(c) The levels of shipyard productivity could be significantly increased by altering the organisation of working patterns, overtime arrangements and management structures. The introduction of new shift and overtime working arrangements and management structures could positively influence the shipyard's efficiency level by taking account of the demands of the production programme and the technology requirements of the product.

(d) Shipbuilding costs could be reduced and productivity efficiency increased by management actions to reduce absenteeism and non attendance: actions that included stringent disciplinary measures on the one hand and health programmes on the other.

Kvaerner Govan's analysis of unproductive manhours provided a critical foundation on which future actions on industrial relations processes, manpower policies and practices could be structured and, providing the actions were far reaching in their implication, could transform the uncompetitive Govan shipyard into a viable shipbuilding unit.

CHAPTER 12: KVAERNER GOVAN'S APPROACH TO INDUSTRIAL RELATIONS

1. THE FRAMEWORK

An important feature of the Kvaerner manpower strategy was their intention and willingness to work with the recognised trade unions, within an industrial relations framework provided that the accountability of the unions and their representatives was properly defined by procedures acceptable to management. This, from a Kvaerner point of view, reflected the traditional Norwegian culture of union recognition with accountability.

Although on the surface, this did not appear to be a complete break from the past, the approach had fundamental differences from that pursued previously at Govan. These differences were far reaching and it could be suggested that they 'redressed the authority and control between management and the shop steward movement'.

The Kvaerner approach was based on the proposition that management, and not the shop stewards, were responsible for managing the pace of change taking place in the shipyard. They did not believe that managers should be inhibited by shop stewards from making decisions and taking actions that would increase shipyard competitiveness. The preferred option for Kvaerner was to work with the unions to ensure that such 'actions', and their consequences, were understood and agreed with the shop stewards prior to implementation. This was in line with the Norwegian tradition where strong unions were accepted. What was not acceptedable was the negative influence that the Govan unions had grown accustomed to exerting, and that required to be changed. This was a vital ingredient in the total strategy for change.

The Kvaerner approach to industrial relations contrasted starkly with that pursued previously in the shipyard. This contrast was most evident in what could be termed as 'trade union', or in a Govan context, 'shop steward accountability'. At Govan the traditional approach afforded the shop stewards joint regulation, in an extended sense, with involvement in management processes, but it did not imply any degree of shop steward accountability.

The shop stewards had power and authority without accountability and many of the inhibiting factors to competitivenesss were by-products of Govan's traditional industrial relations framework. Agreements were concluded that gave away manhours and added considerably to the cost of building ships. The shop stewards did not always encourage the application of flexibility agreements. Agreements were flouted in the interest of job demarcation and overmanning.

The traditional approach also impinged on management authority and control with the shop stewards carrying out managerial duties and providing the shipyard workers with their only communications link on industrial relations issues. The shop stewards, and not management, were the principal attitude formers and they, therefore, set the pace of change in the shipyard.

Kvaerner's initial 'analysis' had indicated that, to achieve competitiveness, it needed to take a range of 'actions' that would bring about changes to manpower policies and working practices: actions that, in some instances, could be considered as contentious, and ending practices which were enforced by the shop stewards.

The prevailing industrial relations system had been unable to cope with this type of contentious change in the past, and stood accused of lacking in economic reality, accountability and credibility.

It left management helpless in certain respects and so it, and the attitudes and values within it, had to be changed. This was the key to unlocking the door to lost productivity. However, to unlock the door, Kvaerner first had to overcome four major hurdles which could be summarised as:-

(a) The attitudes that resulted from a lack of economic realism and which were a product of an industry where job protection was more important than shipyard efficiency and where competitiveness was considered as an impossiblity.

(b) Industrial relations agreements that lacked local shipyard ownership and were flouted in the interest of job demarcation and overmanning.

(c) A communications process that ensured the shop stewards and not management were the link with the shipyard workers on industrial relations issues.

(d) Shop stewards who had power and authority without accountability and had the freedom to carry out trade union duties at will.

Introducing an industrial relations framework acceptable to management and where 'actions' that would build on the foundation of the analysis could be agreed with the shop stewards was considered critical to the Kvaerner strategy. As such the processes adopted to overcome the four hurdles summarised earlier, were considered as vital to the strategies overall success. These processes will be discussed and analysed in the following sections.

2. ATTITUDES AND ECONOMIC REALITY

As a preamble to this section, it may be helpful to understand the perspective from which it was written. The author is the Personnel Director who was responsible for devising a strategy to achieve a change in workforce and union culture and practice - a culture which was familiar to him as he had grown up within it and had experienced it at first hand and at various stages in a career that started on the shop floor. The rationale behind the workforce and union attitudes, and the way in which work practices and union stances had adapted to form a thick protective coating against change were, therefore, well understood.

To appreciate what this new challenge meant and how it was perceived by the workforce and unions would be a fascinating exercise in its own right. But it cannot be the perspective from which the present analysis is developed. The perspective here is that of management, having analysed the problems, seeking ways to rectify the problems and convert the yard back to viability - which was necessary if security of employment and the continuation of the yard into the future were to be realised. This is, therefore, one part of a story which has two sides. While recognition is given to the stand point of the workers and unions, and how they had got themselves to this point, it is the other side which is the prime focus here - the problems for management of achieving a set of changes which would be seen by the workers, initially at least, as threatening to traditional or acquired values, but which had to be challenged nevertheless. Former Managing Director, Mackie, adds support to the view that 'attitudes and economic realities' were major hurdles that had to be overcome if shipyard competitiveness was to be achieved. He pointed out that the Govan yard had, during nationalisation, been cushioned against the harsh economic realities of the international market place.

Indeed, it had been cushioned from these economic realities for much longer than the decade of nationalisation. Govan, in fact, had survived for over two decades as a loss making shipyard. During this period it had changed ownership four times, moving firstly from Fairfield Shipbuilders to Fairfield Glasgow to Upper Clyde Shipbuilders and then to Govan Shipbuilders prior to nationalisation.

In commercial terms each change of ownership followed a financial failure with the Government picking up the costs. The result was that the shipyard workers and their managers had become used to working in a loss-making shipyard where the target was simply to build the ship and let someone else, usually the Government, worry about the costs. There was a deep held belief that the shipyard was in business as a social non-profit making institution and its purpose was to provide employment and support the economy of the local community. There was a presumption that shipbuilding in the U.K. was an industry that could not generate profit and had to survive on the basis of state handouts and subsidy.

This presumption was deep rooted within the shipbuilding industry and, in particular, within the trade union movement. On several occasions during the past two decades, they had advanced the proposition that the only way to maintain a shipbuilding capacity was for Government to introduce a 'scrap and build' policy, financed by the Treasury (and the tax payer).

This view was particularly strong at Govan where the prevailing attitude of the management, shop stewards and the workforce towards costs, efficiency and productivity, as demonstrated by the large number of unproductive manhours and high levels of absenteeism could, at best, be described as ambivalent. These prevailing attitudes were totally inconsistent with the operation of a privatised shipyard whose principal aim was to make money and generate profit by building ships. As such, they were a major hurdle that had to be overcome. A point made by the former Managing Director when he stated:-

> "Privatisation has certainly meant that the goal posts have moved and so attitudes have to change. There has to be a much greater awareness of costs, efficiency and productivity. The ability to stand on our own two feet is vitally important. Gone are the days of the feather-bed image which was too often associated with nationalised industries and this change of attitude means change not simply for the workforce but everyone." (Mackie 1988).

The entire workforce had to accept the reality that there was no longer a "chest full" of money in the Treasury Office available to offset Govan's high losses. The shipyards survival was squarely in the hands of the management and the workers and this survival was based on their ability to change their attitudes and commit themselves to 'actions' that would transform the shipbuilding operation into a viable unit. Kvaerner, therefore, had to positively influence the counter productive attitudes that were an inherent part of the shipyard's approach to industrial relations and which were a major influence on the manhour losses.

It had to replace the existing system and attitudes with their own framework which would bring economic realism, accountability and credibility to the industrial relations process, by:-

(a) Establishing meaningful industrial relations agreements which would integrate the needs and values of the workforce with the company's competitive goals: such agreements to incorporate the 'action' highlighted by the 'initial analysis' and be aimed at tackling the contentious issues hitherto avoided by the traditional system.

(b) Introducing communication systems that would ensure that management had a direct link to the workforce which would enable them to brief the workforce on industrial relations issues. Such systems were needed to ensure that the workforce understood what actions were required by management, the reason for the actions and, importantly, what the actions meant to them.

(c) Reducing the influence, power and authority of the shop stewards movement and introducing a degree of accountability into their role. This, meant defining procedures acceptable to management, a much reduced number of shop stewards and a restriction on the number of manhours available to carry out trade union duties. Such procedures would ensure that the shop stewards ability to inhibit management and shipyard workers from taking initiatives and adopting progressive working practices, was reduced.

To transform the uncompetitive Govan yard into a viable shipbuilding operation Kvaerner had to take the shipyard workforce with them. This meant changing the counter-productive attitudes of the shipyard workforce and gaining their agreement, support and commitment to the strategy, (the detail of which was discussed in Chapter 10) and the associated actions, some of which would be contentious, that would assist the transformation process. Difficulties and tensions associated with the change process were anticipated and with the benefit of hindsight we now know were encountered. The tensions created workforce resistance to change and resulted in a 'strike', the detail of which is discussed in Section 2 of Chapter 14. At the heart of the tensions was the question of job security and the age old problems of working practices, overmanning and redundancies.

3. AGREEMENTS AND OWNERSHIP

There seemed little sense, in view of Govan's uncompetitive situation, in continuing to arrive at 'nicely worded' industrial relations agreements. There was no place for documents which, on the surface, appeared to be aimed at resolving contentious issues when, in reality, both parties - management and trade union representatives - acknowledged that the agreements were, in some cases, an "accommodation of words" that changed little.

The shipyard had, after all, concluded industrial relations agreements annually for the past two or more decades. Most were aimed at contentious issues associated with demarcation and restrictive working practices. These agreements did not, by themselves, eliminate the problems - "who does what" disputes still existed. Platers and caulkers disputed 'ownership' of burning machines, joiners and sheet ironworkers took to the streets in a strike over "who would hang metal ceilings" and caulkers would not change their own grinding wheels. This was in a shipyard where the first flexibility agreement, based on the relaxation of working practices, was signed in 1966 during the Fairfield Experiment.

The industrial relations process and its protagonists had to have accountability and credibility. The process required meaning and had to be associated with economic realism and actions, clearly defined manpower initiatives and plans which had the measurable aim of elimination of manpower utilisation constraints and reducing by 50%, the number of manhours associated with building ships at Govan.

Given the magnitude of lost manhours and lost manpower, cited earlier in Chapter 11, it was an aim that was achievable but only with the commitment and motivation of the Govan workers and, in particular, those involved in the creation, development and implementation of manpower initiatives and associated industrial relations agreements.

Herein lay one of the problems for the privatised Kvaerner Govan: the ownership of initiatives and agreements - a problem which was one of the legacies of nationalisation with its roots in the centralised collective bargaining process. Centralised collective bargaining was, as indicated previously by Kelly (Dr. J. 1988), a mechanism introduced by British Shipbuilding to overcome local shop stewards resistance to changes to working practices.

The reality was that, as a result of this move, the powerful shop stewards movement, at Govan, had no real involvement in the national industrial relations process. Agreements were concluded nationally on the basis of a national vote. Inevitably the Govan shop stewards and the shipyard workers were in the minority. They voted against proposed changes but their views were often set aside and agreements implemented on the majority of votes cast by shipyard workers throughout the length and breadth of the country.

This meant the shop stewards could declare that the agreements were imposed on Govan workers, against their wishes, giving rise to their constant challenges to the manpower initiatives associated with the agreements. The powerful shop steward movement at Govan were recognised as an immovable force who resisted, rather than welcomed change, regarding themselves as the custodians of the craft and trade structures and working practices.

Given this lack of ownership, or indeed lack of involvement in the central bargaining process, the shop stewards response to national agreements could best be described as "luke warm". They did not actively reject them but, in most instances, lessened their impact by paying lip service to them. The shop stewards, the management and the shipyard workers had all grown accustomed to industrial relations agreements which were never fully implemented.

The manpower policies and initiatives, associated with the British Shipbuilders agreements, were developed by a centralised function with limited involvement from the executives of the shipyards and negotiated by the centralised personnel function. Therefore, many excellent and far sighted manpower initiatives were incorporated into agreements which lacked ownership at the local shipyard level by managers and shop stewards.

The historical problem was that agreements e.g., on flexibility were not being enforced or complied with, even when they were developed within the local (Fairfield) framework of collective bargaining. The problem got worse when negotiation was centralised under British Shipbuilders, since the sense of ownership was absent and agreements were again difficult to enforce.

Kvaerner, on taking over, were committed to dealing with unions in a responsible way but demanding accountability from the unions meant that agreements made had to be honoured on both sides. Collective bargaining would still be the recognised process by which rules were made and union and workers rights would be regulated by management. But the scope of union control had to be reduced and managements right to manage restored in important areas affecting manpower utilisation. This meant a culture change, both from management and union/workers, involving an unfreezing - reshaping -refreezing process. In this sense the key to implementing the manpower utilisation changes lay as much in the collective bargaining process as in the direct solutions themselves and this could be true so long as Kvaerner were committed to union negotiations and negotiating change by agreement.

The particular solution was to ensure that:

(a) Management and supervision involved in the primary analysis, were responsible for developing the objectives and carrying the plans through in detail.

(b) Unions/workers would be party to the changes and accountable for them.

(c) Former areas of control in the yard would be returned to management control.

To achieve these objectives and to build a sense of local ownership meant the definition of a strategy not just setting the objectives. This had been tried before and failed. What was different this time was that the primary analysis had local ownership.

Based on the theory 'we tend to support that which we create', Kvaerner, created an active role for managers and supervisors in identifying and quantifying the factors which were inhibiting competitiveness and constraining manpower utilisation. Moreover, the managers proposed 'actions' which they believed would be the basis of a solution to problems.

Managers and supervisors were to be identified with the proposed 'actions'. They, in fact, were the owners. The actions were their ideas and, for many, this was the first time in over a decade that they were given an opportunity to influence the change processes of their departments. Furthermore, the managers and supervisors proposed actions were incorporated into industrial relations agreements negotiated between the shipyard management and the shop stewards. Shop stewards whose accountability was properly defined by procedures acceptable to management and agreements which were put to the workforce by the shop stewards and accepted on a majority vote. Thereafter, action programmes were established, progress was monitored and the results fed back to management, unions/workers who were party to and accountable for the change process.

Kvaerner, therefore, based on the Personnel & Employee Relations Director's, author of the thesis philosphy, set in place a mechanism to overcome the dual problems of industrial relations agreements and ownership. As such the author was firstly a key member of the management team at Govan and secondly a participator/observer in terms of the organisational change process taking place in the yard.

The Director's philosphy required a total shift in the balance of power in the shipyard, management regaining control against the prevailing culture but much was dependent on management's ability to replace the prevailing communications system with one that would enable them to deal directly and thereby influence the attitudes of the workforce.

Management, therefore, required a willingness to confront these issues and, if necessary, take on the unions. New methods of communication were essential and the role of the shop stewards had to be changed. Management by concession or trade union resistance to change, was no longer a tolerable option. Shipyard workers jobs were on the line and there was a lack of alternative employment in shipbuilding or elsewhere in the local economy.

4. COMMUNICATIONS

Significantly, Kvaerner's approach to industrial relations included changes to the ways in which the aims of the agreements were communicated to the shipyard workers. The Managing Director referred to 1990 as:

> "A year when our approach to industrial relations changed. Initiated by the signing of the 1990 wages agreement, we started to tackle the inefficiencies in the use of the working day." (Draegebo 1990).

An important part of the approach to was to recognise the importance of effective communications in terms of transforming the aims of the agreement into positive action, which would reduce inefficiency and improve performance. The new approach to industrial relations had to move away from the shipyards traditional approach to communications whereby, the shop stewards and trade union representatives communicated with, and advised the shipyard workers on agreements.

The shop stewards and trade union representatives regarded communications as their exclusive domain. The trade unions were the principal 'attitude formers' in the shipyard, insofar as they were the only 'voice' in the industrial relations process, as far as the workforce was concerned. They, therefore, influenced the outcome and the eventual fate of agreements and initiatives.

Influencing in a positive way, the hitherto counter productive attitudes of the Govan workforce was essential ingredient of the Kvaerner approach to industrial relations. Many a manpower initiative and industrial relations agreement had floundered due to a lack of commitment and negative attitudes. The new approach to industrial relations adopted by Kvaerner had to ensure that the shipyards workforce fully understood the agreements, their aims, the reasons for any proposed 'actions' and the role of the workforce in the change process.

This new approach placed particular emphasis on effective communications. It involved regular briefing meetings for managers and supervisors, who had been involved in the 'primary analysis', identification and development of 'actions' which included new manpower policies and initiatives. They were briefed throughout the negotiation process and they were encouraged to discuss the proposed 'actions' with the shipyard workers in their work areas thus gaining an understanding and building scope for commitment.

In addition, direct communications, on industrial relations issues, were established between the shipyard workforce and the management. These took the form of letters to the workers homes and a changing role and method of distribution for the company newspaper "Clydesider".

Traditionally bundles of newspapers were left in amenity areas to be picked up by employees. The Clydesider's content was normally associated with non-controversial issues such as - charity and social events. Kvaerner changed this. They altered the editorial content to include industrial relations issues. Indeed, much time and effort was put into articles associated with the proposed changes to working practices and the reasoning behind them.

The newspaper was sent to the homes of all employees to ensure that all of the people, employees and their families, who relied on the shipyard for their job security, understood the agreements and the reasons for the changes and their role in the change process.

Moreover, in order that some managerial control and discipline could be exerted over industrial relations agreements, manpower practices and employment conditions all employees were issued with what was termed as a 'Rule Book'. This handbook, whose contents were agreed with the trade unions, clarified previously contentious issues and sought to take much of the mystique out of the industrial relations process.

In simple terms the 'Rule Book' let the employees know what was expected of them and what they could expect in return from the company. The handbook would form the basis of any discussions between the shipyard worker and his supervisor about what could and could not be done. Furthermore, the 'Rule Book' is issued to new employees at a 'first day' induction session introduced to ensure that they too fully understand the rules of the company.

In this way, therefore, the Kvaerner Govan set out to lay a solid and more disciplined foundation for the future. The Managing Director said:-

> "1990, therefore, has been a year when we have started to eliminate inefficiencies and laid a solid, more disciplined foundation for the future. We plan, in 1991, to build on this foundation and to secure a competitive shipyard which will provide security of employment to our existing employees and opportunities for young people in our community. Gone are the days when the Company was dominated by the old fashioned divisive attitudes of 'them and us'. 1991 must be a year when we create a team in this shipyard, a team who are dedicated to securing a prosperous future." (Draegebo 1990).

He further pointed out that:-

> "Improving productivity to levels where we, in effect, will produce twice as much with the same number of employees is a major challenge but it is one we must be capable of facing up to and meeting. Moreover, it is not a challenge that can be taken up alone by management." (Draegebo 1990).

He was emphasising that the shipyard workforce did not operate as a team, it was divided. The management were in one camp, and the workers in the other. The principal aim of management had been to take up the challenge of improving productivity and the aim of the shipyard workers was to look for ways of defeating management and securing a victory over them and vice versa.

Each prepared their team accordingly. They talked to their people, they psyched them up, motivated them and committed them to victory. As such they influenced the attitudes and a victory for one side was always regarded as a defeat for the other. The eventual loser in the contest was, of course, the shipyard.

The challenge facing Govan was not one that involved a contest between management and the workforce although it may have appeared so to the workforce and unions. It was, in fact, one of the Govan Shipyard against its competitors and this was a challenge of such magnitude that it required the combined effort of both camps. This required a well prepared plan that had to be communicated effectively and understood and supported by all of the team members.

The overall aim was, of course, to positively influence the workforce's attitudes to industrial relations agreements and manpower initiatives and by so doing gain their commitment to actions aimed at reducing manhours and manpower losses.

5. THE SHOP STEWARDS ROLE

The Kvaerner approach to industrial relations also tackled the somewhat thorny and difficult problems of the shop stewards. Huge numbers of manhours were devoted at Govan to trade union activities and duties. The numerical strength of the shop steward movement had grown to 70 and a large number of the stewards were devoting the full working week to trade union duties.

The magnitude of the manhour losses was cited in Clydesider (Issue No.17 1990):-

> "The magnitude of this problem is that last year over 50,000 production manhours were taken up by trade union activities."

However, these direct manhour losses were, perhaps, only the tip of the iceberg. The powerful shop stewards had the time to roam the shipyard, 'policing the working practices' and challenging management who introduced changes, and advising shipyard workers on what they could and could not do.

In this way 'initiative' was stifled. Shipyard workers were discouraged from having "good ideas"; they did not suggest more productive ways of approaching their work. Supervisors and managers found it easier to adopt the 'status quo', rather than endure the consequence of a challenge from the shop stewards. As such, the vast reservoir of shipbuilding knowledge, which existed on the shop floor, was not being channelled into improving productivity and improving the shipyards competitive situation.

Rather the reverse was happening. Practices adopted by the competition to increase their competitive edge were alien and frowned upon at Govan. The caulking department, for 15 years, resisted the introduction of metal removing processes such as arc air gouging and burring, in the interest of preserving buffing, an operation which took up to five times longer and was less effective. The problem was so acute that even temporary employees were restricted from carrying out tasks in Govan that were common place in their previous company. The prime example was the caulkers who, although capable of doing so, were prohibited by the shop stewards from changing their own grinding stones.

The role of the shop stewards had become confused. They did not regard themselves as employees of the company, who were accountable to production supervision, nor did they recognise that their prime responsibility was to produce manhours. Rather, they saw the role of the shop stewards as that of a full time trade unionist, whose job it was to preserve the 'status quo', albeit they were paid their wages by the company.

The Kvaerner approach was to reduce the number of manhours the shop stewards devoted to trade union activities. However, there was a second aim which was not quite so evident. This was to provide an industrial relations climate in which managers could manage the business and shipyard workers could utilise their skills and initiatives without the constant challenges from the shop stewards.

This was not to say that Kvaerner Govan were adopting an anti-shop steward or trade union stance - quite the contrary. They, in fact, perceived the shop stewards role at Govan to be a vital ingredient of the change process, but the accountability of the shop stewards had to be properly defined by procedures acceptable to management.

The Kvaerner view was that the shop stewards were, first and foremost, employees of the company and their prime role was to produce manhours which could be sold to the customer. They were part of work teams and, while they may well have been regarded by their fellow workers as the 'captain' of the team, they were still nonetheless 'accountable' to the production supervision for their time, performance and discipline. The shop stewards were team workers who happened also to be the trade union representatives reporting to the supervisor and, like any other shipyard workers, being allocated meaningful work.

In a sense this view was the start point for the re-definition of the shop stewards role within an industrial relations framework acceptable to Kvaerner. Their approach, as indicated previously, was based on the proposition that management was responsible for managing the pace of change in the shipyard. As such, the factors inhibiting them moving the shipyard towards competitiveness, including the unaccountable power and authority of the shop stewards, had to be removed, particularly, the inhibiting factors emanating from the perception of the shop stewards as a rival management structure.

In theory, they had no managerial authority to direct and control the work of shipyard workers - however, in practice it seemed they had. This perceived authority had, at times, rendered the shipyard management helpless to introduce changes that would increase competitiveness.

The role of the Govan shop stewards was, therefore, unacceptable to Kvaerner. They were, however, willing to work with the shop stewards but it had to be on the basis of properly defined procedures acceptable to management. These procedures set out in the 1990 industrial relations agreement were it was stated:-

> "The company recognised the rights of its employees to appoint Trade Union representatives (i.e. shop stewards and staff reps) to represent them.....
>
> The number of Trade Union representatives will be reasonable in relation to the number of employees in the company. The number, however, will not exceed a total of twenty, plus three full time conveners and one part-time convener."

Initially these procedures were rejected by the local union representatives and given their implication in terms of numerical reductions this was not suprising. Management however were committed to shifting the balance of power in the shipyard in favour of managers and supervisors and were, therefore, determined to take on the unions on this particular issue. After five months of negotiations the procedure was adopted and incorported into the industrial relations agreement of 1990.

The number of shop stewards was thus reduced from 70 to 20 and, in addition, the number of hours available to the 20 remaining shop stewards was restricted to 5 hours in any week.

The agreement, therefore, addressed both the numerical strength of the shop stewards movement and also the number of hours the individual shop stewards could devote to trade union activities.

Under the terms of their agreement, the company reduced the number of manhours devoted to trade union duties from 50,000 to just over 10,000 manhours per year. The 10,000 manhours per year recognised the fact that 20 shop stewards would have 5 hours per week available for 45 working weeks per year. Moreover, the 3 conveners would be allocated 37 hours per week and 1 part-time convener 16 hours per week.

In addition to reducing the number of manhours associated with trade union activities the Kvaerner approach to industrial relations also addressed the problems of the shop stewards role insofar as it:-

(a) removed their ability to roam the shipyard 'policing' working practices.

(b) clarified their role in the industrial relations procedures of the company and defined the limits of their authority.

(c) clarified their principal job function and their responsibility to produce manhours.

(d) clarified their relationship with the production supervisor.

(e) reduced their ability to stifle the shipyard workers initiatives and ensured that new employees could adopt the more productive practices of their previous companies.

(f) ensured that managers and supervisors could adopt more productive ways of approaching their work without the constant challenge of the shop stewards.

The overall aim of the Kvaerner approach was to provide an industrial relations climate in which the shipyard workers, their supervisors and managers, could utilise their skills and initiative without the constant challenge of the shop stewards. It is important though to recognise that a cornerstone of the Kvaerner approach was their intentions and willingness to work with the recognised trade union within an industrial relations framework subject to proper definition of the accountability of the unions, and their officers.

6. CONCLUSIONS

The Kvaerner industrial relations framework was, essentially, the 'nerve centre' of the ambitious manpower strategy, the vital link between the strategies analytical analysis and the implementation stage. It was the linking stage where the 'actions' from the analysis were incorporated into industrial relations agreements prior to implementation. As such, from a management perspective, the framework was the key to unlocking the door to the lost productivity identified previously in chapter 11.

Critics could suggest that the Kvaerner approach was anti trade union and the principal aim was to reduce the power and influence of the shop steward movement. They could support that view by pointing out that Kvaerner would only work with the trade unions providing the union officials and the shop stewards had accountability for agreements and actions and providing the degree of accountability was defined by procedures acceptable to management.

To the critics this was rather like Kvaerner saying to the shop stewards that they could participate in the industrial relations framework but only providing they conform to the role and the rules set by the company.

Realists, however, would argue that Kvaerner were simply replacing a 'flawed' industrial relations system, unable to cope with the type of contentious actions required to improve manpower utilisation and, thereby, address the problems of uncompetitiveness, with an industrial relations framework that could. They could support the argument by pointing out that the lost manhours and manpower cited earlier in chapter 11, were by-products of the shop steward 'lead' system, which afforded the stewards control over the pace of change taking place in the shipyard and ensured them the only communications platform to influence the attitudes of the workforce. Management had to replace this flawed system with one which:

(a) was capable of producing agreements incorporating the 'actions' emanating from the 'primary analysis' prior to implementation and having the support and commitment from the owners of the industrial relations process, the shipyard management and the shop stewards.

(b) would complement the hitherto exclusive shop steward 'voice'by providing a clearer system of management communications. In theory, the counter productive attitudes resulted from 'fear' and insecurity. Improved management communications could remove this fear and insecurity. The supervisory briefings, the 'Clydesider' newspaper, and the Company Rule Book were seen as means to give the workforce an understanding of what actions were required by management, the reasons for the actions, and what the actions meant to the workers.

This was designed to positively influence their attitudes by removing the fear and insecurity.

(c) reduced the power and authority of shop stewards and increased their accountability for agreements and shipyard efficiency. This redefinition took place through a reduction in the number of shop stewards from 70 to 20 and in the time each was allocated for trade union duties. This reduced the shop stewards ability to 'police working practices' and reduced their ability to inhibit management and the workforce from taking initiatives and actions that would increase efficiency.

The fundamental philosophy behind the Kvaerner approach was that management and not the shop stewards were responsible for the pace of change taking place in the shipyard and in the demanding commercial market place this proposition had credibility. Arguably, the proposition 'redressed the authority and control between management and shop steward'. It recognised that the shop stewards were, first and foremost, shipyard workers who were under the direct control of supervisors and, in such a role, they had no authority to control the workforce.

CHAPTER 13: KVAERNER GOVAN'S ACTION PROGRAMME PHASE ONE

1. THE ACTIONS

The Kvaerner Govan 'action programme' was, essentially, the stage of the manpower strategy where thoughts and discussions were translated into actions. It was, in effect, the third stage of a strategy following on from the initial analysis of manpower utilisation and the definition of a participative and communicative industrial relations process designed to incorporate the actions into meaningful industrial relations agreements.

The 'action programme' was in two phases and the initial phase was incorporated into the negotiated industrial relations agreement of 1990, while phase two, to be discussed in Chapter 14, was incorporated into the 1991 agreement. The initial phase of the programme was concerned with maximising the manhours available for productive use. In a sense, it was the foundation phase concerned with influencing the shipyard's 'work ethic' and tackling the problems of managerial discipline and control over working hours. This involved introducing a range of actions to ensure that productive work and earnings payments were linked, for example, to ensure that the shipyard workers received payment only when they 'clocked in' at their work areas ready to start work.

This range of actions, the contents of which are illustrated in figure 13.1, were aimed at assisting in the process of transforming the uncompetitive shipyard into a viable shipbuilding operation for the first time in over two decades.

ACTION PROGRAMME

PHASE ONE

ACTION AREAS		ACTIONS
1. CONCESSIONS		
Starting and Stopping Times.	-	Reduce manhours conceded to activities for other than productive use.
Shop Stewards	-	Reduce control of shop stewards and introduce accountability.
Additional Days Off	-	Remove concession days.
2. PERFORMANCE		
Health & Safety	-	Improve performance through communications and increased commitment.
Quality	-	Improve performance through training and increase individual accountability and commitment.
Flexibility	-	Remove factors inhibiting application of Agreements.
3. MANPOWER		
Absenteeism	-	Reduce absenteeism levels.
Sickness	-	Re-appraise sick pay systems and the role of the Occupational Health Department.

SOURCE: *Bisset (1991)*

Figure 13.1

Within the setting of the new Kvaerner industrial relations framework the agreements and the range of actions were communicated to the shipyard workers by management and the shop stewards, prior to implementation, thus ensuring that the workforce were aware of, and fully understood, their implications.

The initial phase of the 'action programme' appeared to work. The 1990 industrial relations agreement was the foundation on which the shipyard's increased productivity was built.

> "In terms of the company's long term future the most important achievement, however, has been the upturn in productivity. The foundation for the increase was laid with the signing of the 1990 wage agreement which saw the introduction of bell to bell working and tackled absenteeism and other forms of ineffective time. Perhaps, for the first time in many years, the company received the full benefit of the agreement." (Draegebo 1991).

Unlike previous agreements, the words of the 1990 agreement were translated into deeds and increased productivity. Much of the credit for this, according to the Managing Director, must go to the workforce who responded immediately to the 'actions' and, as a result, productive hours available to the processes associated with building ships increased.

The statement that 'full benefit was received' was significant. The agreement was concluded as a result of extensive negotiations between management and the shop stewards. The negotiations had 'give and take' with management giving a 9.2% wage increase and a reduction of 2 hours on the normal 39 hours working week in return for effective working arrangements represented by what is termed as 'bell to bell working', removal of concessions and demarcation, control of shop stewards and the acceptance of a rule book.

The initial phase of the 'action programme' tackled absenteeism and other forms of ineffective time and produced productivity increases under the following headings:

(a) Concessions - a reduction in the manhours lost at stopping and starting time, due to the introduction of 'bell to bell' working. Further manhour reductions occurred due to the introduction of control over the shop stewards and the elimination of the concession day arrangements.

(b) Performance - a reduction in manhour losses associated with accidents, arising from a re-appraised approach to health and safety. Further manhour reductions were associated with quality improvements in welding and the elimination of factors inhibiting the full application of flexibility agreements.

(c) Manpower - an increase in the number of workers available for production arising from reduced absenteeism levels.

The issues tackled under each of these headings are spelled out in the following sections.

2. CONCESSIONS

The initial phase of the action programme made a significant impact on the manhour losses related to what was loosely termed as 'concessions' which arose in three areas of business, namely starting and stopping times, concession days and shop steward arrangements.

The principal aim of the 'action programme', was to recover these conceded manhours and, by so doing, increase the manhours available for productive use. However, the 'action programme' had further, not quite so evident but equally important aims, these being to bring about a change in the shipyards workers 'work ethic' and the introduction of a greater degree of managerial discipline and control over working hours.

The cornerstone of the programme was the introduction of a concept known as 'bell to bell working'. Quite simply this meant that the shipyard workers started work at the offical starting time and ended when the whistle blew.

More time was devoted to productive work and significantly less time to tea breaks and walking to and from clocking in stations. This new working arrangement increased the time available for building ships by 20%. I.D.S. Report No. 606 December 1991, indicated:-

> "The company that Kvaerner bought from British Shipbuilders was paying its employees for a 39 hours working week, but so many inefficiencies had been allowed to creep into the system that it was only getting the benefits of around 29."

Ironically, most of these inefficiencies were created as a result of bargaining concessions, the nature of which has been discussed previously in Chapter 11.

'Bell to bell working' was, therefore, the mechanism adopted by Kvaerner to provide the managerial control over the times at which shipyard workers started and ended work and thereby eliminate the conceded manhours and inefficiencies. In addition time clocks were moved from the main gates to the work areas where they were manned, at the beginning and the end of the shifts, by supervisors. They ensured that the shipyard workers were equipped for work before clocking on, and that the workers clocked only their own cards at the end of the shift. Supervisors were able to 'eyeball' their own workers at the start and end of the shifts and could also exercise a greater degree of managerial control and discipline over their workers activities.

These were clear signals to the shipyard workers that things had changed. They acknowledged that payments would only occur from the time they actually clocked-on in the workplace. As such, they initially had to travel from the main gate to the amenity areas, put on their safety equipment and make their way to the work areas in their own time. The process was reversed at the end of the shift.

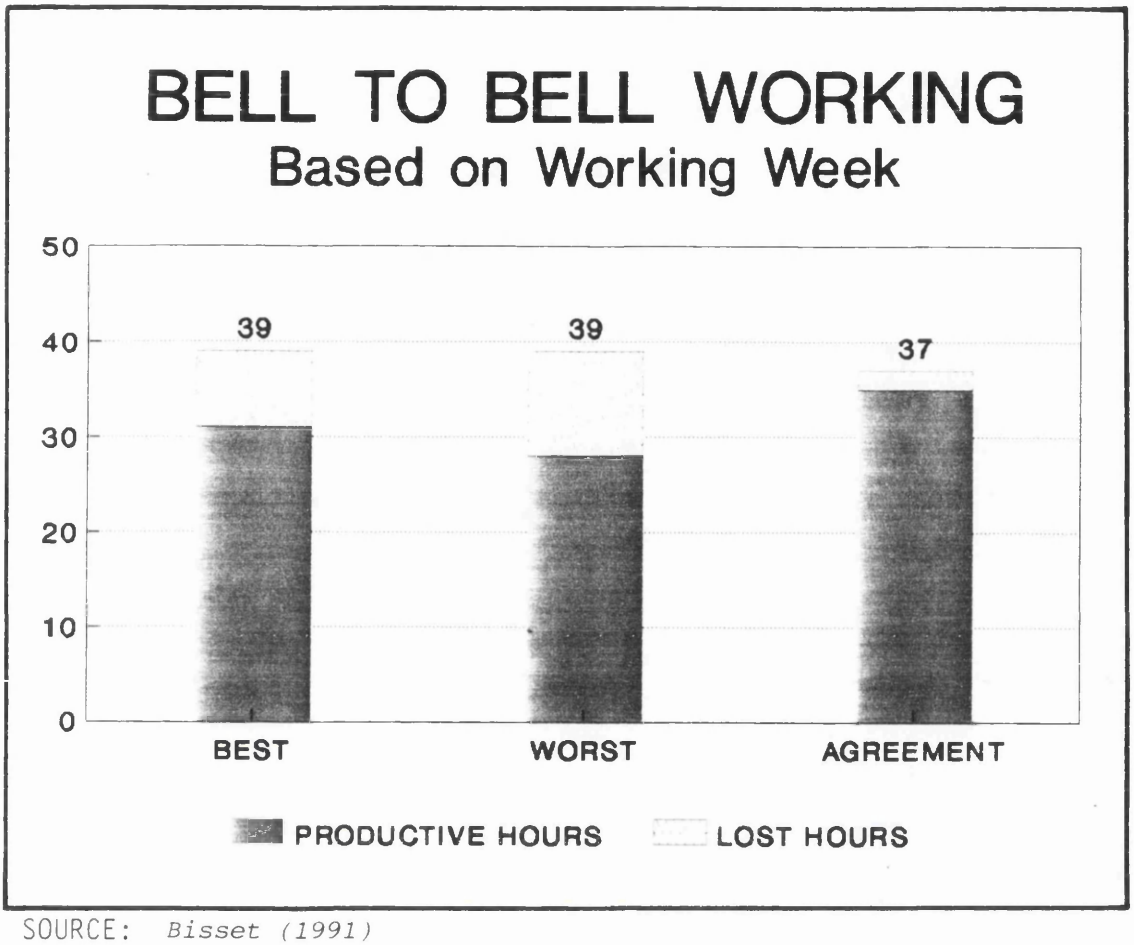
The bell to bell agreement also tackled the problems associated with the 15 minute tea break which, in some instances, extended to 45 minutes. Cydesider (Issue No.17 May 1990) explains:-

> "During the morning shift employees can have a cup of tea at their place of work. However, the present practice of leaving the place of work and going to canteens or amenity areas will be discontinued as it trebles the amount of time taken for the tea break."

To support this part of the agreement a sufficient number of hot water urns were located in each of the work areas. The canteen areas were opened before working hours to enable the workers to purchase filled rolls but were then closed during working hours. The overall effect of the agreement was that the number of manhours lost due to the inefficiencies associated with stopping and starting times and tea breaks was reduced significantly.

According to the initial analysis of manpower utilisation the manhours available for productive work ranged between 28 to 31 hours per week. Consequently, the starting point for measuring improvements, derived from the 1990 agreement, varied between the best estimate of 31 manhours out of the normal 39 per week, and the worst situation of 28 out of 39 hours per week.

The 1990 agreement did, in fact, reduce the normal working week by 2 hours from 39 to 37 but, significantly, it increased the number of productive hours to 35 hours 20 minutes. Only 1 hour 40 minutes were devoted to what could be loosely termed as 'concessions or lost manhours' and this comprised a 15 minute tea-break and 5 minute wash-up daily. The improved situation is illustrated in Figure 13.2.



SOURCE: *Bisset (1991)*

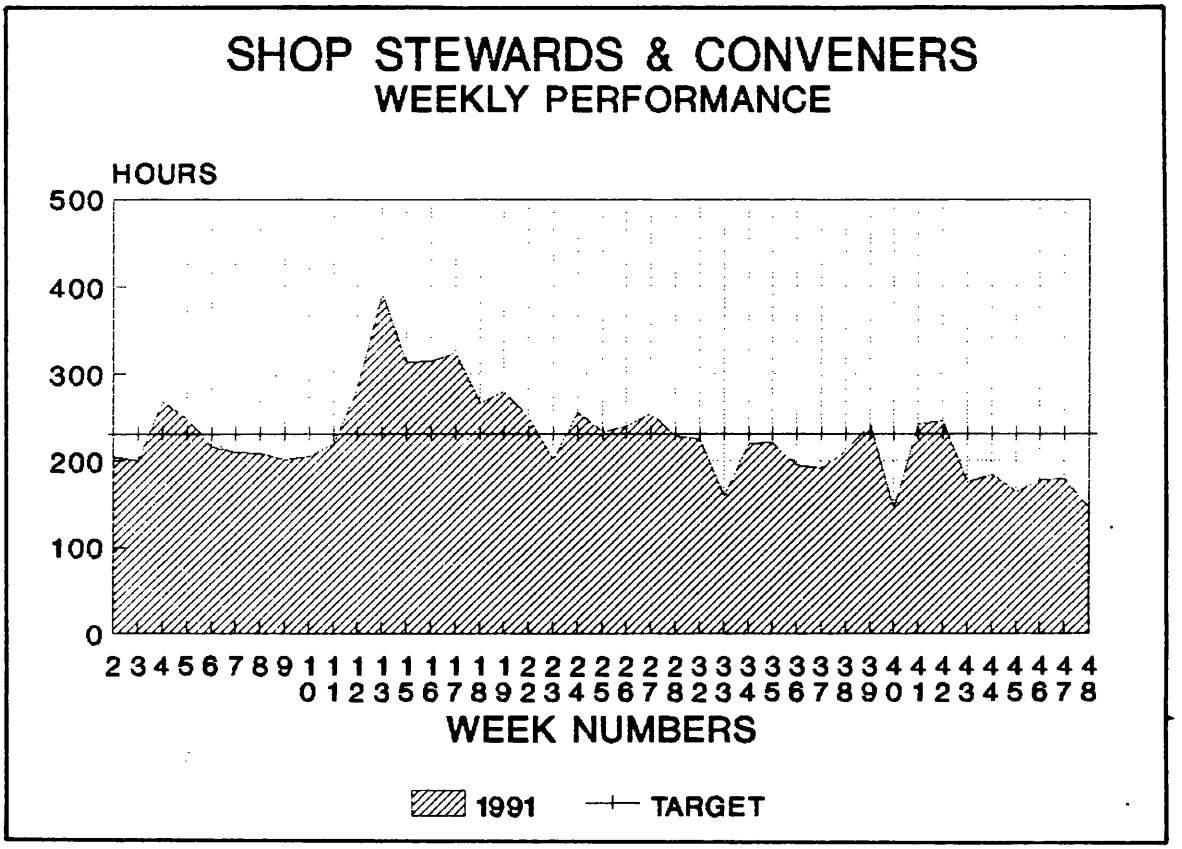
Figure 13.2

Based on the 'best estimate' scenario, there, was an increase of 14% in the number of productive hours and, in the worst case, the improvement was 26%. An improvement in 'best estimate' terms was equivalent to 133,000 manhours and, in terms of the worst scenario, the improvement was in the region of 247,000 manhours - a significant improvement indeed.

Moreover, a further 40,000 manhours were made available when the three day concession system was withdrawn. The withdrawal recognised that reasonable arrangements for holidays, bereavement, jury service etc., existed outwith the concession day system.

The 1990 agreement also tackled the somewhat thorny and difficult problems related to the 70 shop stewards and the 50,000 manhours they devoted to trade union activities.

Under the terms of the 1990 agreement, the manhours devoted to trade union duties were reduced from 50,000 to just over 10,000 per year. The weekly number of allowable manhours was established at 227 per week and, as illustrated in figure 13.3, the budget for 1991 was maintained.



SOURCE: *Wilson (1991)*

Figure 13.3

The 'actions' taken to address the manhour losses due to concessions were, therefore, successful and as the Managing Director earlier indicated, for the first time in many years, the company received full benefits from the agreement.

In addition to the considerable manhours savings, the 1990 industrial relations agreement also brought about positive changes in the attitudes of the shipyard workers and the industrial relations climate generally in the shipyard.

3. PERFORMANCE

Manpower actions, aimed at improving productivity were also evident in other areas of the business, in particular, health and safety, quality and flexibility agreements.

Health & Safety

Health and safety had long been a major cause for concern in the Govan shipyard. Indeed, workers had been accustomed to working in workplaces cluttered with cables and hoses. It had become commonplace for workers to leave debris behind on staging planks and it was the exception, rather than the rule, for a worker to wear protective safety equipment. The result was that accidents occurred on a regular basis.

At the very heart of this unacceptable situation were the attitudes of the shipyard workers, their supervisors and managers: negative attitudes which had their roots in the age old problems of 'who does what'. Only this time the argument was not so much about 'whose job it was to clear the debris and move the cables', but more a statement that 'it was not my job to do such menial tasks.'

The issue became so contentious that it became a major industrial relations issue and formed part of the 1989 I.R. Agreement. Clydesider Issue No.13, August 1989 stated:-

> "All tradesmen will remove their own handable scrap or debris to assist with the cleaning of work areas. Platers/Shipwrights will now draw flex-welding equipment from the satellite stores, connect up at their work stations and return to store at the end of the job or shift."

That this type of activity had to be underpinned by an agreement suggested that the injury or maiming of shipyard workers was, apparently, of lesser importance than the preservation of age old attitudes whereby tradesmen would not carry out tasks of an unskilled nature. A tradesman would rather take the risks associated with working in an untidy workplace and wait on a labourer to tidy up for him rather than clear or tidy up at the end of the shift or when their job was complete. The agreement did, at least, provide the initial mechanism to address the issue, but Kvaerner acknowledged that it would take much more than an industrial relations agreement to bring about an acceptable improvement.

Several key 'actions' were, therefore, activated to improve the situation. These 'actions' included - workshop clean ups, supervisory training, other forms of training for operators and craftsmen and the introduction of safety action teams. The role of the safety action teams was a particularly important aspect of the drive to change the negative attitudes and improve health and safety performance through direct involvement of the workforce. A statement from the Personnel and Employee Relations Director underlines this.

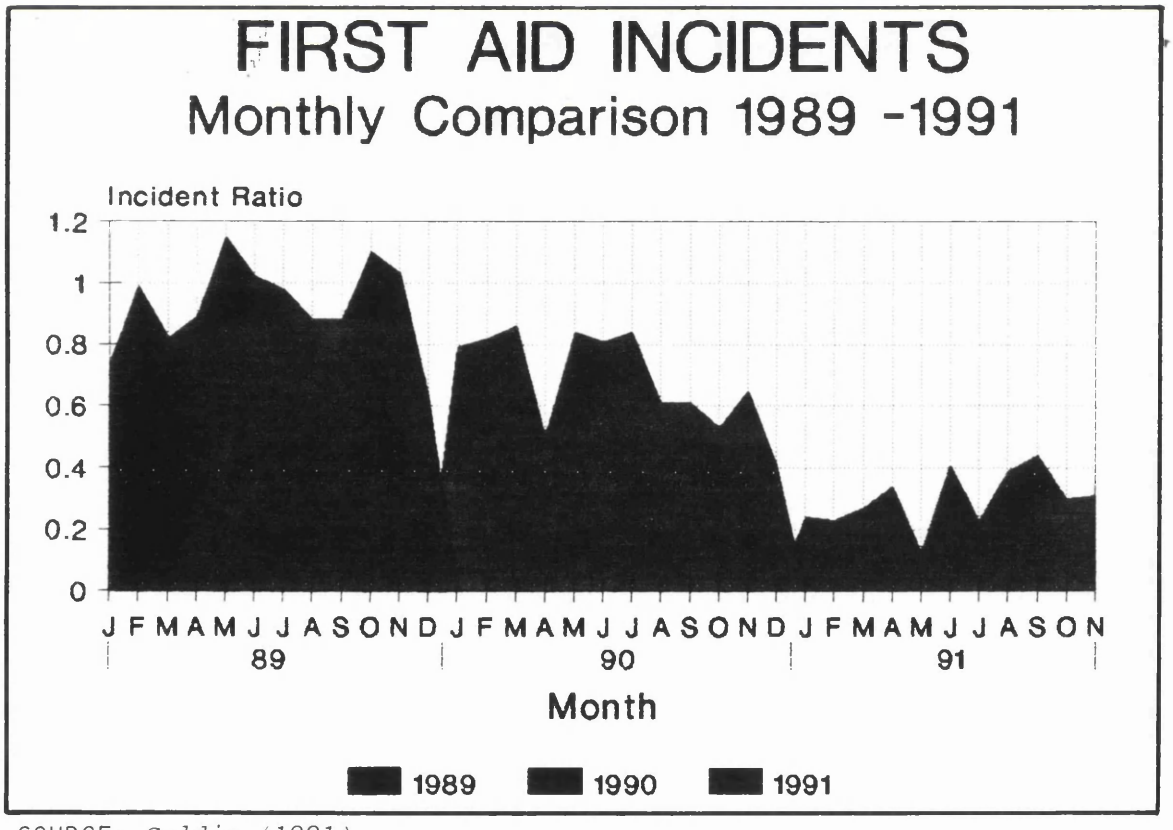
> "The aim was to involve our shop floor employees, their foremen and managers and the safety department in a more participative and active role in the health and safety arrangements for their work areas." (Gordon 1991).

Health and safety was an important part of the business and everyone had a role to play. That required action on the part of the employees in the work areas where the problems existed. This was precisely what the action teams were aimed at. Talk had to be replaced by action - if the work areas is untidy clear it up - if the job is unsafe make it safe.

The initiatives appeared to pay off and the health and safety performance, as measured firstly, by the number of first aid incidents and secondly, by the number of days lost as a result of accidents, improved dramatically. During 1989, there was an average of one minor incident per employee, per month, requiring first aid treatment.

During 1990 and 1991 the situation improved considerably and by 1991, on average, an employee had 2.8 first aid incidents annually. This is illustrated in figure 13.4. According to the Personnel and Employee Relations Director.

> "In 1991 our improvement is such that we have one fifth of the first aid accidents we used to have. During the same period the more serious accidents, as measured by the number of Mandays lost, has been cut by two thirds." (Gordon 1991).



SOURCE: *Goldie (1991)*

Figure 13.4

Annual manhour losses reduced from 69,000 pre 1989 to 21,400 (2,200 due to first aid incidents and 19,200 due to the more serious accidents).

Quality

There were, of course, other reasons put forward in Chapter 12 for lost manhours, due to poor performance and the most obvious of these was the major quality problems associated with sub-standard welding workmanship. The welds had avoidable faults - slag inclusions, spatter, undercut and porosity.

The solution to this massive problem, which was responsible for an almost 300,000 manhour loss on ship 301 was, therefore, firstly to increase the competence of the welders and secondly, gain their commitment.

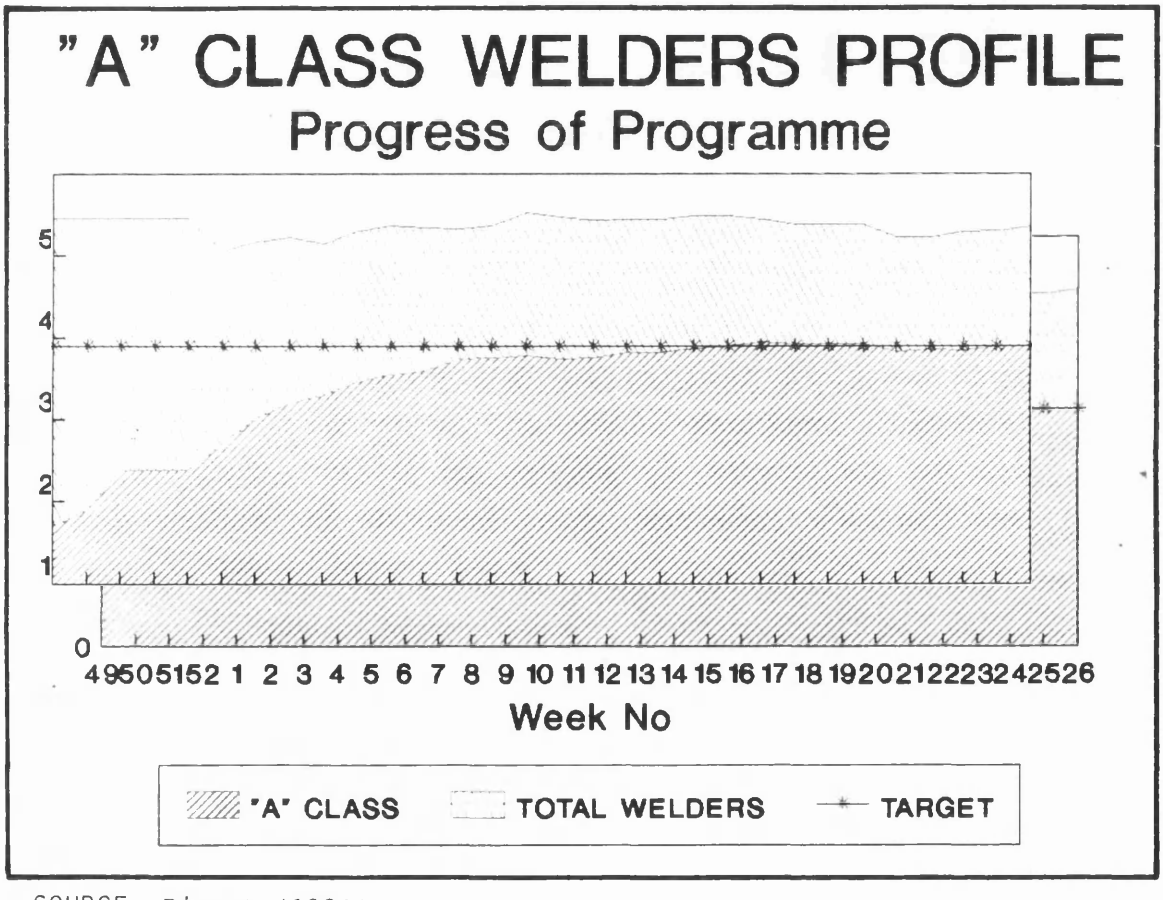
To increase the competence of the welders Kvaerner invested heavily in a major welder training initiative to ensure that the welders could carry out the tasks expected of them with confidence. The training programmes were a mixture of theory and practical training and one participant was quoted as having said:-

> "This is the best training I have been through at the company. It is much more comprehensive and it definitely helps to know the reasons behind the course - to give a broader picture of the job required. So far it has solved a lot of problems for me - its like learning to swim yourself then someone else comes along and teaches you properly." (Sorbie 1990).

At the end of the training programme all participants had to pass two test plates which were inspected by the external inspection authorities. Successful participants were thereafter classified as 'A' class welders.

Kvaerner believed that at least 70% of the welders should be 'A' class and it would be these welders who would be allocated work on the highly critical areas of the ship, the low temperature steelwork and the critical X-ray work. These were the areas of the ship where the welding quality problems were most acute and where the vast majority of the 300,000 manhours were lost in ship 301.

The target figure for class 'A' welders was achieved and is illustrated in figure 13.5.



SOURCE: *Bisset (1991)*

Figure 13.5

In addition to increasing the competence of the in-company welder resources a secondary problem existed. To meet production demands the company had to numerically increase the number of welders employed, this to ensure that firstly, production programmes were maintained while welders were being released from production to take part in training and secondly to meet the increased welding demand due to the high level of rework.

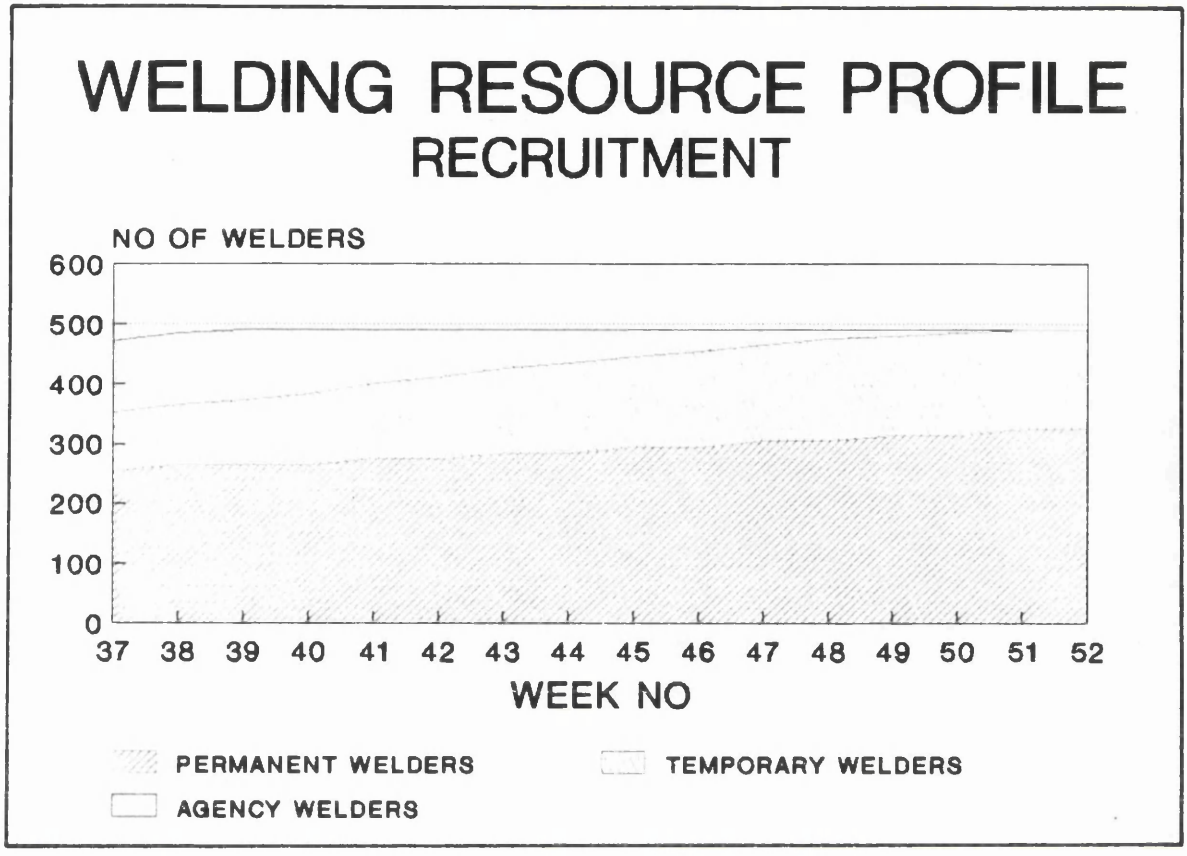
The short term solution was to employ 'agency welders', craftsmen who were reputed to be 'top of the range' welders with experience of sophisticated constructions and whose costs to the company were 3 to 4 times greater than simply employing welders directly. At its peak some 100 agency welders were engaged by Kvaerner at an additional cost of over £1 million.

This move to engage 'agency welders' was, of course, 'unpopular' and created industrial relations unrest. It is, however, a credit to the new industrial relation framework that economic reality prevailed. After detailed discussions with the welders' shop stewards, the management of Kvaerner committed themselves to recruiting local unemployed welders who had to successfully participate on a pre-employment training and testing programme supported under the Government's scheme for the unemployed.

Given that it was important not to 'import' further welder quality problems, the pre-employment training and testing programme ensured that the welders, many of whom had not worked for several months or years and were not capable of working to the quality demands of the sophisticated construction standards of the L.P.Gs, were brought up to that standard before recruitment. The Senior Welding Instructor explained:-

> "The idea is to get welders who have been working as temps or who have been away from their trade back to work. We will take them on first as Grade 'B' welders before bringing them up to Grade 'A' standard. (Fraser 1990).

The timescale for replacing the 'agency welders' was set at 6 months and the initiative, as illustrated in figure 13.6, was a major success in that all agency welders were replaced within a 4 month time frame.



SOURCE : *Bisset (1991)*

Figure 13.6

These training initiatives ensured that the Kvaerner internal welder resources and those recruited externally had the competence to carry out their tasks with confidence, but while it did solve the problem of competence it did not entirely solve the problem of commitment.

This was tackled under another initiative which involved the introduction of a quality related performance bonus. To gain this bonus, which represented an additional payment of 5% of earnings, the welder had to be classified as 'A' class, be working on critical work, be monitored on an individual basis and had to achieve at least a 92% quality performance.

This was a break from the traditions of the past two or more decades. Since the days of the 'Fairfield Experiment' collectivism had replaced individualism. Individual incentive and payments had been replaced by a notion that 'we are all Jock Tamson's bairns' and, as such, should all be treated and paid the same. Individual monitoring had been frowned on.

Kvaerner's initiative set these traditions to the side and was driven by two main factors. Firstly, the pride of the welder who valued the recognition that his 'A' class classification afforded him and the knowledge that a quality performance of less than 92% would alter this classification. Secondly, the incentive to increase earnings by 5%.

The initiative aimed at improving the quality performance appeared to work. According to the Quality Manager,

> "There has been a 58% improvement in welding quality from ship 301 to 302. Furthermore, at the current stage of 303 there has been a further 51% improvement from ship 302." (McPherson 1991).

Almost 300,000 manhours were lost on ship 301 due to poor quality performance, the improvement on 302 reduced the manhour losses to 126,000 and still further to 61,740 on ship 303.

Flexibility

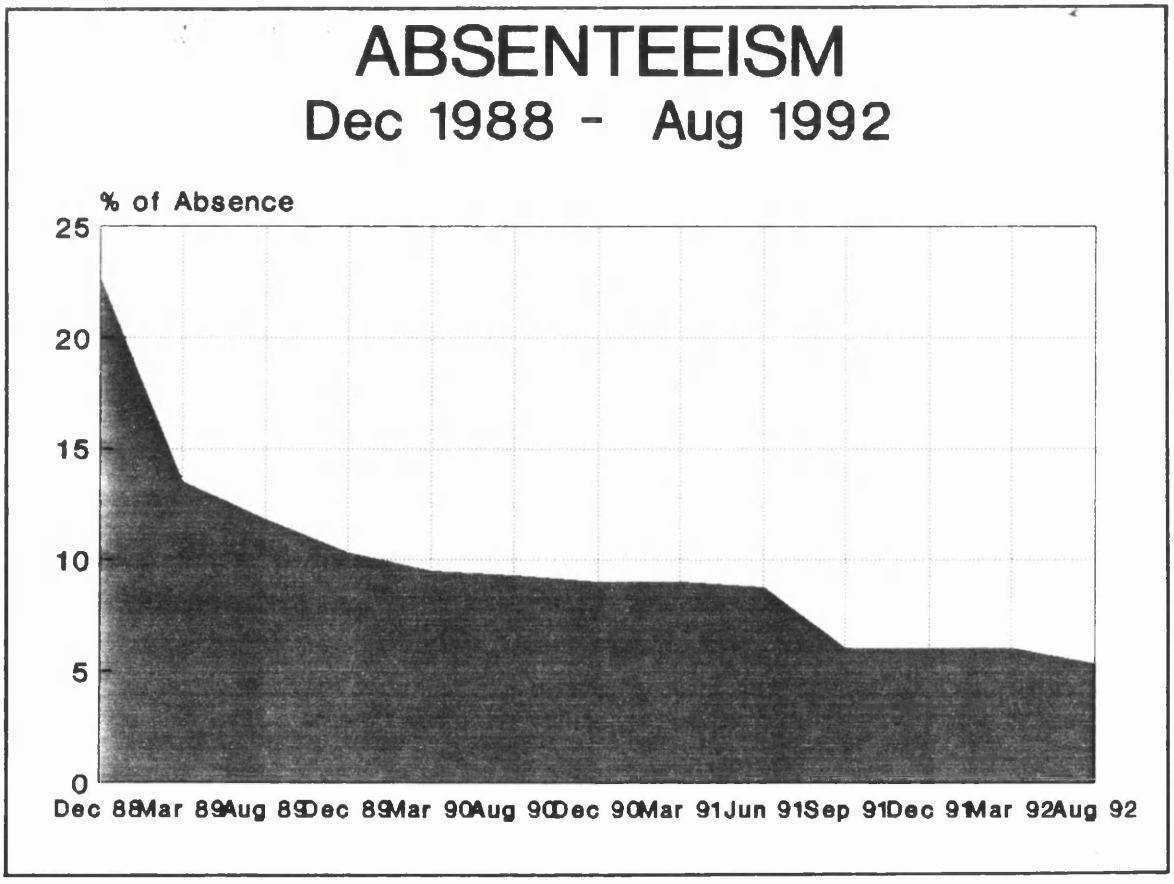
The manhour losses associated with what was termed as the 'poor performance' evident in the application of flexibility agreements virtually disappeared. This was principally due to the new, more disciplined and controlled approach to industrial reations adopted by Kvaerner. In particular the communication systems introduced to take the mystique out of the industrial relations process ensured that everyone in the shipyard fully understood the I.R. Agreements, their aims, the reasons for the change and their role in the change process. Furthermore, the redefinition of the shop stewards' role ensured that the shipyard workers, their supervisors and managers applied agreements uninhibited.

Platers and shipwrights connected up their own burning and welding equipment rather than wait on the services of others. Caulkers changed their own grinding discs instead of queuing at stores for hours to have their discs changed by others, welders moved their own exhaust and ventilation trunks and all shipyard workers, when required to do so, operated the hydraulic lifts without the assistance of a stager.

4. ABSENTEEISM

Absenteeism at the Govan shipyard reached an all time low of 6% in the second half of 1991. This contrasts starkly with 1989 when absenteeism was rife running at an alarming 22%. which created havoc with production schedules and added significantly to costs.

The absenteeism levels for the period 1989 to 1991 are illustrated in figure 13.7.



SOURCE: *Busset (1991)*

Figure 13.7

According to the Personnel Director,

> "If the company was to survive in the world market place we had to have people here to build ships to cost and on time. It was obvious that absenteeism had to be tackled head on if we were to succeed." (Gordon 1991).

Some of the 'actions' taken by Kvaerner to tackle the problems were - the tightening up of the sick pay procedures - more stringent controls through the disciplinary procedures - the expansion of the occupational health programme to assist employees to return to work - a major health and safety drive to prevent lost time through accidents and a qualification that overtime premium payments would only be paid for hours worked beyond 37 in any week.

Kvaerner took the view that absence would only be tolerable within the rules of the sickness and disciplinary procedures. Employees were supported for a maximum of 4 sickness absences per year and any further absences regarded as absenteeism. In some instances sickness absence was measured in days, while in others it stretched to months. The total period of support was, however, related to the employees length of service.

Company sickness payments were withdrawn from temporary employees and restricted to permanent workers with six months service or more. Unauthorised absences of more than one and a half days per month was regarded as a disciplinary offence, as was 5 latenesses - while employees who were absent from work for one week, without notification, were dismissed.

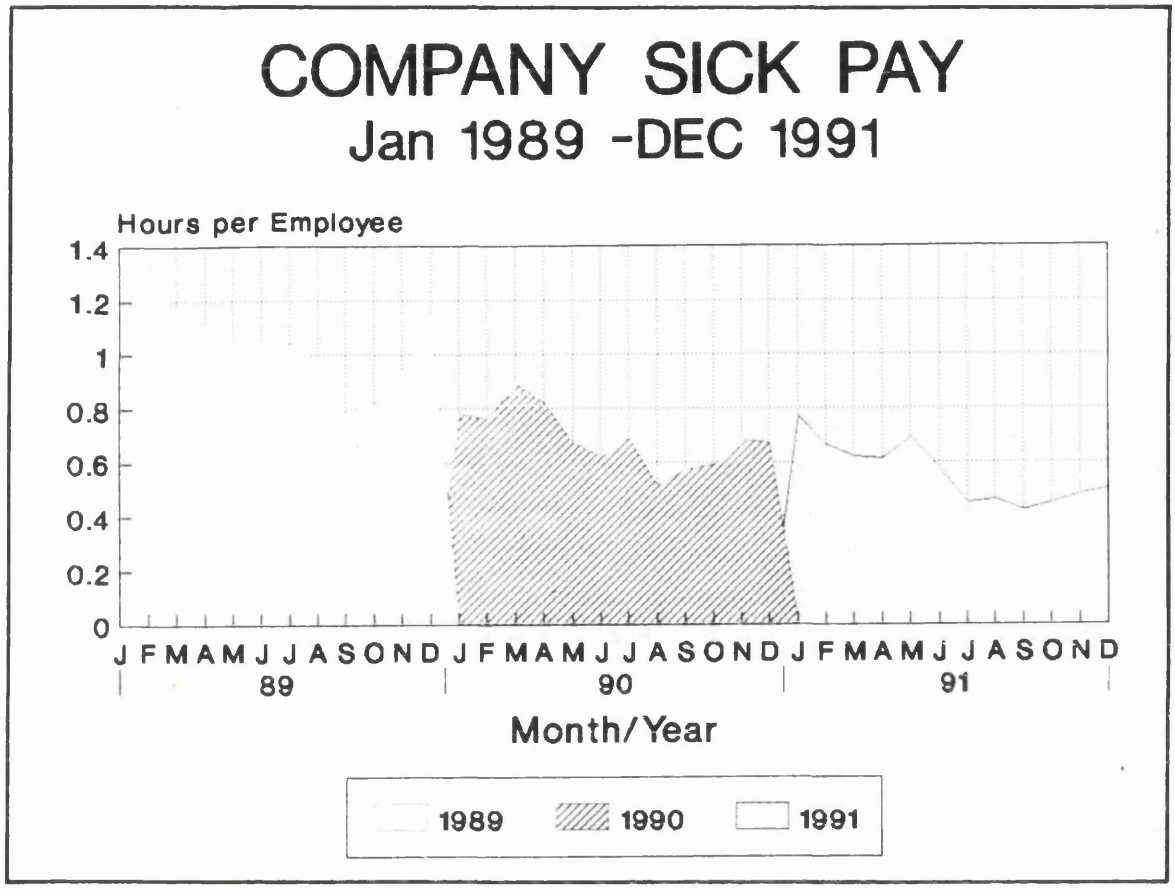
The occupational health initiative, on the other hand, was aimed at assisting employee's to return to work. They took the form of visits to the employee's home and weekly surgeries in company for employees with a period of absence greater than one working week.

Company sickness support was made or withdrawn on the basis of medical assessments and employees who refused to attend surgeries had their sickness support withdrawn.

Furthermore, in order to overcome the problems of what was loosely termed as the 'Monday Club'- the employees who worked a Sunday and were paid premium rate, then took the Monday off - a provision was introduced into the overtime payment arrangements, that the first 37 hours worked in any week was paid at the normal hourly rate and only hours worked beyond 37 attracted premium payments. This meant that the 'Monday Club' employees were paid for their Sunday work at their normal rate and not at an overtime premium rate.

These measures, together with the great improvements in the yard's long term prospects, brought about by the four ship order and the prospects of job security, greatly improved the absenteeism performance over a sustained period. By the latter part of 1991, the absenteeism levels had reached an all time low of 6%. (120 employees were off work daily compared with 440 when the level of absenteeism was running at 22%).

Production schedules were easier to maintain, recruitment of labour to progress work in the absence of the missing 440 employees was significantly reduced, and the associated costs lessened considerably. The sickness costs of supporting absent employees, estimated in chapter 12 as £0.75 million annually, was also reduced - as illustrated in figure 13.8.



SOURCE: *McGoogan (1991)*

Figure 13.8

The reduction in costs associated with sickness support payments was significant from an average of 1.26 hours pay per employee in January 1989 to an average of 0.5 in December 1991. Based on a labour force of 2,000 employees and an hourly rate of £5.81, this means that the weekly costs of supporting sick pay was reduced from £14,643.24 to £5,810.

The overall effect of the 'actions' were that the shipyard workers at Govan were more committed to turning up to build ships on a regular basis. Their attitude to the discipline of work, on a regular committed basis, changed and this had a consequential effect on the shipyard's competitive situation by reducing the costs of building ships.

5. CONCLUSIONS

There is sufficient evidence to suggest that phase one of the 'action programme' provided a solid and disciplined foundation on which the Govan shipyard could build a competitive future. Solid in the sense that the 'actions' removed decades of decay and inefficiencies in terms of manpower policies and working practices. Disciplined from the point of view that the 'action programme' was part of a well thought out three stage manpower strategy aimed at transforming the hitherto uncompetitive shipyard into a viable shipbuilding operation.

The proposition that 'actions' could remove inefficiencies in manpower policies and working practices was not unique to Kvaerner - far from it. However, what was distinctive about the Kvaerner approach was that the 'action programme' was aggressively implemented by local management determined to succeed. The 'actions' did substantially impact on the shipyard's productivity and, as indicated in figure 13.9, increased considerably the manhours available for building ships.

ACTION PROGRAMME - PART ONE

Increased Manhours

	Action Area		Available Manhours
1.	**CONCESSIONS**		
	Starting & Stopping Times		133,000
	Shop Stewards		40,000
	Additional Days Off		40,000
		TOTAL:	213,000
2.	**PERFORMANCE**		
	Health & Safety		48,200
	Quality		248,260
	Flexibility (one example only)		57,600
		TOTAL:	333,060
3.	**MANPOWER**		
	Absenteeism		504,000
		TOTAL:	504,000

SOURCE: *Gordon (1993)*

Figure 13.9

But there was much more to it than this. In quantitative terms management were now more in command and accepted to be so by the workforce. There was a greater discipline in the operation. Important agreements were being put into effect without inhibitions and the work ethic was showing signs of change.

What was happening in analytical terms was that:

i) the management's confidence increased. This based on the fact that the analysis had given them understanding and quantification of problems.

ii) the new management were finding its feet, pointing in new directions and recognising the scope for profitability.

iii) the workforce were beginning to recognise this managerial confidence and competence. Attitudes were changing and a basis for trust was being established.

iv) quality workmanship was being restored and greater task flexibility.

v) an acceptance of boundaries for collective bargaining and the redefinition of management's right (and responsibility) to manage.

In terms of the conceptual model, some element of the flexible firm's were evident but, perhaps, this was not the key characteristic.

CHAPTER 14: KVAERNER GOVAN'S ACTION PROGRAMME PHASE TWO

1. THE ACTIONS

The second phase of the 'action programme' addressed the problems of how best to use or organise the shipyard's manhours and manpower. The actions are summarised in Figure 14.1.

ACTION PROGRAMME

PHASE TWO

ACTION AREAS		ACTIONS
1. ORGANISATION OF HOURS		
Working Shifts	-	Introduce management controlled shift working arrangement suited to production and contractual demands.
Overtime Working	-	Move control of overtime working from shop stewards to management.
2. MANPOWER ORGANISATION		
Bureaucratic Structure	-	Flatten organisation structure and re-align support departments with production departments.
Supervisory/Management	-	Re-define individual roles within flatter structure and support individuals with training.

SOURCE: *Gordon (1992)*

Figure 14.1

Addressing these problems was the major feature of the 1991 Industrial Relations Agreement, the principal aim of which was to reorganise the resources of the shipyard to suit the customers product and workload.

> "1990 therefore has been a year when we have started to eliminate inefficiencies and laid a solid more disciplined foundation for the future. We plan in 1991, to build on this foundation and create a competitive shipyard." (Draegebo 1990).

The 'range of actions', particularly those associated with working hours were regarded as contentious and struck at the very heart of what remained of the shipyard's traditional and shop steward controlled working practices. The action programme involved:-

(a) Creating a three shift working arrangement more suited to product demands and a competitive shipyard environment. These arrangements would provide a suitable time frame for weld X-Ray and plant maintenance, this without inhibiting production programmes and thereby enable management to productively resource plant, equipment and machinery on shifts more suited to contractual demands. Control of overtime working and the selection of employees to work overtime would be transferred from shop stewards to management.

(b) Creating a flatter more decentralised organisation structure by eliminating several layers of management and re-aligning support departments such as planning and loft with the production function. The roles of supervisors and managers within the new structure would be redefined and supported with training aimed at improving their individual and collective performance.

> These actions were aimed at removing the bureaucracy associated with the organisation structure and, thereby, improving supervisory management accountability for manpower and manpower utilisation.

The magnitude of the increased shipyard efficiency directly related to the actions incorporated in phase two of the Kvaerner Govan action programme will be the subject of the following sections of this chapter.

2. THE ORGANISATION DISPUTE

Two aspects of organisation namely, shift working patterns and overtime working arrangements, both the subject of shop steward control, had been identified by the shipyard managers and supervisors as being problematic and contentious. The shop stewards, not management, controlled shift and overtime working times and the rota system that determined the shipyard workers who could and those who could not work.

This unsatisfactory situation was summarised by the Personnel Director when he stated:-

> "Anyone who has been working in the yard over the last 12 months realises that our present arrangements are unsatisfactory. We have had dayshift working, nightshift working, double dayshift working, three shift working and even a special backshift, all of which resulted in chaos and confusion." (Gordon 1991).

Replacing these chaotic shift working patterns with a more disciplined and regular working arrangement designed to meet the special needs of the sophisticated ships being built in the shipyard and to improve communications between the shifts was one of the far reaching actions incorporated in phase two of the programme.

Such a shift working arrangement, as embodied in the 1991 Industrial Relations Agreement, struck at the very heart of one of the shipyards remaining traditional working practices and resulted in the shipyard workforce taking strike action.

It had long been a tradition in the shipyard for the vast majority of the workforce to operate on a dayshift basis. They augmented their earnings by working two nights late and a Sunday morning. A minority, about 20%, worked nightshift and their working week was restricted to four nights. They also augmented their earnings by working two nights late and a Sunday afternoon. Indeed, the four hour period between the end of dayshift and the start of nightshift was nicely divided up, the first two hours being dayshift overtime hours and the second two hours being the nightshift overtime hours. This was part of the traditional culture whereby shipbuilding was regarded as an industry where 2 nights late and a Sunday were part of the regular working week and available at will to the shipyard workers.

The other shift patterns in the shipyard were manned on a voluntary basis and still came under the control of the shop steward movement. The shop stewards dictated the shift times and it was they who supplied management with the lists of suitable volunteers. Additional payments were made to encourage the voluntary process but, inevitably, it was difficult to attract suitable volunteers. As a result many of the shifts were unbalanced and ineffective. Steel units could not be erected on board the ship due to a lack of crane drivers, units were not welded due to an imbalance of welders. Shifts overlapped and there was a shortage of equipment. In other words the situation was chaotic and confused.

The move to change the shift pattern was perceived to be a further challenge to the traditional values of the shipyard.

The proposed new shift patterns, in their opinion, would disturb the status quo and midweek overtime earnings could be affected. The shop stewards would no longer control the shift times or volunteer lists. Employees would be expected to work unsociable backshifts.

It was against this background that the new shift patterns were initially rejected and the workforce chose instead to strike. Thus, according to a statement from the Personnel Director, the future of the company was placed in jeopardy:-

> "After all the hard work and changes that have taken place over the last year, we now stand on the threshold of transforming what was an uncompetitive shipyard into one which can compete successfully in the shipbuilding market place. It seems, therefore, illogical that we are prepared to throw all this away and threaten the company's future viability by taking strike action over issues which, on the surface, appear to be reasonable proposals." (Gordon 1991).

The 'actions' to be incorporated in the 1991 Agreement, including the shift working patterns, were regarded by the Personnel and Employee Relations Director as being vital to the future viability of the shipyard. The yard was at the high end of the technology market. Its products were sophisticated and to construct such vessels satisfactorily, within budget and within the time constraints, necessitated changes to the traditional practices and, in particular, changes to the shop steward controlled voluntary shift systems and overtime working arrangements.

By virtue of the far reaching actions associated with Phase One of the action programme, the viability of the shipyard was within touching distance, but it could not be achieved under the status quo.

Delivery times would become unreliable and economic targets would not be achieved. As such, in the opinion of the Personnel Director, the 1991 Agreement was crunch time for the Govan shipyard. All the work of the past year would be for nothing if the Agreement could not be concluded. A strike would be unhelpful.

Unhelpful or not, the strike did take place, ironically, against the recommendations of the shop stewards and the full time trade union officials who were realistic enough to recognise the problems. Indeed, the shop stewards and management had, during negotiations, agreed that there were profound problems with the prevailing shift and overtime arrangements and accepted that the arrangements had to change.

A range of options were discussed on a give and take basis with management moving away from their preferred shift option of two production shifts between the hours of 7.30 a.m. to 11.15 p.m. followed by a third shift between the hours of 11.15 p.m. to 7.30 a.m. devoted to weld X-Ray and plant maintenance. Management believed that this shift arrangement would improve communications and continuity between production shifts and, by so doing, increase shipyard efficiency. It also had the logic of X-Raying welding after a full day's production work.

They accepted instead the shop stewards' proposed compromise of a production shift starting at 7.30 a.m. followed by a support X-Ray type backshift and a second production shift starting at 11.30 p.m. and operating over 5 nights. The shop stewards, in promoting the compromise, believed that the backshift would be socially unpopular and, therefore, difficult to resource. Logically this shift should be used for X-Ray and maintenance, where the number of employees required to work was small.

The workforce rejected the shop stewards proposals and opted instead to take industrial strike action, an option promoted by what could be loosely termed as the unofficial voices. These were the voices of employees, many of whom were former shop stewards, who had lost their official positions when the shop stewards numbers were reduced form 70 to 20. They held the view that 'things had gone too far' and the belief that 'the clock should be turned back'.

In a sense, this rejection and the option to take strike action was, perhaps, the most critical stage of the Kvaerner Govan manpower strategy. It challenged the economic reality, accountability and credibility of the industrial relations framework and the authority of the management and the shop stewards. As such it was a challenge that had to be taken up if the strategy was to achieve its aim of transforming the uncompetitive shipyard into a viable shipbuilding operation, based on workable industrial relationships.

The strike did take place on Friday 17th May 1991 and lasted two weeks. At the end of the first week management issued dismissal notices to all striking employees for breach of contract. This action brought matters to a head. The agenda changed and moved away from discussions on shift patterns and concentrated instead on conditions associated with job reinstatement.

For many the strike was a watershed in that the workforce, as represented by the unofficial voices, finally recognised that the management of the shipyard were determined and would not be distracted by strike threats from taking contentious actions, particularly actions that they believed would increase shipyard efficiency. It was a watershed, also from the point of view that the shop stewards credibility and authority was enhanced, at the expense of the discredited, unofficial voices who had created the dispute which cost the workforce two weeks wages.

In fact only weeks after the dispute the twenty shop stewards, who participated with management in the negotiations, were re-elected by their departments to continue to represent their views.

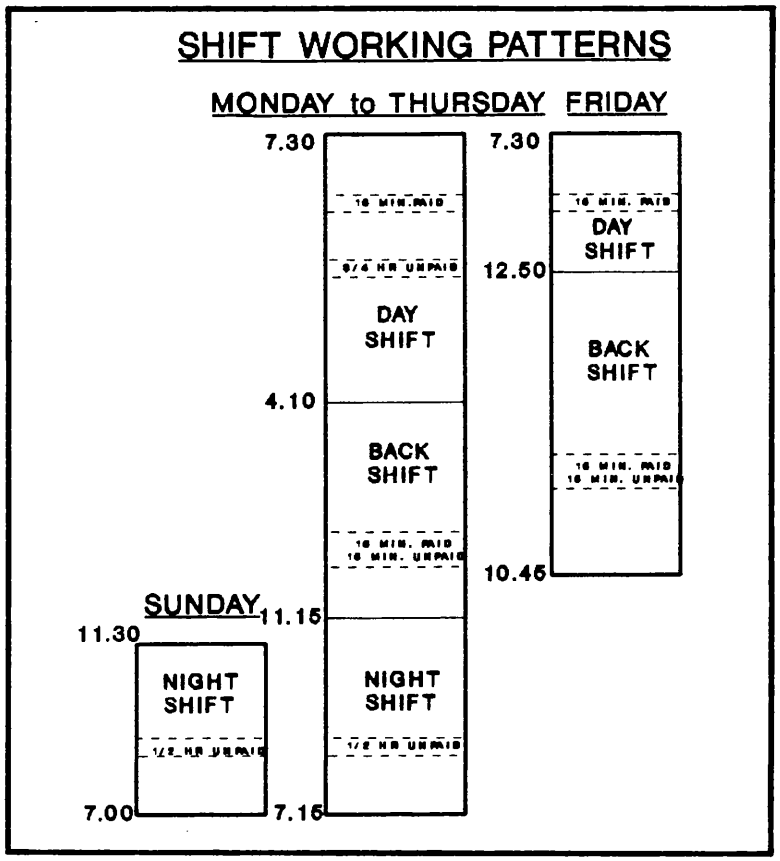
3. ORGANISATIONAL ACTIONS

The resolution of the organisational dispute saw the adoption of the 1991 Industrial Relations Agreement which had a twenty one month duration and was associated with actions aimed at increasing the efficient use of working hours. These were embodied in an Agreement which increased the pay of the workforce by 6.2% in year one and a further 4.4% in year two. The principal action was associated with shift working arrangements which, following further discussions with the shop stewards, was based on the original management option and had an element of compulsion. This was a clear signal to the workforce that the shop stewards compromise had been rejected, and once rejected, no longer part of the bargaining process. Management's initial proposals now prevailed.

The new arrangement made a significant impact on shipyard efficiency. The Managing Director subsequently summarises this as follows:-

> "A major benefit of the shift pattern embodied in the 1991 Agreement is that communications between the dayshift and the backshift is vastly improved. Previously, most time was lost due to a lack of contact between dayshift and nightshift and with the new agreement the X-Ray programme is now on target - thanks to the introduction of a third shift and this also allows for much quicker feedback on any quality problems coming through so that these can be dealt with straight away." (Draegebo 1991).

The shift working arrangement introduced as part of the Phase Two action programme is illustrated in Figure 14.2.



SOURCE: *Bisset (1991)*

Figure 14.2

Quite simply, a majority of the workforce continued to operate on that dayshift and a substantial minority, approximately 40% operated on backshift. The Agreement removed the shop stewards control over shift working times and also removed their role in producing lists of volunteers. Resourcing shifts became a management responsibility and while the preferred option was to resource shifts with volunteers management could, if the voluntary option failed, use a compulsion as a solution. Of the 650 employees required to resource the backshift, all but 35 were volunteers. The 35 non-volunteers operated on a four week on - four week off basis.

The introduction of the new shift working arrangement increased the continuous productive working day from 7.30 a.m. to 11.15 p.m. The shifts were structured back to back to ensure contact between shift workers and to allow supervisors and managers to discuss the on-going workload. Many manhours hitherto lost between the end of dayshift and the start up of nightshift, as cited earlier by the Managing Director, were recovered and the continuing dialogue between the supervisory/management staff ensured that the production unit was working to one common objective.

The third shift, the nightshift, was utilised to support the X-Ray programme and ensured that this vital work could be carried out uninhibited. This was particularly important from a safety point of view and allowed X-Rays to be carried out at times when the workforce were away from the shipyard. The X-Ray results, under the new arrangement, were fed back to production management at the start of the morning production shift. This ensured that quality problems were addressed before staging and equipment was moved and, in the case of operator error, before the operator created further quality problems. The third shift was also utilised for maintenance purposes and was available to tackle production overloads providing, of course, that the X-Ray programme in that area would be uninhibited.

The 1991 Agreement also tackled the problems associated with overtime working arrangements, an activity which, as indicated previously, was organised by the shop stewards. It was they who decided the shipyard workers who would work overtime. The result of this arrangement was that attendance, during overtime working, at 48% of management expectation was poor. The prevailing arrangement also meant that many manhours were lost as workers moved from one part of the yard to work their overtime in another part of the shipyard where the work was unfamiliar to them.

The 1991 Agreement removed this arrangement and placed responsibility for overtime working and the selection of those required to work firmly under the control of the supervisors and managers. It was they who decided, on the basis of skill, performance, attendance and work requirements, the shipyard workers who would work overtime. Since the inception of the agreement, overtime working attendance at 95%, has been good. Those working overtime have been the same workers who were working on the jobs during the normal week. This was a move away from a situation where overtime was shared on a common basis to one where overtime was done by those whose job really required it. It also meant that the skills and knowledge required for the job were on tap for management and eliminated the need to import manpower from one area of the shipyard to another.

Summing up, it was evident that significant changes were taking place in the shipyard as a result of the actions emanating from this stage of the programme. These included:

(i) important additional contributions to effective use of manpower.

(ii) management willingness to confront resistance to change to the extent that they faced up to the consequences of strike action.

(iii) shop steward's authority was under challenge from a section of the shop floor workforce but emerged reinforced after the strike.

(iv) management regaining control over workers overtime allocation.

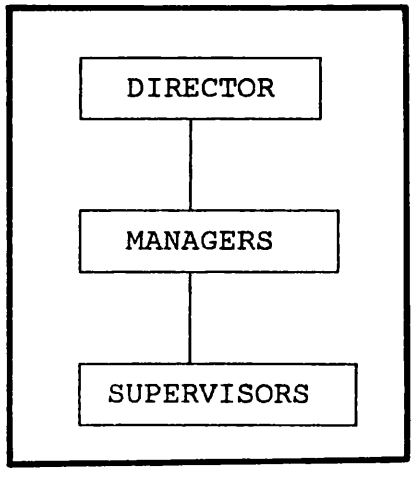
(v) management succeeded in adopting a shift working patterns to modern requirements.

4. BUREAUCRATIC STRUCTURE

The organisational problems of the shipyard included those associated with the costly bureaucratic organisational structure, where four tiers of managers operated between the Production Director and the supervisor. This structure inhibited effective communication and performance was restricted by confused job roles. It was a structure, particularly during nationalisation, often by-passed by the powerful shop stewards movement and where management decisions were constantly challenged and overturned, a structure that lacked authority and accountability and, as such, was regarded as ineffective.

Kvaerner's organisational 'actions', incorporated in phase two of the action programme, initially introduced a range of measures, including flattening the structure, decentralisation, role definition and supervisory/management training, as a means of addressing these problems. The flatter structure was achieved in the production function, for example by eliminating three layers of managers, leaving only one level of production management between the Production Director and supervisors, as indicated in figure 14.3.

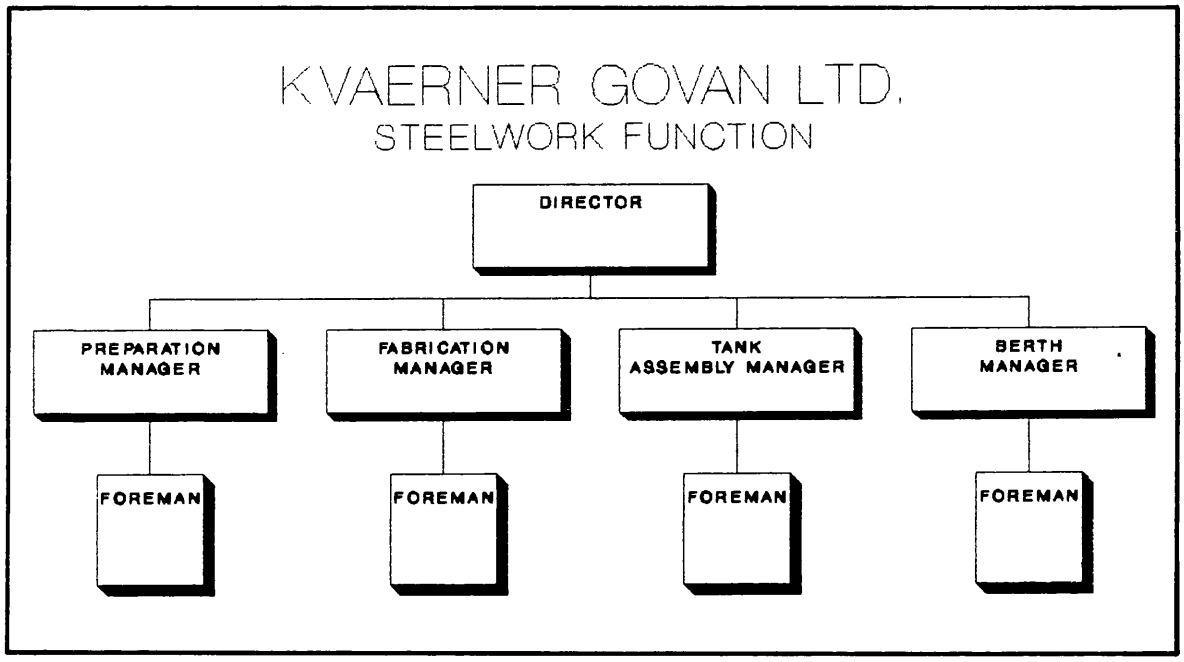
KVAERNER ORGANISATION STRUCTURE



SOURCE: *Bisset (1992)*

Figure 14.3

At the remaining managerial level (the middle tiers), functions were allocated, according to pre-determined work areas. The steelwork function, for example, was sub-divided into four work areas with one production manager responsible for each area, the Preparation and Sub Assembly, the Fabrication Shop, the Tank Assembly area and the Berth. This structure illustrated in Figure 14.4.



SOURCE: *Bisset (1992)*

Figure 14.4

In addition to steelwork, production managers were appointed for each of the pre-determined work areas associated with pipe/mechanical, electrical, joinery and service function. The production managers were supported by supervisors or foremen, as they were titled in the shipyard, whose role was changed to reflect that of a first line manager. As such, they were the controllers of manpower, minutes, methods, materials and machines.

To support the new leaner organisation structure, several hitherto centralised functions were decentralised. The planning, loft and maintenance functions the tools of production, were placed under the direct control of the Production Director. Repetition and duplication of effort within these functions was eliminated.

The organisation was production cost centre driven and based on the theory that the customer pays only for the end product and all other functions were merely tools to be called off when required by the producer of the product. These organisation measures reduced the number of staff employees employed in support and managerial functions from 588 to 330 and, as such, had a positive influence on overhead costs. However, the sting in the tail was that production, as controllers of the other functions, could no longer apportion blame to the centralised support functions for production delays. Accountability lay squarely with the production function, its managers and its supervisors.

Moreover, given that the production managers and foremen had participated in the process of developing and implementing the manpower measures, which were incorporated in the action programmes, they had been provided with most of the tools essential for success. The constraints to effective manpower utilisation had been removed. The problems of the hitherto powerful shop stewards movement were resolved. The industrial relations environment was conducive to change, their job roles had been defined and responsibility and authority delegated to the lowest level of the structure.

Significantly, however, Kvaerner acknowledged that notwithstanding these changes, the managers and foremen who accepted the positions of authority in the structure were, basically, the same employees who had managed the shipyard prior to 1988.

They tended to be employees who were products of what could loosely be termed as an 'incestuous system' whereby external recruitment was discouraged and, therefore, the positions of supervisors and managers filled by internal means. The result of this was that Govan managers and foremen had not been exposed to the harsh realities of the commercial world and few had any effective supervisory/management training or qualifications.

Moreover, the role of the foremen and managers had changed considerably in two or more decades of shipbuilding and, in particular during nationalisation. This was due to the centralised and bureaucratic organisational structures. They were no longer regarded as the 'king pins' of the industry, the people who could influence earning and employment prospects. The supervisory role had, in most instances, changed to that of a progress chaser. It lacked status, authority and credibility and those recruited to the positions were reflective of the nationalised industry's low expectations and perceptions of the role.

This was not to say that talent did not exist within the supervisory management ranks. Of course it did, and the excellent quality ships produced, at Govan, served as a testament to that talent. The point was that these supervisors and managers, notwithstanding their technical competence, much of which they brought to the job, could not produce their quality ships to budget. They lacked competence in various aspects of the supervisory/management activities, which they did not perceive as being part of their job and for which they were neither trained or qualified.

Indeed, as has been discussed earlier, the shipbuilding industry's approach to supervisory/management training was poor. They thought little about investing vast sums of money on the training of apprentices yet did little about training supervisors and managers.

Supervisors, even in 1988, continued to be a product of the "weekend miracles". They were part of the craft and trade structure on the Friday and a vital member of management on the Monday. Kvaerner changed this. They believed that effective supervisory/management performance was of paramount importance in terms of shipyard viability. A vital ingredient of this was competent, well trained supervisory/ management staff. Accordingly, a supervisory/management training initiative was established. I.D.S. (report 606 1991) stated:-

> "The company has introduced the National Examination Board for Supervisory Management (N.E.B.S.M.) qualifications into supervisory training. All supervisors are currently trained on-site in an open learning basis as are a number of people who aspire to become supervisors of the future."

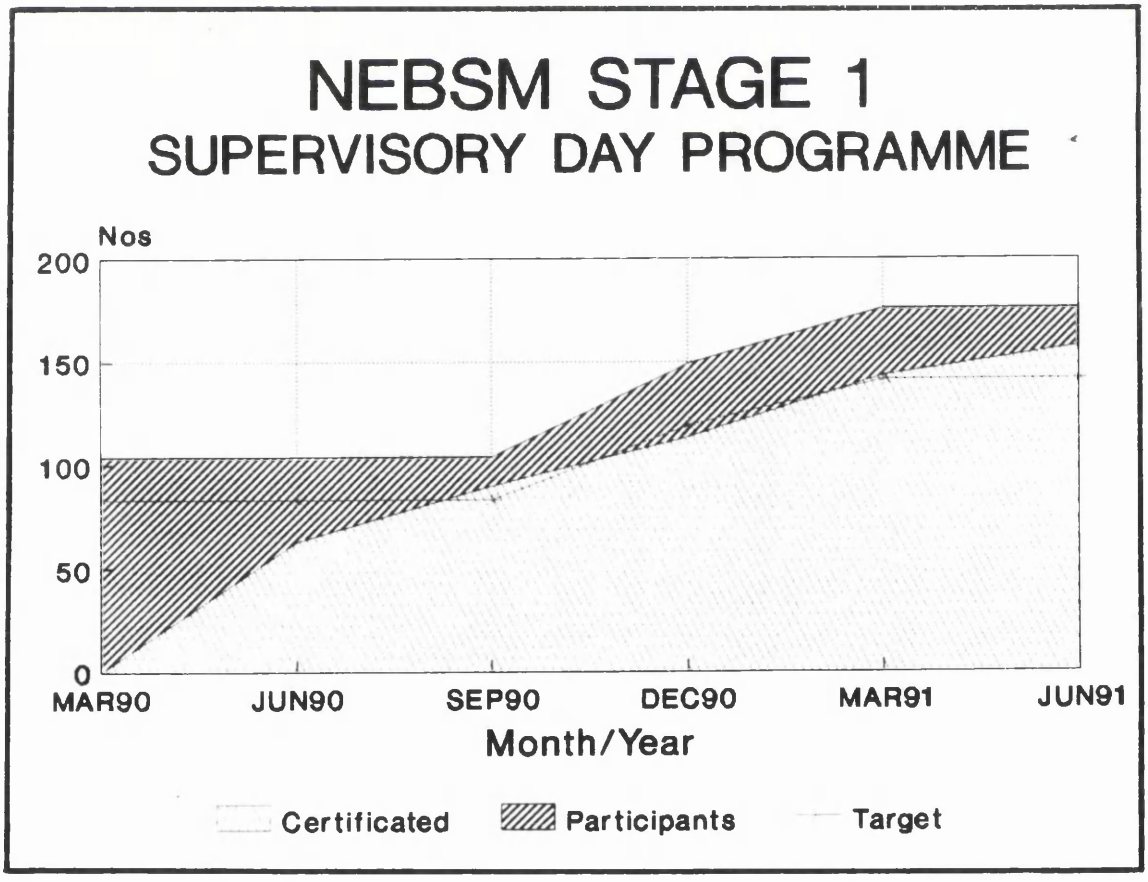
The training introduced by Kvaerner was work related and included units of training associated with budgetary control, communications, leadership and health and safety amongst others. These were all areas of the business where supervisory skills and knowledge was limited and where company performance was regarded as poor.

The principal aim was to improve supervisory performance by ensuring that the supervisors were trained on all aspects of their job. This was defined to include the areas where they had no previous experience and for which they were now accountable. The company was underlining its concern to deploy well trained and qualified supervisors as a vital ingredient of organisational efficiency.

Initially, the training was directed at the existing production supervisors. The 104 incumbents had received little by way of effective supervisory training and had little by way of professional supervisory management qualifications.

The training initiative, thereafter, was extended to include the supervisors and managers in the commercial and technical areas of the company. In total, therefore, 154 supervisory/management staff were committed to an introductory training programme consisting of the 5 training units, discussed earlier, leadership, supervisory authority, communication, budgetary control and Health & Safety.

This part of the training programme was compulsory. However, given that the vast majority of the participants were taking part in this type of supervisory management training and education for the first time, the company did not expect all participants to complete the introduction stage successfully. They took the view that, in educational terms, success would be achieved if 80% of the participants gained the introductory award and, as illustrated in 14.5, this target was achieved.

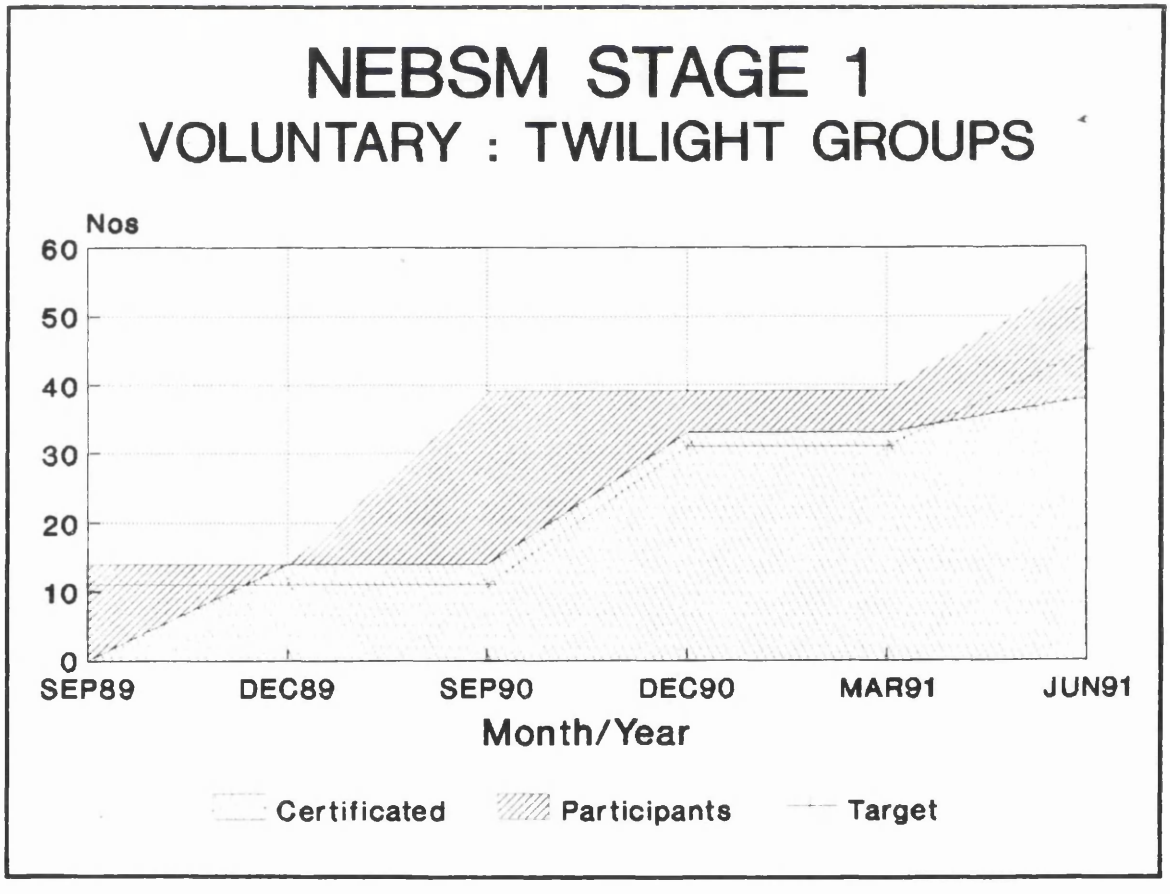


SOURCE: *Bisset (1992)*

Figure 14.5

The successful candidates were awarded the introductory certificate in Supervisory Management by the National Examination Board. The majority continued on a two year programme aimed at gaining full certification. Those who were unsuccessful or who did not continue in the programme did so in the knowledge that further promotion was no longer available to them.

Significantly, most of the training was done at home with only a 2 hour tutorial session once every three weeks, carried out on site at Kvaerner. The tutorials were arranged to suit the working shifts operating in the yard. Dayshift supervisors attending dayshift tutorials and nightshift attending tutorials arranged during their shift. In addition, a further supervisory/management training initiative was aimed at potential supervisors, the employees who were being groomed for future supervisory positions.



SOURCE: *Bisset (1992)*

Figure 14.6

This was to ensure that, prior to promotion to a supervisory post, the employee had received appropriate training and, in this way, the weekend miracle was avoided. In total, some 60 employees operating in the production, commercial and technical departments of the company, participated in this programme and, as indicated in figure 14.6, their performance toward achievement of the introductory certificate was good.

Notwithstanding the merits of the educational qualification associated with the training, the principal aim of this initiative was, of course, to raise the performance level of supervisors and management. The recently appointed Procurement Director stated:-

> "We believe that this qualification will greatly assist managers and foremen in the company to carry out their supervisory duties in the workplace with added confidence and commitment." (Bateman 1991).

5. CONCLUSIONS

The second phase of the Kvaerner Govan 'action programme' had two key characteristics. First, the programme aimed at increasing the efficiency of shift and overtime working hours and struck at the very heart of what remained of the shipyard's traditional practices and values. Second, it focussed on structures, in seeking to eliminate the costly and inefficient bureaucratic supervisory management structure whose principal function was to organise the shipyard's manpower.

At one level of analysis, this phase of the 'action programme' was all about 'fine tuning'. The actions associated with the programme's initial phase had recovered the manhours management and hitherto conceded to non-productive activities and removed manpower inhibitions. This had effectively increased the manhour and manpower resources available for productive work, influenced the shipyard's work ethics and tackled the problems of managerial discipline and control over manpower resources. Phase Two was concerned with how best to organise the shipyard's new increased manhours and manpower to best suit the products being built and the construction programme, taking account of the plant, equipment and facilities available in the shipyard.

The perception that Phase Two was 'fine tuning' does not detract from its importance. There would, in fact, be little point in increasing manhours and manpower availability if the problems of how best to use it remained. To that extent Phase Two was critical and, in a sense, was rather akin to the 'fine tuning' of a high power racing car. The car owner invests heavily in powerful resources to compete with the world's best but unless these resources are 'fine tuned' they will be sluggish and will not produce maximum efficiency. Kvaerner were, therefore, aiming to fine tune their powerful resources to compete efficiently with the world's best in the international market place, by ensuring that the shipyard's most powerful resource, that of manpower, was being used most effectively.

The Phase Two actions included:-

(a) Control of shift and overtime working hours and the selection of the shipyard workers to work moving from the shop stewards - moving from the shop stewards to management. Responsibility and control was placed in the hands of the people best suited to getting maximum performance.

(b) The introduction of a disciplined three shift working arrangement ensured that the custom and practice of working hours was replaced by an organisation that was product or customer based. Thus it was more capable of meeting the demands of an efficient and competitive shipyard environment.

The actions were contentious and evoked a reaction from the workforce and ultimately led to a two week strike. Arguably, however, the strike was not really about shift and overtime working arrangements there was another hidden agenda. This interpretation is supported by the ease by which the shift and overtime working arrangements were introduced and the fact that the backshift was resourced, in the main, by volunteers. The fact was that the strike was the platform to enable the unofficial voices to vent their disapproval of what was going on in the shipyard. It was a last gasp effort on their part to turn the clock back to the 'good old days' with all of the inefficiencies that entailed and a bid to regain the powerful base they previously occupied. The folly of this 'yellow brick road' scenario was, however, cruelly exposed during the strike and economic reality prevailed.

The evidence also suggests that the reorganisation of the costly and inefficient bureaucratic supervisory management structure increased shipyard efficiency in terms of manpower organisation in that:-

(a) If viewed simply from a cost basis the elimination of three layers of management reduced staffing levels and, as such, staff overhead costs. In fact, the reduction in overheads was significant given that support staff was reduced from 588 to 380.

These reductions were, however, only half the story: the reduced overheads now supported 2.5 million manhours, which now build two as distinct from one ship per year.

(b) It improved communications, effectiveness and performance of supervisory management staff by redefining the job roles in the new flatter organisational structure. In effect the supervisors and managers were told what was expected of them, their key outputs and the support they would have from the company. Included in the support was a structured training programme aimed at equipping them with the type of supervisory management skills their redefined jobs required.

It would be reasonable to conclude, therefore, that the phase two action programme increased organisational efficiency in terms of working hour and manpower organisation and it was a vital link of the manpower strategy aimed at transferring the hitherto uncompetitive Govan Shipyard into a viable Kvaerner Govan Shipyard.

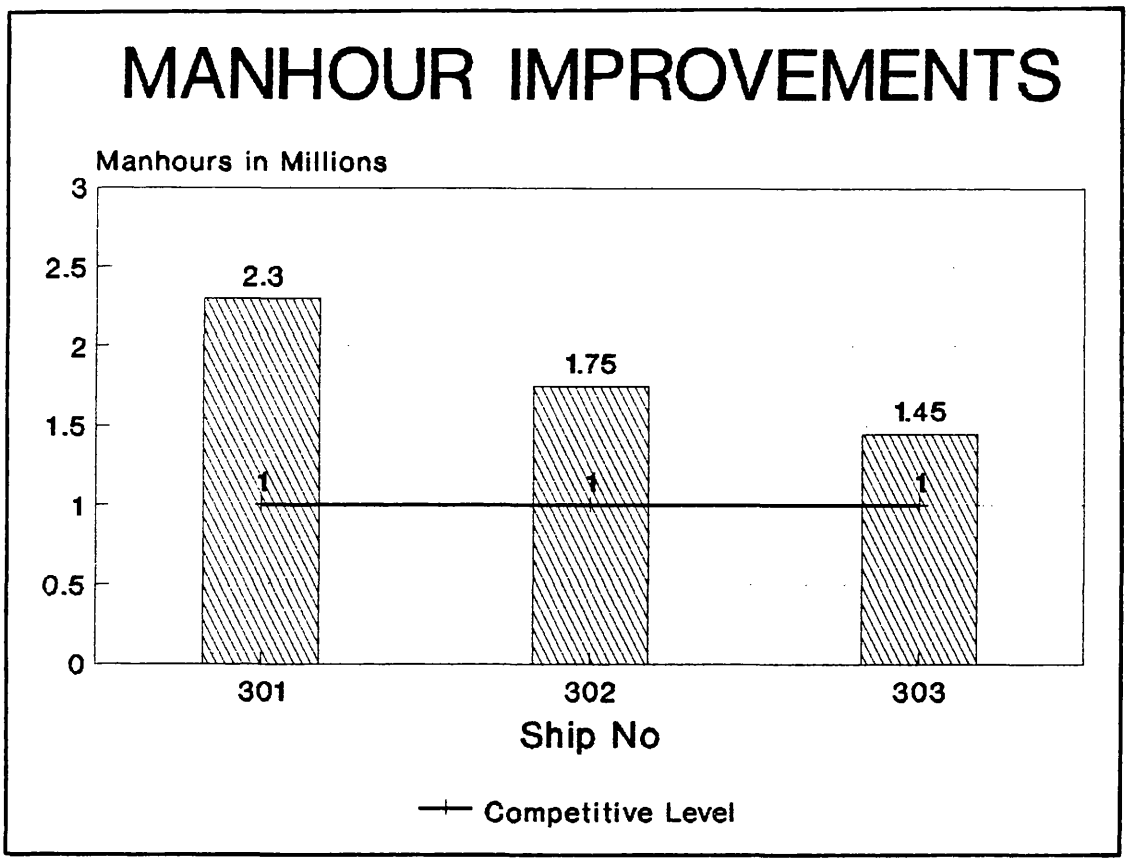
6. EFFECTIVENESS OF THE STRATEGY

The overall aim of the Kvaerner strategy was, of course, to transform the uncompetitive Govan shipyard into a competitive, viable, shipbuilding operation. This to be achieved principally by reducing, by approximately 50%, the manhour content of building ships at Govan. Kvaerner, however, recognised that a reduction of this magnitude would not be achieved overnight. Equipment, plant, machinery and facilities had to be installed. A range of far reaching manpower actions had to be developed and implemented. The negative counter-productive attitudes of the shipyard workers, their supervisors and managers had to be overcome and economic realities had to prevail. The culture of the workplace had to change.

Kvaerner believed that a two year time frame was appropriate to set in place the individual components of the strategy and, thereafter, predicted that the shipyard would cease to be a loss maker one year later. To achieve these targets the Govan Shipyard had to build their ships at what could be termed as competitive levels. In market terms, competitive shipyards constructed L.P.G. vessels of the type and size built at Govan using 1 million manhours. This, in simple terms, meant that to transform the uncompetitive Govan shipyard into a competitive shipbuilding operation, Kvaerner had to build their L.P.G. ships at Govan for a similar or lesser number of manhours. The target for competitiveness for L.P.G.'s was, therefore, established at 1 million manhours. At the commencement of the two year time frame, beginning with the signing of the 1990 Industrial Relations Agreement, there was an indication of the normal Govan shipyard performance in L.P.G. vessels.

The bulk of the first of the four L.P.G.'s on the order book and a large proportion of the second had been completed. The first of the vessels was identified in the shipyard as hull number 301 and, on delivery, the manhours taken to build the ship were estimated at 2.3 million. This was more than twice that taken by the competition and still 1.3 million manhours in excess of the market place demands.

The challenge of the Kvaerner strategy and, in particular, the manpower policies and initiative, was to eliminate these excessive manhours over the period of construction allocated to the three remaining L.P.G. vessels. The strategy's effectiveness, as measured by the reducing manhour content of the Govan built L.P.G., is illustrated in figure 14.7.



SOURCE: *Bisset (1992)*

Figure 14.7

From the 'normal shipyard performance' of 2.3 million manhours in 301, the manhours taken to build 302 was reduced to 1.75 million and a further reduction to 1.45 million manhours for 303. The forcast was that the manhour content of 304, due for delivery in March 1993, would show a further reduction and would be in the region of 1 million manhours. Consequently, in terms of competitiveness, the Govan shipyard is on target to build their quality ships at market levels.

This is supported by the fact that they succeeded in securing the biggest shipping order placed in the UK and valued at £380 million for 5 chemical carrying vessels, the last 4 of which were confirmed on 19th December 1991.

> "The biggest merchant shipping order placed in the UK for several years has secured the jobs of 2,000 workers at the Govan yard, on the Clyde, for the next three years." (Evans 1991).

The order was won in the tough international market place and the Govan shipyard fought off competition from 70 other shipyards throughout the international shipbuilding community. Kvaerner Govan succeeded in gaining the contracts and, in so doing, securing the future of the Upper Clyde's last remaining merchant shipyard.

CHAPTER 15 CONCLUSIONS

1. INTRODUCTION

This thesis has attempted to provide an account of the approaches to manpower utilisation adopted and practiced at the Govan shipyard as it progressed through different economic, managerial and organisational phases. This detailed account was framed in terms of four different 'models' of manpower utilisation identified as:-

1. The Classical Approach.

2. The Scientific Management Approach.

3. The Flexible Working Approach.

4. The New Realism Approach.

These four successive models reflect different phases in the development of the shipyard, each in their own way responding to different technologies, different economic and market circumstances and different organisational forms. The models were, of course, not discrete, but the progression from one to the next, though continuous in time, represented a move to a new paradigm.

Part of the purpose of the thesis has been to develop conceptual models which can be used analytically to understand the processes of change and the significance of the successive moves from one approach to manpower utilisation to another. A framework borrowed from Douma and Schreuder (1992), who draw on the work of others, notably Coase (1937) and Mintzberg (1989), was used to establish a conceptual model for this purpose.

In concluding this thesis, we wish to underline the significant differences among the four models of manpower utilisation identified in the foregoing chapters. We would argue that they do, indeed, represent distinctive models with key differences in their approach. These have been discussed in detail in earlier chapters but here it is worthwhile spelling out, a little more clearly, in what respects they differ and this is the first main purpose of this chapter.

Secondly, we have developed and used a conceptual framework to help us understand the changes between models. In retrospect we need to ask whether this framework has served its purpose adequately. To address these questions the conclusions will be set within the context of some literature relating to organisational effectiveness and human resource management and the 'conceptual framework' will be used to draw conclusions on and to explain, on a model by model basis, the developments associated with the individual approaches.

2. THE CLASSICAL APPROACH

During the nineteenth and into the twentieth century, the Govan shipyard adopted and developed this approach in response to changing technological and economic circumstances. Technology had enabled ships to be built from iron and steel instead of wood. Steam power had replaced sail as the principal means of ship propulsion and shipbuilding tasks and functions were carried out more productively by power generated machines rather than by the muscular physical efforts of the shipyard workers.

From the economic point of view, the competitive demands of the iron and steel shipbuilding market place, as distinct from those of the old wood using industry, meant that the shipyard could only achieve profitability if it took account of technological advances.

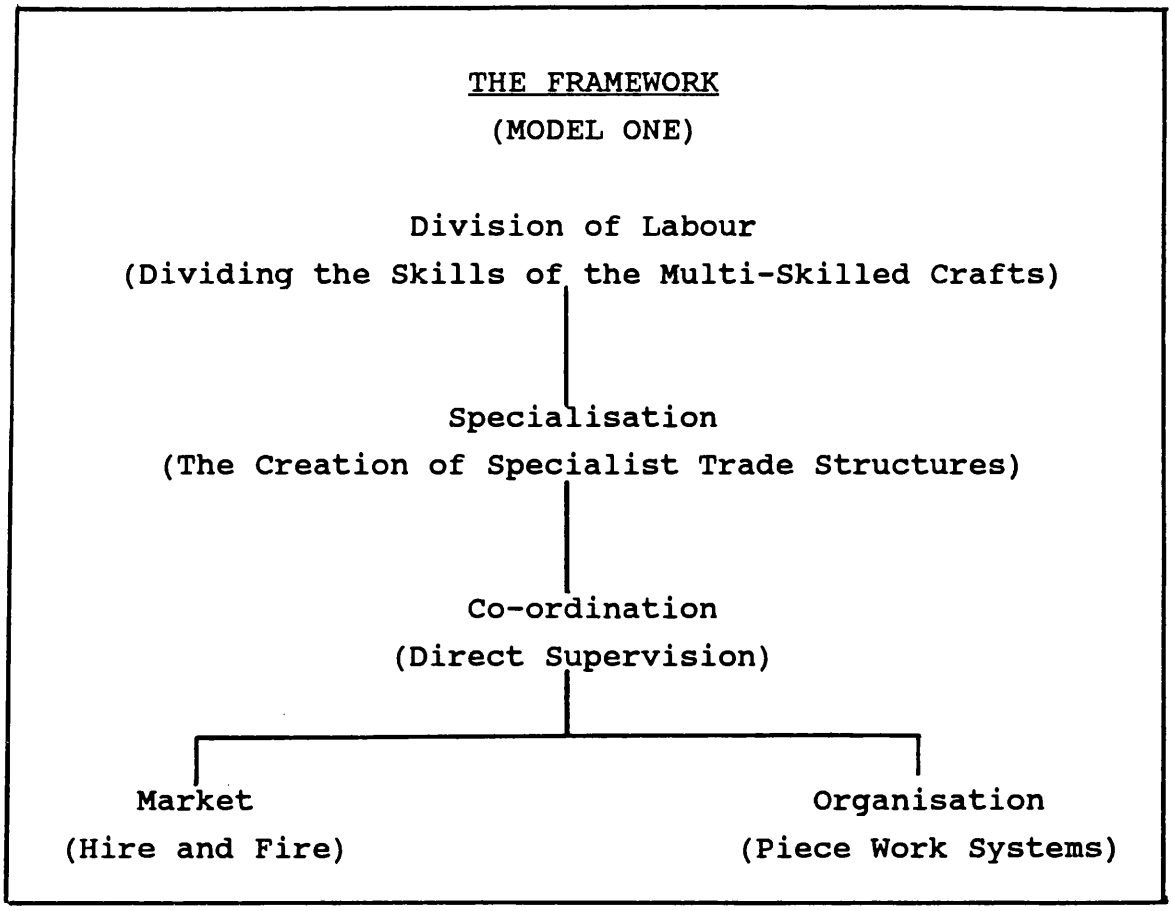
These advances led to major changes being made to the way the shipyard workers were utilised and organised. The multi-skilled craftsman give way to trade specialists. New machine related skills had to be learned for preparation, shaping, cutting and fabricating of metal.

What emerged was the approach to manpower utilisation based on specialisation we have defined above, as 'The Classical Approach', discussed as 'model one' in Chapters 4 and 5. The degree of specialism was limited, however:

> "While increasing specialisation of the workforce in the British shipbuilding industry from the mid 19th century onwards acted to narrow the range of tasks an individual worker was called upon to perform and so decrease skill requirements, it is important not to confuse this specialism with the more extreme forms of the division of labour associated with e.g. Adam Smith's example of the pin manufacturing." (Lorenz 1991 Page Ref.54).

Lorenz's point is well taken. The iron and steel shipbuilding industry was more complex than that of pin manufacturing and this meant that it was not possible to specialise shipyard manpower to the extent that a worker repeatedly performed one simple task at one location in the production process. The division of labour in shipbuilding therefore had a much broader occupational or craft base and to this extent the emphasis was on work group rather than individual specialisation.

Using the framework borrowed from Douma and Schreuder (1992), illustrated in figure 15.1, it is possible to present some conclusions and explain what the management at Govan were trying to do by moving to work group specialisation and adopting the classical approach to manpower utilisation.



SOURCE: *Based on Douma & Schreuder (1992)*

Figure 15.1

In shipbuilding, division of labour occurred when the skills of the multi-skilled shipwrights, who built the old wooden ships and those of the boilermakers who constructed the steam generated boilers that provided the energy for ship propulsion, were divided into a number of specialist trades. This narrowed the job content and made the job easier to learn.

> "By defining jobs narrowly and making each job easy to learn many firms obtain increased productivity through specialisation and through the interchangeability of workers with limited skills and experience rather than training workers to become multi-skilled." (Lynch 1991 Page Ref.9).

This degree of specialisation brought about the shipbuilding craft and trade structure and from the multi-skilled craft of boilermaking alone emerged the individual trades of Platers, Riveters, Drillers, Caulkers, Template Makers, Markers Off and Welders. Each trade was allocated a range of tasks and trade boundaries were established for the individual trades. Thus multi-skilling gave way to trade specialisation which allowed for efficiency and productivity gains. However, with this increased specialisation our conceptual framework suggests there is a need for co-ordination to arrange a network of exchange between the specialists.

Mintzberg (1989) provides a technology of organisation which enables us to distinguish the form of co-ordination associated with our trade specialisation as being that of 'direct supervision'. The foreman provided this and knew exactly what authority and responsibility he had in this role. He co-ordinated the work of the specialist workers by issuing orders and instructions and his authority stemmed from the fact that he could influence the workers employment prospects and earning levels.

In terms of influencing employment prospects the foreman had authority to regulate the numerical strength of the workforce and 'hire and fire' manpower in line with the demands of the shipbuilding market place. The foreman decided if workers were suitable for employment or if they were to be fired. This 'hire and fire' policy was important and enabled the shipyard to utilise its manpower effectively. This policy was made possible by the fact that the Govan shipyard was located in a district where shipbuilding was the principal industrial sector in the economy. (And, indeed, this concentrated market for shipbuilding labour, with its specialist trades, was common in all the main shipbuilding areas of Britain down to the 1960s and 1970s).

> "An individual employer could use a 'hire and fire' policy without risking permanent loss of skilled labour for the district, as it was generally possible for a worker to find comparable employment with another firm." (Lorenz 1991 Page Ref.62).

Thus workers 'fired' from Govan could find work in another nearby shipyard and did not have to leave the district or search for work outwith their trade. In this way there was a well developed external labour market for shipbuilding workers, providing a mobile supply of manpower that simply moved from yard to yard as the need arose. The organisational forms associated with direct supervision were, in this case, closely limited and complementary to, the external labour market.

Another option available to the foreman, in his co-ordination role, was his ability to influence his workers earnings level through his control of the incentive payment systems such as 'piece work'. This control also enabled him to influence the workers individual performance. Through the piece work system he allocated work on the basis of skill and determined the rates of pay, controlled quality and workmanship and ensured that the job progressed to plan.

In terms of our conceptual framework, therefore, the classical approach, depicted as model one, took as its start point the broader based skills of the shipwrights and the boilermakers. It divided these skills into a number of specialist trades and created a shipbuilding craft and trade structure with boundaries that defined 'who does what'. Co-ordination was provided by powerful foremen who utilised the external labour market through their 'hire and fire' policy to regulate their manpower requirements and utilised incentive payment systems to organise work. The classical approach thus combined both internal oganisational controls with free use of a well-developed specialist labour market.

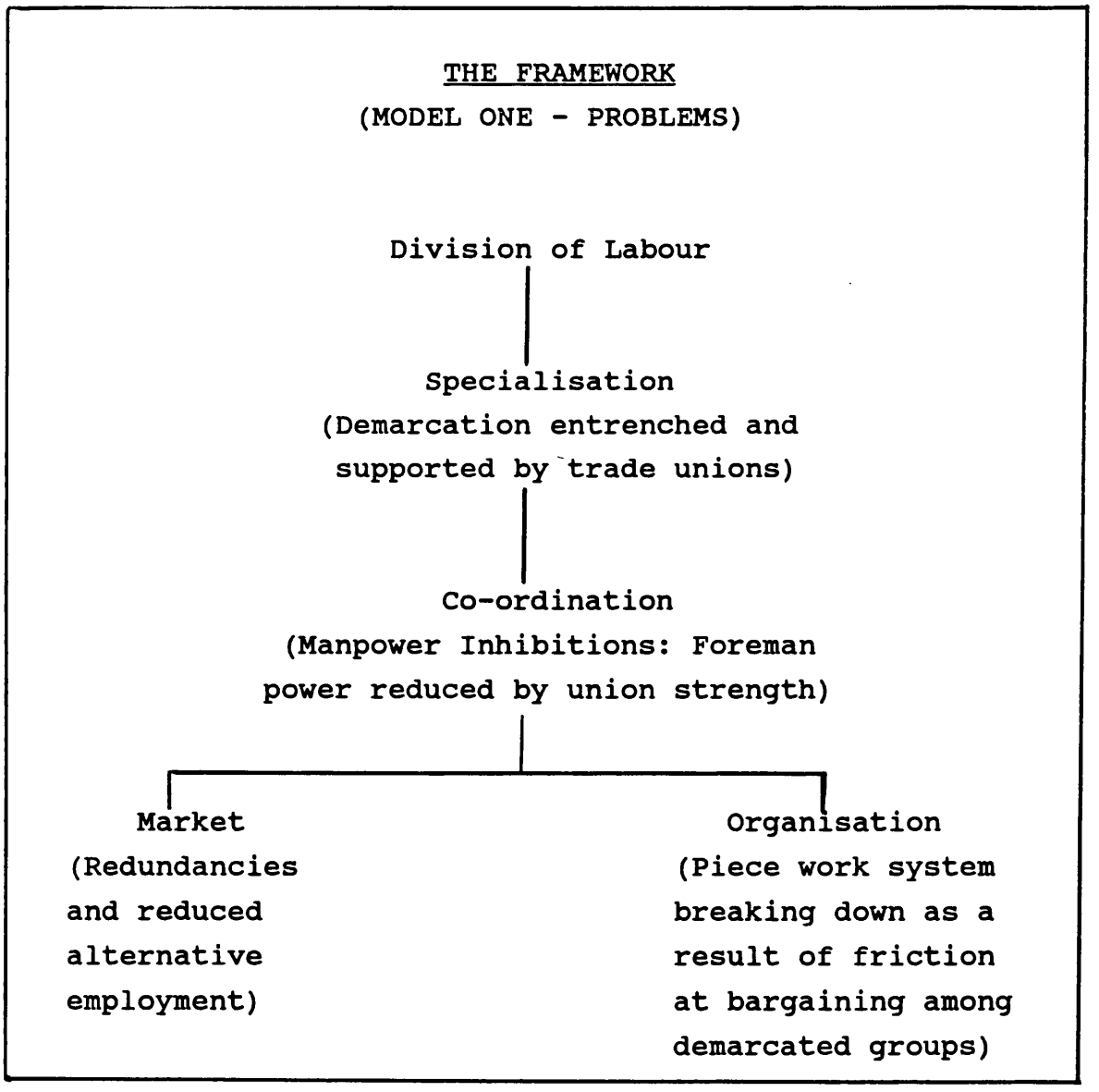
3. THE SCIENTIFIC MANAGEMENT APPROACH

This approach was a modified form of scientific management, reliant on industrial engineering techniques, allied to a participative approach to industrial relations. The Shipyard's adoption of the approach was directly related to economic circumstances, technology and product market conditions and management desire. The problems of manpower utilisation and industrial relations had inhibited economic growth. Govan had become an unprofitable and uncompetitive shipyard. Uncompetitive shipyards elsewhere were closing. By 1965 eight of the Upper Clyde's 13 yards had already closed and the Govan Shipyard itself was on the brink of closure. Significant changes in technology and product market conditions took place after World War II in world shipbuilding.

> "Ships became larger and more standardised. The rapid increase in world demand for ships in combination with new, more capital-intensive technology based on welding and prefabrication encouraged often dramatic increase in the scale of production with significant variations between stages of ship construction, the result was increasing routinization of work and its simplification through mechanisation." (Lorenz 1991 Page Ref.96).

The new management of the Shipyard wanted to conduct an 'industrial experiment' at Govan. This 'experiment' involved new management techniques; new communications systems and industrial relationships were established, requiring age old traditions and customs to be set aside. Counter productive attitudes were challenged and productivity agreements concluded locally. Management, in a sense, sought to re-establish competitiveness and raise efficiency by sharing control: shop stewards were given a role in management processes. As a result the direct supervisory control of the foreman was broken down and displaced.

Using our 'Conceptual Framework' it is possible to draw a number of conclusions on what the new management were trying to do. In our terms they were adopting a scientific management approach not, perhaps, of the Taylorist variety common in the early twentieth century, but one modified by an 'enlightened' industrial relations approach which aimed to increase workforce and union participation in the production and managerial processes. This framework, illustrated in figure 15.2, is used to present conclusions on the manpower utilisation and industrial relations problems they faced.



SOURCE: *This and the following 'Framework' charts are variants of the basic scheme provided by Douma & Schreuder (1992)*

Figure 15.2

The historical division of labour had created trade specialisation which gave way to trade demarcation and restrictive working practices, bound in by custom and, latterly, by the protection afforded to them by trade unions support. With changes in design and materials, on a continuing basis, conflict and dispute arose between the various trades over 'who does what' as one trade group repelled an encroachment of another over their demarcated boundaries. Industrial relationships between the individual trade groups (even within a single union) and between the workers and management was poor and lacked trust and co-operation.

> "The effect of such disputes was to generate a high degree of distrust over any proposed change in institutional arrangements that threatened to alter the established division of labour between the groups of skilled workers." (Lorenz 1991 Page Ref. No.71).

Co-ordination of manpower, essential to any efficient manpower system, was inhibited by this demarcation and the distrust and lack of co-operation associated with it. The specialist tradesman was unable to progress work without the services of workers from a different trade. A plater fairing a butt, for example, in addition to a helper required the services of a welder to tack and a burner to remove obstructions. Four workers to do a job that the plater, but for demarcation, was able to carry out by himself. Co-ordination was also inhibited by the fact that each of the tradesmen had a different specialist foreman. The result of these restrictions was that productivity was low, inefficiency was rife, overmanning widespread and the shipyard increasingly uncompetitive and unprofitable, in an era when overseas competition was rapidly growing.

Market forces also contributed to the co-ordination inhibitions. The closure of eight of the Upper Clyde shipyards damaged the 'hire and fire' option. Shipyard workers 'fired' from Govan no longer readily picked up a job at the nearby shipyard. Instead they faced the prospect of unemployment or seeking alternative employment outwith the district or industry.

> During the 1960's the casual nature of employment (hire and fire) became a focal point of discontent amongst workers. As the 1960's progressed this increasingly resulted in the loss of skilled labour to other industrial sectors offering a greater degree of employment security." (Lorenz 1991 Page Ref. 119).

Thus redundancy and lack of job security were industrial relations issues which inhibited co-ordination. The decline of the Upper Clyde industry was a contributory factor in this.

In the mid - 1960's the new management response to those associated manpower utilisation and industrial relations problems was the adoption of an approach defined here as Scientific Management which sought to ally a disciplined management approach to work control with a participative approach to industrial relations. This approach was discussed as model two, in chapters 6 and 7.

Our 'Conceptual Framework', illustrated in 15.3 enables us to draw conclusions on what the management were attempting to do.

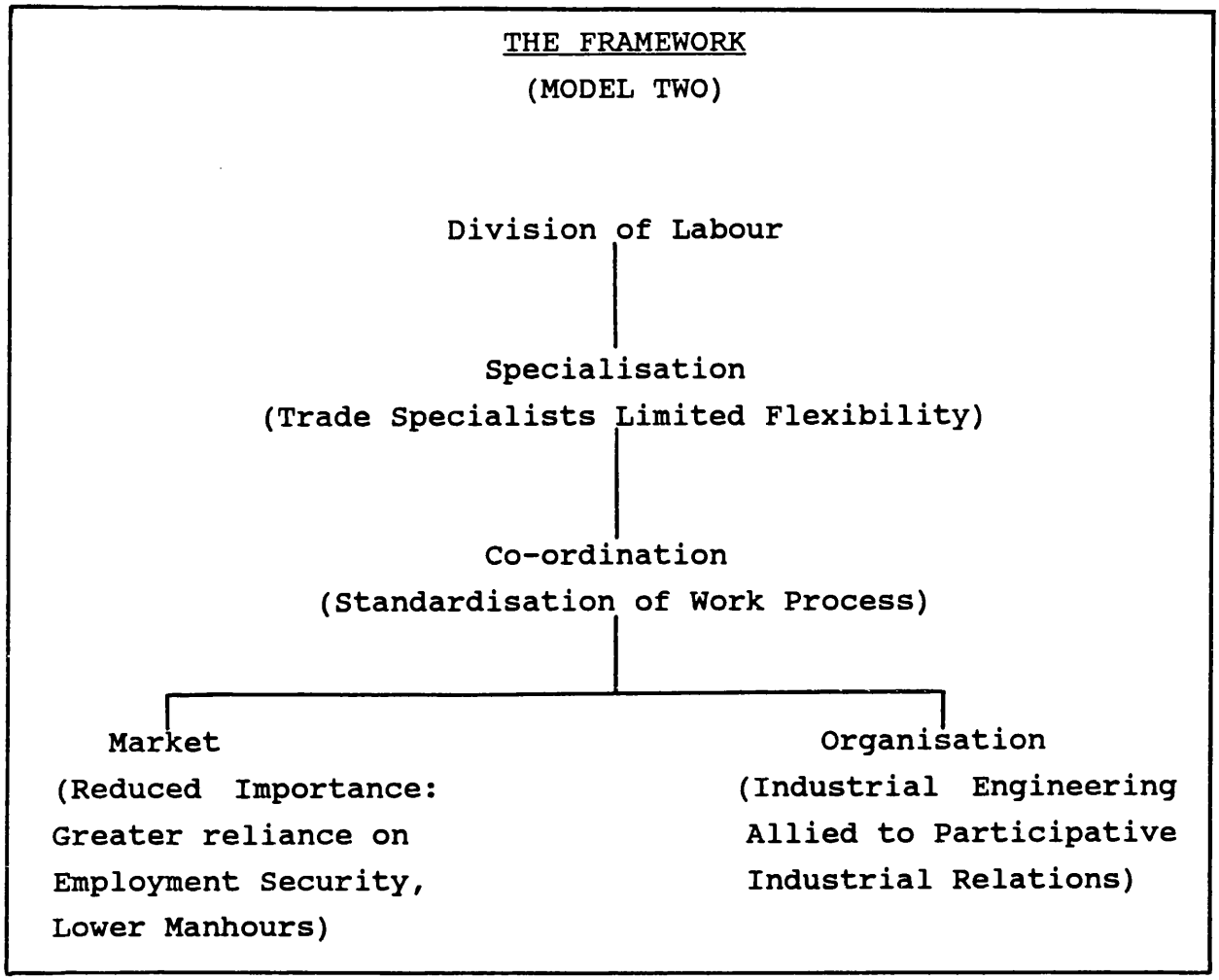


Figure 15.3

The scientific management approach took as its start point the division of labour and the presence of the specialist craft and trade structure now backed up by trade union power. It departed from the classical approach:

i) By extending the skills of the specialist to include those required for a limited form of flexible working.

ii) By replacing the direct supervision approach by a work standardisation system developed by the industrial engineers.

iii) By seeking to replace the unstable payment system by a form of measured daywork.

iv) Seeking to regain management control by sharing power in the workplace with workers and their union representatives.

i) Skill Flexibility:

A plater, for example, through training extended his skills to enable limited tack welding and burning to be performed.

> "This creates a new type of flexibility in the workplace which is more comparable with rapid technology and new production techniques----- Broader skills training for all workers reduces the need for supervision and allows the day to day management of the firm to be performed." (Lorenz 1991 Page Ref. 140).

Limited trade flexibility aimed to ease the manpower utilisation problems caused by trade demarcation: area supervision was adopted to ease the manpower inhibitions caused by specialist trade foremen and the associated difficulties of co-ordination.

ii) Standardisation of Work Process:

The most noticeable change, however, in terms of our conceptual framework was in the method of co-ordination. Direct supervision was replaced by a form of co-ordination distinguished by Mintzberg (1989) as 'standardisation of work process' which sought to achieve co-ordination by specifying the work process of the shipyard workers carrying out inter-relating tasks. The standards and instructions were developed by industrial engineers and based on time and motion studies. This process of work standardisation and instruction was one of the cornerstones of the scientific management approach given that the aim was to introduce new management techniques, communication systems and industrial relationships which sought to ally a management approach to work control with a participative approach to industrial relations.

iii) Participative Industrial Relations:

Standardisation of work process was seen, therefore, as a means of achieving the standards of work and output which the market demanded. This could not, however, be achieved in a purely technical way because management faced a long established workforce culture based on the crafts on which the industry was built, and entrenched by the activities of the shop stewards in policing their work areas. Hence the need for participative industrial relations and a role for the shop stewards in management processes.

This and the replacement of direct supervision as the means of co-ordination had major implications for the role of the foreman. His ability to influence employment, earnings and performance diminished. The hire and fire policy; control of planning, manpower resourcing, quality, performance and discipline were allocated to service departments. Formal authority associated with the job diminished and management and shop floor influence eroded with the onset of the shop stewards participation in management processes.

iv) Withdrawal of Incentive Payment Systems:

Incentive payment systems had been part of the control mechanisms traditionally used to secure desired output levels. Fractional bargaining in the yard at work group level, undertaken by the shop stewards, had bypassed the foremen and helped to create wage escalation and chaotic wage structures such as the Donovan Commission complained of in 1968. This was to be replaced by a measured day work system which sought to control the chaos.

A significant 'sea-change' took place within the shipyard as a result of the 'experiment' and the adoption of updated scientific management approaches.

The most significant, in terms of manpower utilisation, was the popularisation of productivity agreements and the emergence of a shop steward movement which converted an acquired power base into a platform of authority that enabled them to influence the shipyard management's decision making process and to influence the attitudes of the shipyards workforce.

> "However sceptically the Fairfield (Govan) experiment was viewed at the time by the majority of employers, and however ambiguous the results, it was significant in popularising the concept of productivity bargaining in shipbuilding." (Lorenz 1991 Page Ref. 120).

But, we would argue, it also contained the seeds of future problems which could only be eradicated by management winning back the right to manage. That would require not only a credible plan for effective manpower utilisation but also a redrawing of the lines of industrial relationships between management and unions.

4. THE FLEXIBLE WORKING APPROACH

Whatever the outcome of the Fairfield experiment might have been, we shall never know for it was overtaken by events, specifically the Government's initiatives which led, firstly to the inclusion of the Govan Shipyard in the ill-fated Upper Clyde Shipbuilding and, secondly to the Nationalisation of British Shipbuilding and the inclusion of the Govan Yard in a new nationalised corporation in 1977. The latter initiative produced a new approach governed by the centralised nature of the new nationalised organisation seeking to face up to the problems of a national industry undergoing continuing decline.

Shipyards throughout the United Kingdom were closing. What remained of the industry was on the verge of extinction. The surviving shipyards, including Govan, were unprofitable. The U.K.'s share of the international market had crumbled. Competition was cut-throat. Productivity levels of U.K. shipyards were uncompetitive. In technological terms, plant, equipment and facilities were inferior to that of the foreign competition. Little or no investment had been made in new technology. What little modern technology had been introduced was rejected by shipyard workers anxious about their jobs, or used inefficiently because of excessive manning.

Direct shipbuilding jobs in the U.K. were reduced to 87,000 from 290,000 between the period 1948 to 1978. Unemployment in shipbuilding communities were above the national average and rising. Shipbuilding capacity, although dramatically reduced, exceeded demand and further job losses and shipyard closures were imminent. Suspicion and fear was rife. Trust and confidence between workers and management had all but disappeared.

Our 'Conceptual Framework', illustrated in figure 15.4, enables us to present, in a Govan context, a number of conclusions on the status of Model Two, at the time of nationalisation.

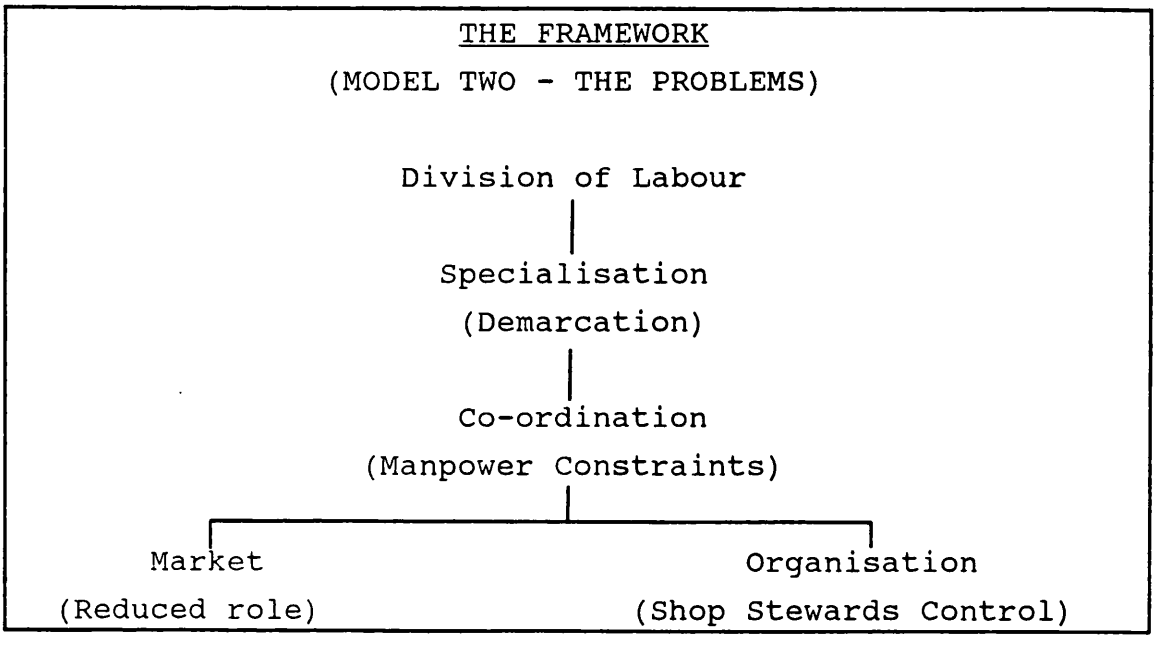


Figure 15.4

The limited flexibility associated with the specialist trade structure, a major feature of the scientific management approach had ended by the time that the shipyard was nationalised.

Manpower co-ordination was inhibited by the return of trade demarcation, overmanning, restrictive working practices and by a powerful shop steward movement whose support for these inhibitions was based on the logic that it saved jobs.

> "From the perspective of the shop floor and the individual craftsman, the logic of job control as a strategy to protect future job opportunities remained intact." (Lorenz 1991 Page Ref. 119).

Rather than save jobs these inhibitions were responsible for job losses and shipyard closures given that they were a principal factor of uncompetitiveness.

> "Foremost was the severity of the crisis, as increasingly effective foreign competition forced the number of major producers to close. The employers identified restrictive union practices as a principal cause of the significant productivity differences between British and continental producers." (Lorenz 1991 Page Ref. 118).

Thus the issue of co-ordination inhibitions was critical. From a market perspective lack of competitiveness meant insufficient orders. Shipyards without orders closed and those remaining reduced manpower. Massive job losses and redundancies were common place and this created insecurity for those remaining in work and a further weakening of the role of the external market for shipbuilding labour as redundant workers sought jobs elsewhere in the economy. This thinking was short term: current job protection was all that seemed to matter. Future job security, through increased competitiveness, was not an evident priority.

Co-ordination was also inhibited by confusion. This was due to the demise of the strategy whereby co-ordination was achieved by standardisation of work process. 'Direct Supervision' was not an alternative due to the erosion of supervisory and management authority. The vacuum which existed was loosely filled by the shop stewards who carried out management tasks and whose participation in the management decision making process enabled them to regulate manpower utilisation policy and practice.

Nationalisation changed this. A centralised approach to organisation allied to a flexible working approach to manpower utilisation was established. Our 'conceptual framework' illustrated in 15.5, enables us to draw a number of conclusions on what the management of the nationalised industry were trying to do by adopting this approach.

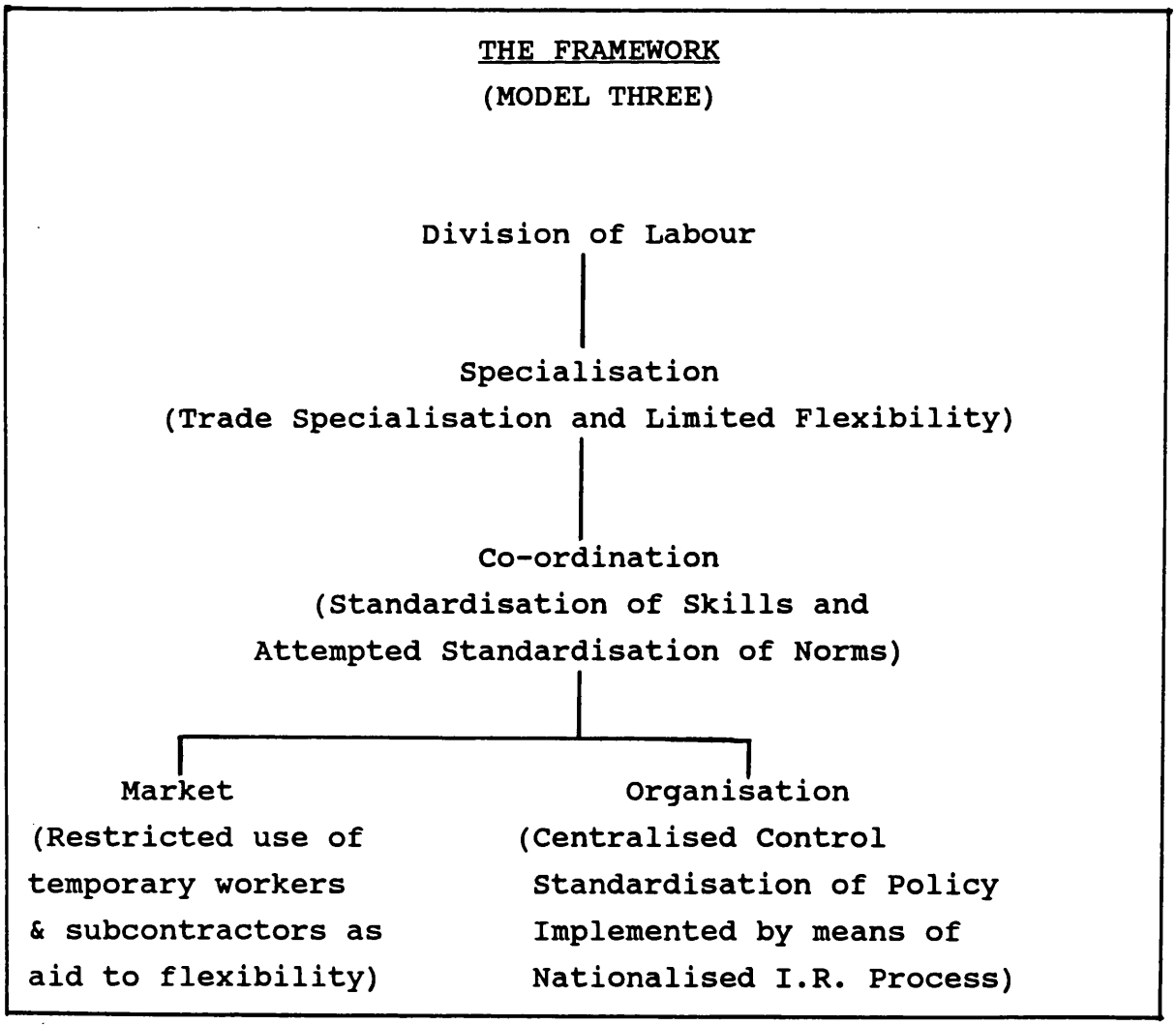


Figure 15.5

The co-ordination, control and direction of all shipyards throughout the U.K. was centralised and placed under the management of headquarter staff. As such, the shipyards lost their right of self determination. The centralised staff decided marketing, investment, financial management and personnel policies. They decided which of the shipyards traded and which closed, who reduced manpower and by how many. They held, in their hands, the fate of the shipyards and controlled the mechanisms to make or break them. The coordination activity was effectively removed to a higher organisational plane, the question being whether the mechanism of control could fill the void left at individual shipyard level.

Manpower utilisation policies were developed at the centre and incorporated into national industrial relations agreements concluded by headquarter staff and the nationalised trade union officials. This bypassed the powerful shop stewards and overcame resistance from local management. The new manpower policies challenged the traditional working practices and were based on a flexible working approach to manpower utilisation.

The specialist trade structures remained at the heart of the flexible working approach but to enable a greater degree of manpower mobility and to ease co-ordinational inhibitions forms of functional and numerical flexibility were added. The concept was good but support agreements for these were cumbersome and bureaucratic, a charter for continued dialogue between local managers and shop stewards neither of whom were the owners of the agreements.

The co-ordination of manpower was based on the policies emanating from these centralised agreements. This conforms to Mintzberg's (1989), standardisation of skills allied to standardisation of norms.

The policies took account of the uncompetitive nature of the U.K. shipyards and their declining share of the international market. Thus the annual round of industrial relations and pay bargaining became closely linked with changes to working practices and restructuring proposals. National agreements were associated with the organisation of manpower and shipyard closures and job losses were associated with pay increases.

The approach to manpower utilisation was confused. On the one hand policies were introduced to improve shipyard competitiveness and on the other restructuring proposals to close shipyards and create job losses. Workers annually were asked to radically alter their 'job saving' working practices to improve competitiveness, yet they had no reason to believe that their job or the shipyard was secure for the duration of the agreements - improve the shipyard's competitiveness one day and close it the next was the perceived theme. This confusion gave rise to distrust between the local shipyard management and the centralised staff and between management and the workforce. Motivation, initiative and morale in the shipyard was low and the attitudes of those who worked at Govan reflected this.

Arguably, the nationalised approach was fundamentally flawed, managing such a massive operation from the centre proved not to be viable. Standardisation and uniformity of policy implementation, in a complex industry with diverse problems and management styles, was never a suitable option. A shipyard, such as Govan, had unique problems and required a management who understood the uniqueness of these and could resolve them. The scientific management approach adopted at the yard in the 1960's proved that a localised initiative could secure progress. Changes, many similar to those of the flexible working were made and productivity and competitive levels improved.

There is nothing to suggest that industrial relations agreements and the flexible working approach, based as it was on a concept akin to that of Atkinson's 'Flexible Firm', were unsound. In fact the reverse is true and conceptually the approach to flexible working is credible. Unfortunately, the effectiveness was inhibited by the remoteness of the centralised approach and the resistance and distrust created by this and the undoubted fact that U.K. shipbuilding capacity exceeded demand.

5. THE NEW REALISM APPROACH

Kvaerner's acquisition of the Govan shipyard and the adoption of the new realism approach to manpower utilisation was based on economic and market considerations. Economically, the yard was a loss accumulating business disaster. Annual losses were in excess of £40 million. The yard was available for privatisation at a modest price. Financial arrangements were available to the new owner for restructuring, redundancy and retraining costs. A cost-plus workload provided a protected lead-in period, E.C. subsidy and attractive shipbuilding mortgage facilities were available to attract potential customers. Market research indicated an upturn in the shipbuilding market by Mid 1990's. The shipping market was changing with more sophisticated cargos transported by sea. Owners were planning to replace their aging fleets with more technology based and safety conscious vessels. A shortage of shipbuilding capacity world wide and a perceived demand for new builds presented profitable market opportunities.

Kvaerner had a long and profitable association with shipbuilding in Norway for over a century and a belief that, with appropriate investment and changes to manpower policies, ships would be built profitably at Govan. Much had to be done to enable this uncompetitive shipyard to take advantage of these profitable market opportunities.

A decade of nationalisation had left the yard riddled with inefficiency, complacency and ineffectiveness. Manpower utilisation was constrained by restrictive working practices, demarcation and overmanning. Managers and the workforce were inhibited by their traditional values. National agreements had not led to improvements in manpower utilisation and industrial relations agreements were not implemented for a sustained period.

The result of this was that ineffectiveness accounted for 50% of productive time and absenteeism levels were in excess of 22%. Morale, commitment and motivation were at an all time low. These were symptoms of a demoralised workforce who had lost faith in their ability to build ships competitively in a profitable environment and instead looked upon Govan as a government 'loss maker' providing a socially responsible function.

Our 'conceptual framework', illustrated in figure 15.6, enables us to present conclusions on the status of the nationalised industry's flexible working approach to manpower utilisation at the time of the acquisition.

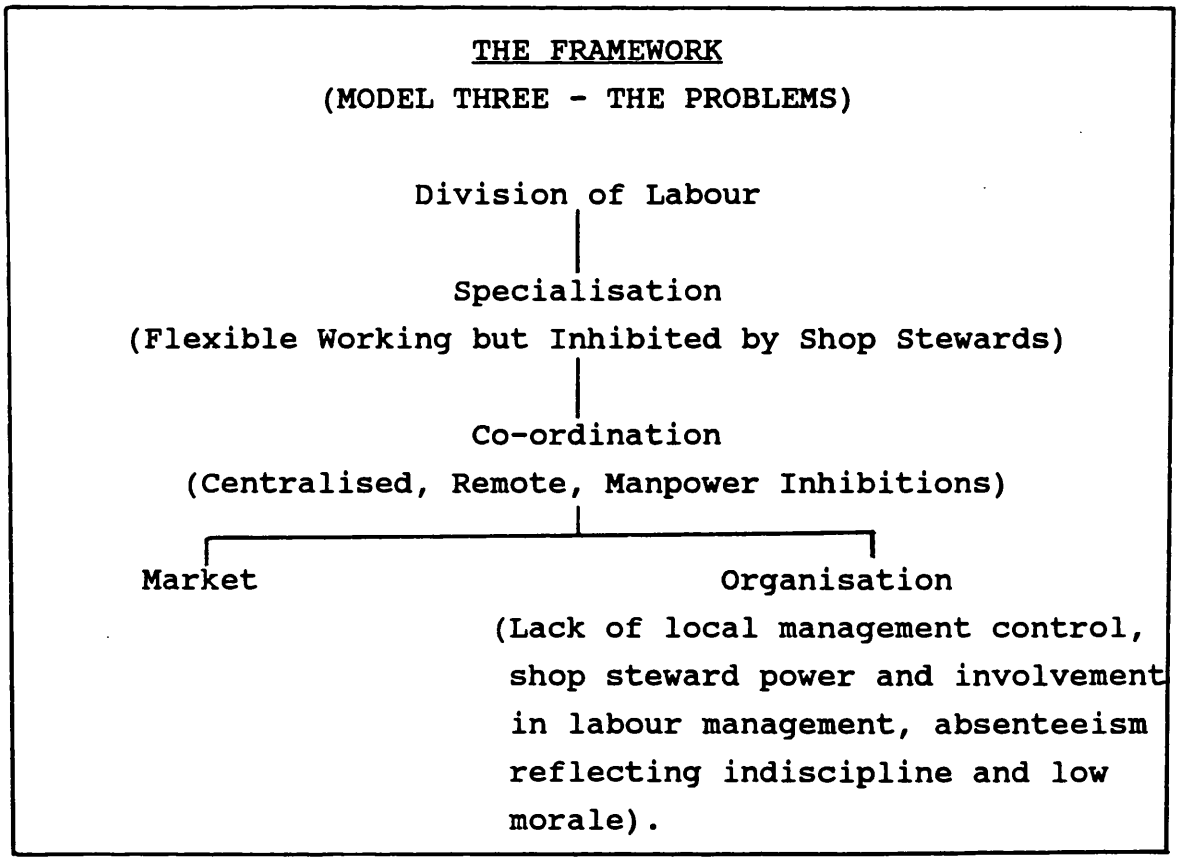


Figure 15.6

Attempts by management to implement flexible working were challenged by shop stewards intent on protecting 'their department members' by preserving the specialist trade structures. Shipyard workers were instructed by stewards, at departmental meetings and in the workplace, on what they could and could not do. Management were helpless, in such circumstances, and this gave rise to a reluctance, on the part of management, to implement the principal elements of the flexible working approach. This restricted manpower co-ordination but it was not the only inhibition. The standardisation and uniformity of policy implementation, the cornerstone of the centralised approach proved problematic. Local management and shop stewards had difficulties with ownership of national agreements and policies. Management were never quite sure of interpretation and application and shop steward created 'department rules' to nullify the effectiveness.

Co-ordination was also curtailed by the workforces' poor attitude and commitment to work. The symptoms of this were evident in the exceptionally high levels of absenteeism and poor health and safety and quality performances. One in four of the workforce were not at their work every day and the effectiveness of those who were, was constrained by the high number of accidents and quality failures. Work programmes had to be re-arranged because of this and the organisation of the shipyard's manpower was seriously affected.

The shop stewards involvement in the organisation of shift working and in the management of overtime working arrangements, a relic of the scientific management approach, inhibited co-ordination. Shifts were voluntary and organised to suit the social and leisure needs of the shipyard workers rather than contractual and market circumstances. Management of overtime working arrangements by the shop stewards gave rise to inefficiency, confusion and confrontation. Thus management's inability to organise the hours of work to suit the production programme seriously handicapped manpower co-ordination.

Kvaerner's response to these and other problems of manpower utilisation and industrial relations was the adoption of the new 'realism approach', discussed in chapters 10 to 14. What emerged was an 'industrial revolution' whereby an uncompetitive loss making shipyard, with a demoralised workforce and management, was transformed into one of Scotland's most successful companies with an export order book valued at £380 million and a 2.5 year workload. The strategy responsible for this transformation, developed and implemented in 3 years, changed the work ethic, shipyard culture, workforce attitudes and industrial relationships. It increased the competence and effectiveness of the workforce and management and provided the base on which competitiveness was improved.

Our 'conceptual framework', illustrated in figure 15.7, enables us to draw a number of conclusions on what the management were doing by adopting the new realism approach.

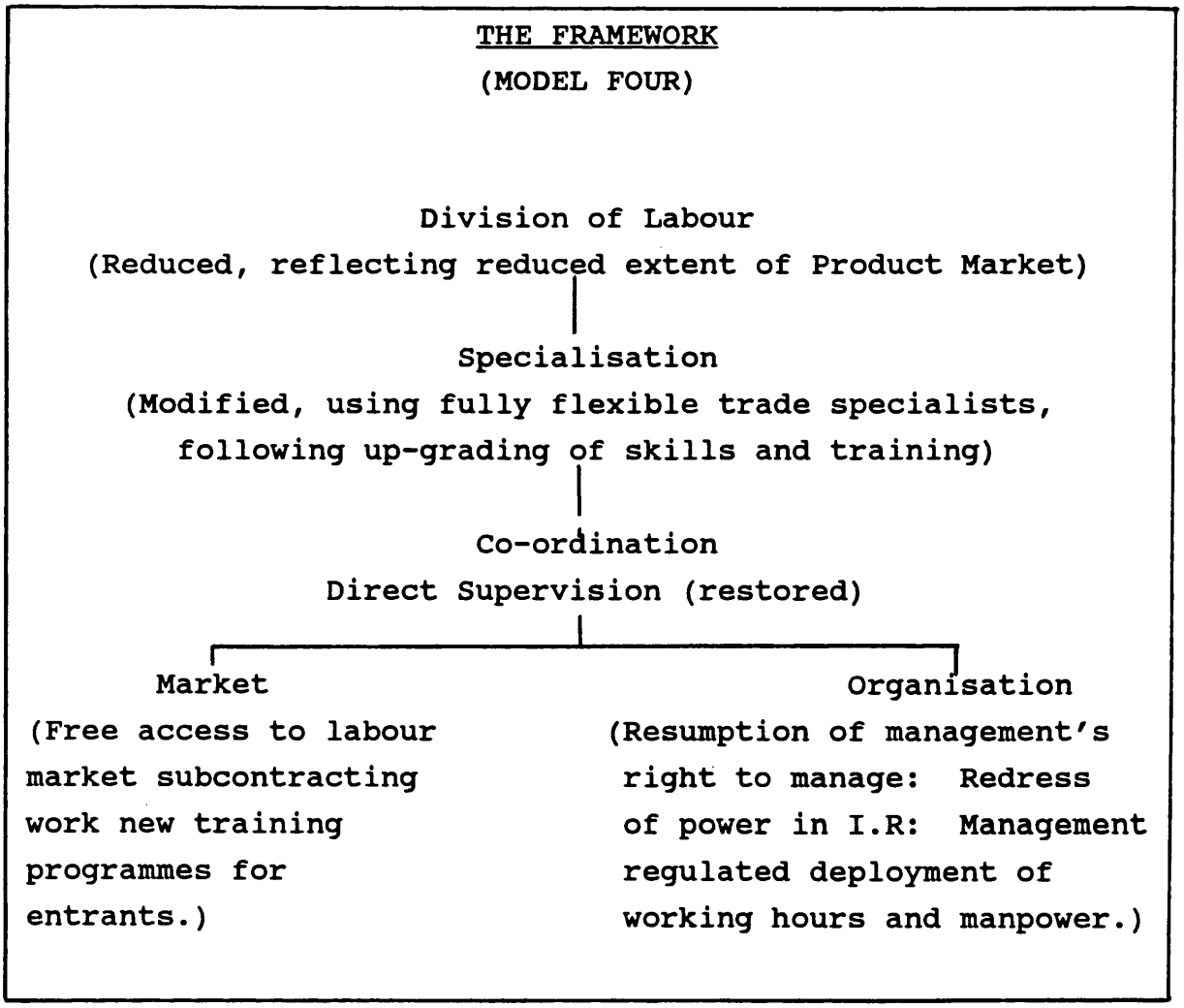


Figure 15.7

The approach took, as its start point, the restoration of supervisory/management authority and the erosion of the shop stewards control over the workforce. The guiding proposition was that management and not the shop stewards were responsible for the pace of change taking place in the shipyard. As such, they should not be inhibited by the stewards from making decisions or taking actions that would increase shipyard competitiveness.

This approach contrasted starkly with that pursued previously in the shipyard. The shop stewards had extended joint regulation, to include involvement in a range of management processes, without any implied accountability. They had the power and authority to flout agreements in the interest of job demarcation and overmanning, thus inhibiting manpower co-ordination, productivity and shipyard competitiveness.

Changing the prevailing industrial relations system and the attitudes and values within it was, therefore, the key to unlocking the door to co-ordinational inhibitions and lost productivity, the principal factors of the shipyard's uncompetitiveness. The system had been unable to cope with contentious changes to working practices. It ignored economic reality, it lacked accountability and credibility. Overcoming this required a shift in the balance of power. Management required to regain control against the prevailing culture but much depended on management's ability to replace the prevailing shop steward controlled communications system with one that enabled them to deal directly with employees and, thereby, influence the attitudes of the workforce.

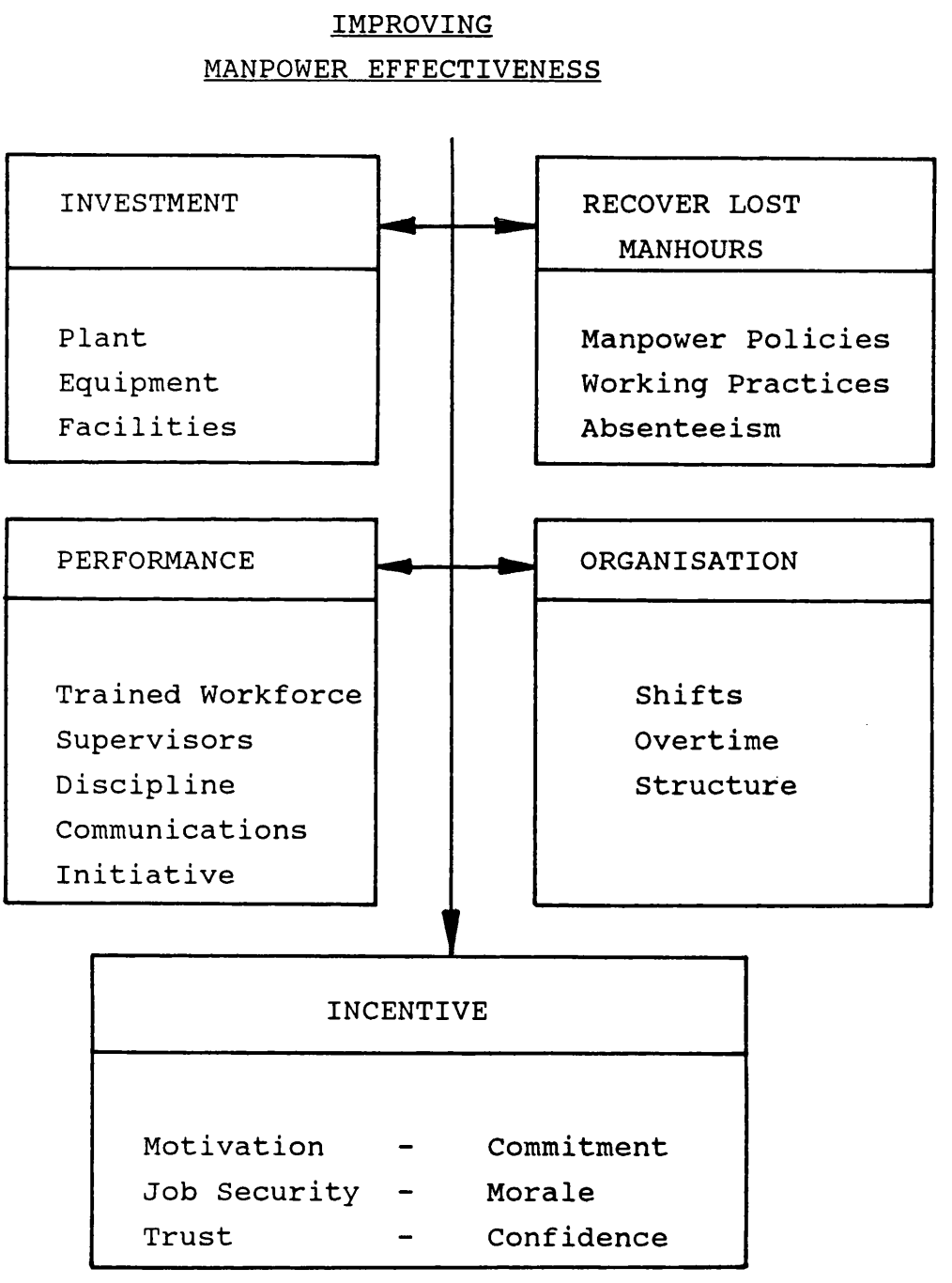
Thus management confronted the contentious issues inhibiting co-ordination and, when necessary, took on the shop stewards. New methods of communication were established and the role of the shop stewards in co-ordinating manpower utilisation and change was reduced. Management by concession was no longer a tolerable option.

Kvaerner were committed to working with the recognised trade unions in a responsible way and within an industrial relations framework, provided accountability of the union and their respresentatives was properly defined by procedure acceptable to management. The aim was to establish a culture of union recognition with accountability, ensuring that agreements would be honoured on both sides. Collective bargaining, therefore, was still the recognised process by which rules associated with manpower utilisation and practices were made and unions and workers rights regulated by management. But the scope of union control was reduced and management's right to manage important areas affecting manpower co-ordination restored. In a sense the key to co-ordination and to implementing the manpower utilisation changes, lay as much in the collective bargaining process as in the direct solutions themselves.

In terms of our 'conceptual framework' the type of co-ordination mechanism adopted would be distinguished by Mintzberg (1989) as being 'Direct Supervision', whereby the supervisor issued orders and instruction to a group of shipyard workers whose tasks inter-related. Thus for the first time in (at least) a decade, supervisors and managers had restored to them a positive and active role in the co-ordination of manpower and management of the shipyard change processes. This involved identifying and quantifying the factors inhibiting manpower co-ordination and proposing 'actions' that would remove these inhibitions and, thereby , improve productivity and shipyard competitiveness.

The 'actions' were incorporated into industrial relations agreements negotiated between management and shop stewards and accepted by the workforce. Action programmes were established, progress monitored and results fed back to management, unions and workers. Thus ownership of the change process and agreements and the accountability for actions was established within the parties to industrial relations at yard level.

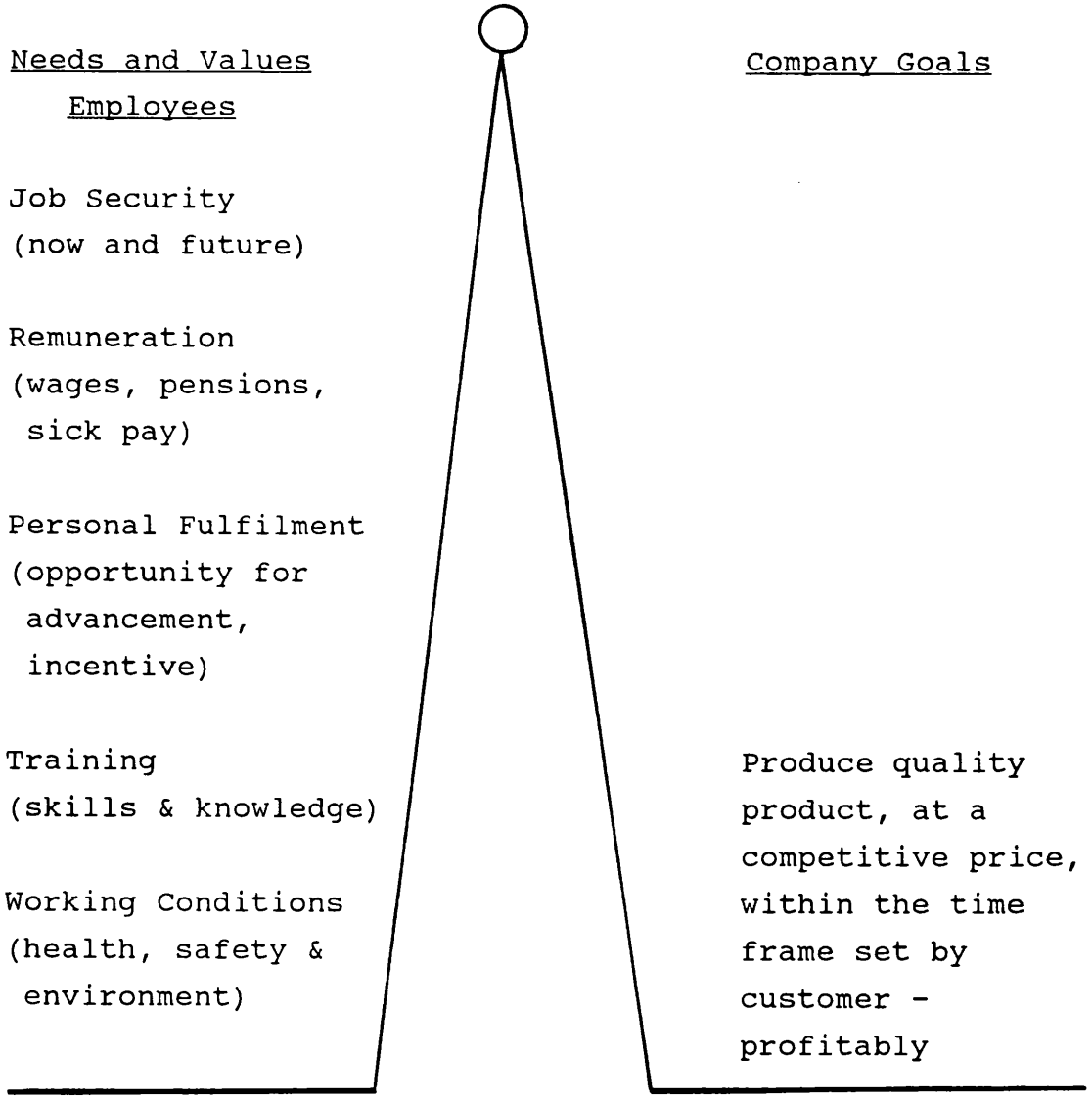
The 'action programmes' incorporated into the 1990 and 1991 industrial relations agreements, initially maximised the manhours available for productive use and influenced the shipyard's 'work ethic', by tackling the problems of managerial discipline and control of working hours. Thereafter, the problems of how best to use or organise the shipyard's manhours and manpower were addressed. The actions are illustrated in figure 15.8.



SOURCE: *Gordon (1992)*

Figure 15.8

The new realism approach has proved successful to date. It enabled restraints on co-ordination to be removed and manpower effectiveness to be improved. Govan is now on the brink of profitability and its competitiveness was sufficient to secure contracts valued at £380 million in the international shipbuilding market place. These new contracts afford the workforce a degree of job security and an opportunity to continue the process of transforming the shipyard. The basis of this was put in place with the signing of the 1993 industrial relations agreement which integrates the needs and values of the employees with that of the company's goals - illustrated in figure 15.9.



SOURCE: *Gordon (1992)*

Figure 15.9

This has been addressed within an 'initiative framework' whereby the emphasis is on improving commitment, motivation, trust and confidence of the workforce and related to the timely delivery of quality ships to the customers satisfaction.

In conclusion a summary of the four models of manpower utilisation is illustrated in figure 15.10.

THE FOUR MODELS

MODEL	ORGANISATION	BREAKDOWN FACTORS
1. The Classical Approach		
(a) Ingredients Increased division of labour. Limited multi-skilled groups.	(a) Co-ordination Direct Supervision through Foreman.	Contracting markets for products (ships) - reducing profitability.
(b) Outcome Specialisation Craft structure Demarcation	(b) Organisation Deployment to skills Piece work system	
(c) Organisation Entrepreneurial	(c) Market Hire and Fire	
2. The Scientific Management Approach		
(a) Ingredients Industrial engineering techniques allied to a participative industrial relations approach	(a) Co-ordination Direct supervision supplanted standardisation of work processes	Shop stewards control of management processes co-ordination function lost to management.
(b) Outcome Standardisation of work Shop stewards involvement in management processes	(b) Organisation withdrawal of piece work systems introduction to industrial engineering techniques	Fairfield experiment ended abruptly - political change brought reorganisation in the face of declining market. The 'experiment' did not fail nor was success proven.
(c) Organisation Machine	shop stewards authority increased	
	(c) Market Restriction on hire and fire	

SOURCE: *Gordon (1993)*

Figure 15.10

THE FOUR MODELS (CONT'D.)

MODEL	ORGANISATION	BREAKDOWN FACTORS
3. **The Flexible Working Approach**		
(a) Ingredients Increased flexible working. Centralised control	(a) Co-ordination Standardisation of skill. Attempted standardisation of norms but from a central corporate H.Q., without means of implementing.	Decline in U.K. share of market. Level of competitiveness. Bureaucracy/ over centralisation.
(b) Outcomes Search for control. Lack of ownership.	(b) Organisation Centralised control by means of national industrial relations process. Stronger trade union control.	Uncompetitive Govan Yard sold off.
(c) Organisation Machine	(c) Market Limited numerical flexibility.	
4. **The New Realism Approach**		
(a) Ingredients A strategy which recognised manpower utilisation as a principal factor of shipbuilding competitiveness and a belief that ships could be built profitably.	(a) Co-Ordination Direct supervision restored. Decentralised control re-established.	
(b) Outcome Restoration of managerial authority and a redefined role for the shop stewards. Common values and belief. Various forms of standarisation.	(b) Organisation Standardisation of norms. Skills upgrading. Investment in technology. Return to incentives.	
(c) Organisation Entrepreneurial	(c) Market Hire and fire restored but against background of greater employment security.	

SOURCE: *Gordon (1993)*

Figure 15.10 (Cont'd.)

The new realism approach has improved manpower utilisation in the shipyard and is an important ingredient of Govan's competitiveness.There is little doubt that this is not the end of the story. Both product and labour markets, as well as technology, will continue to change and, as this happens, new responses will be needed in corporate strategy, yard objectives and in the practice of managing the labour process.

Arguably, the present model has potential for such flexibility and, if one were to hazard a guess about the direction of change in organisational terms, it would be that greater emphasis will be placed on standardisation of norms built on trust and mutual adjustment - which may be regarded as a relatively high aspiration and, perhaps, difficult to achieve.

In reviewing the material in this chapter, we believe that it has been demonstrated:-

a) that the models discussed and analysed earlier are distinctive and that key characteristics within them can be identified

b) that the conceptual framework has generally been able to cast light on the nature of the shifts between models as economic and technological environments have changed. Of particular interest here has been the changing character of the division of labour and specialisation, expanding and then shrinking as the extent of the market has increased and declined. It is also important to note that the two alternative forms of co-ordination, through the market and through internal organisation, have continued to play complementary roles as the evolution of the models has unrolled, though undoubtedly the most interesting areas of change have been in the area of internal co-ordination, with an eventual return, in Model Four, to the direct supervision arrangement characteristic of Model One. But other features of the organisation and the utilisation of market processes have changed in the meantime. Hopefully, we can attribute some of our understanding of what happened during the evolutionary process to the insights provided by the conceptual framework.

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