



**LABOR SUPPLY AND THE EMPLOYMENT STRATEGIES
OF FRENCH AND BRITISH SHIPBUILDERS
1890 TO 1970**

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ABSTRACT

The employment strategies of French and British shipbuilding employers are contrasted for the period 1890 to 1970. The focus is on the differences in their recruitment, training, and job tenure policies. The paper begins by considering the political determinants of labor supply conditions in each country. The aim is to show how differences in the balance of power among peasants, workers, and industrialists in each country and differences in the relations of these groups to the state structured the labor markets in nationally specific ways. This discussion is followed by an analysis of the impact of these labor supply conditions on the yards' employment policies and consideration is given to the influence of collective bargaining institutions in each country. The study shows that strikingly different employment practices were established in the French and British shipbuilding industries despite the firms sharing a common technology and often competing in the same international markets.

RESUMEN

Este artículo compara las estrategias de empleo implementadas por los empleadores de la construcción naval en Francia y Gran Bretaña durante el período 1890-1970, analizando las diferencias en materia de políticas de selección, entrenamiento y estabilidad en el empleo. En primer lugar, se consideran los determinantes políticos que condicionan la oferta de mano de obra en cada país. El objetivo es mostrar cómo diferencias en el balance del poder entre campesinos, obreros e industriales, y diferencias en la relación de estos sectores con el Estado estructuraron el mercado laboral de diversas formas en cada país. Luego, se discute el impacto de las condiciones de la oferta de trabajo sobre las políticas de empleo a nivel de planta, considerándose también la influencia de la acción sindical. El estudio muestra que si bien las firmas comparten tecnologías similares y a veces compiten en los mismos mercados internacionales, las políticas de empleo han sido substancialmente diferentes.

The last few years have seen the appearance of a number of studies concerned with international contrasts in the history of work and managerial strategies.ⁱ These studies have been undertaken with the assumption that systematic comparisons of nations can improve our understanding of the industrial development process in ways precluded from research focussing on a single nation's experience. The concern with international differences also reflects widespread dissatisfaction with earlier unilinear interpretations of the history of work that argued that managerial practice progressed through a series of stages in accordance with a logic of capitalist development.ⁱⁱ A variety of research, both historical and contemporary, has pointed to the inadequacy of such teleological formulations.ⁱⁱⁱ

This essay aims to contribute to our understanding of international differences in industrial development. It explores the history of French and British shipbuilding employers' strategies in the interrelated policy areas of labor recruitment, job tenure, and training. The essay shows that producers in each country pursued strikingly different policies towards their workers despite sharing a common technology and often competing in the same international markets.

The explanation presented for this focuses on the differences in regional labor markets and industrial structure to which employers in each country actively adapted their policies. In contrast to most studies, these economic conditions are not taken as given. Rather, the analysis shows how markets were shaped in intended and unintended ways by the actions of employers, trade unions, peasants, and the state taken in support of their perceived interests. The essay thus investigates the interrelationships of conflicts of interest among social groups, the structuring of markets, and the strategies of individual firms.^{iv}

The coverage of the study is limited to the private shipyards engaged primarily in the construction and fitting-out of vessel's hulls. No effort has been made to compare conditions in the British Royal Dockyards or the French arsenals, where employment practices differed substantially. The British comparison is based on the two main building regions, on the Clyde river in Scotland and on the Tyne, Tees and Wear rivers on the north east coast of England. The French comparison is based primarily on conditions in the yards located on the Loire estuary in Nantes and Saint Nazaire, France's principal building region.

The essay begins with a brief overview of nineteenth century patterns of industrial development in France and Britain. It considers the relationship of these patterns to labor supply in each country. The detailed history of shipbuilding employment policies follows.

1. National Patterns of Labor Supply: The Nineteenth Century Context

Comparative histories of nineteenth century industrial development in Britain and France traditionally have taken France's relative backwardness as the point of departure. Recent

revisionist accounts have strongly contested this perspective. Firstly, based on revised estimates of per capita commodity production and labor productivity, it has been argued that the French economy performed comparably to the British.^v Secondly, it has been argued that British and French industrial development took place in distinct ways involving specialization in the production of different types of products to which techniques of production and enterprise organization were adapted. In short, France was not the tardy emulator of Britain, but rather pursued a different path of development.^{vi}

O'Brien and Keyder, who have perhaps argued the revisionist case most systematically, have interpreted the difference between the British and French pattern of industrial development as follows. In Britain, the existence of large and expanding markets at home and abroad for relatively undifferentiated products encouraged an early transition to the mechanized factory system of production.^{vii} In France, the slower growth and geographical segmentation of the domestic market and the smaller proportion of output produced for export encouraged the retention of smaller scale artisanal forms of production. Small-scale skill intensive methods were particularly suitable for satisfying locally differentiated demands.^{viii}

This stark comparison of French and British economic development naturally overlooks the considerable diversity within each economy. As J. H. Clapham and more recently R. Samuel have stressed, small-scale labor intensive methods retained considerable importance in Britain throughout the nineteenth century.^{ix} On the other hand, the factory system did make inroads on the workshop sector in France, particularly from the mid-nineteenth century.^x The basic contrast, however, is not in dispute. The French 1906 industrial census presents a striking picture of the vitality of small-scale forms of production. The self-employed accounted for 71 percent of all industrial establishments and 27 percent of the industrial working population. Considering firms with employees separately, 32 percent employed less than ten workers.^{xi}

Regionally differentiated patterns of product market demand in France can be explained by the persistence of rural society and the relatively slow pace of urbanization. This in turn can be linked to the slow growth of population and the ability of the land to absorb additional supplies of labor throughout the nineteenth century, which limited the flow of population into the cities.^{xii} The agricultural sector in France absorbed some two and half million additional inhabitants during the nineteenth century and as late as 1914 agriculture accounted for about 60 percent of the labor force engaged in commodity production. In Britain, the agriculturally employed labor force expanded slowly during the first half of the nineteenth century, reaching a peak of 2.0 million in 1845-54. There was a subsequent decline to 1.6 million in 1895-1904. During this same period the industrially employed work force expanded dramatically, from some 1.6 million in 1803-12 to 7.4 million in 1895-1905. By 1914 industry accounted for over 80 percent of the labor force engaged in commodity production.^{xiii}

While an explanation of the differential rates at which agriculture and industry absorbed labor in France and Britain is beyond the scope of this paper, it is important to recognize the political dimensions of the process. Most accounts, though accepting that geographical conditions may have played a role, emphasize the importance of differences in property rights and in particular the greater success of the French peasantry in defending their rights to land.^{xiv} The origins of this difference are obscure, and arguably date to the Middle Ages and the efforts of the monarchy in France to prevent the seigneurs from encroaching on its tax base by reinforcing the peasantry's prerogatives. Comparable efforts by the crown in Britain were ineffectual and in general parliament and king facilitated the process of enclosure.^{xv} Regardless of origins, it is generally agreed that the French revolution, in abolishing seigneurial dues, strengthened the position of the peasantry and improved their ability to sustain themselves on small plots of land.^{xvi}

The viability of the small agricultural or industrial proprietorship in France during the nineteenth and early twentieth centuries resulted in labor supply problems for large industrial employers. The availability of these options in combination with slow population growth limited employers' ability to recruit and retain a large number of workers. The problem was not merely the slow growth of potential supply, but also one of preferences, preferences that small proprietors both in agriculture and industry repeatedly showed themselves capable of defending through political action.^{xvii} Thus differences in the wider balance of power between economic interests in each country and their relation to the state or political center contributed to structuring the supply of labor in particular ways.

1.1 Shipbuilders' Employment Policies, 1890-1945

One response of industrialists in France to problems of labor supply was the adoption of paternalistic policies. In such diverse sectors as textiles, machine building, steel, and paper it is easy to find examples of large employers providing a range of social services, including low cost housing and medical services, designed to attach their workers to the factory by creating a sense of company loyalty.^{xviii}

In the case of the shipbuilding industry during the late nineteenth and early twentieth centuries, such strategies proved impractical due to the industry's particular technical and market conditions. Ships were large and complex products built in a series of stages requiring different skills. Production began with the preparation of a set of small-scale designs showing the body plan of the vessel. These were transformed into full-scale wooden templates for later use as guides in constructing the vessel's steel hull. The work involved designing, draughting, and woodworking skills.

The preparation stage was followed by hull construction in which plates, angle bars, and other steel components were cut and bent to shape and then assembled and riveted together at

the berth. A variety of metal working skills were involved, primarily plating, angle-iron smithy, riveting, and caulking skills. The final stage of fitting out the vessel required the most diverse range of aptitudes including those of the plumber, electrician, brass moulder, carpenter, and painter.^{xix}

These large variations in skill requirements between stages of production meant that the only way employers could hope to stabilize their demand for specialized workers was to carefully plan the sequence in which successive vessels were produced. This would allow specialized trades to be transferred from one ship to the next without being periodically laid-off. However, market constraints generally precluded this sort of scheduling. In both Britain and France between 1890 and 1945, most construction contracts were bespoke, vessels being built on demand to the precise specifications of the owner. Further, builders faced sharp fluctuations in the overall level of demand for new construction. These highly unpredictable market conditions discouraged a policy of speculative construction that would have allowed producers to anticipate and plan a yard's future labor requirements.^{xx} Given the high cost of an individual ship relative to the total value of a yard's annual production, failure to sell a single vessel produced on speculative basis might well prove financially crippling.

The contrasting employment strategies that British and French builders pursued in response to this general problem were partly determined by differences in the size and structure of the industry in each country. The British industry was divided into two major regions located on the Clyde river in Scotland on and the Tyne, Tees and Wear rivers in the north east coast of England. Within each region the industry was highly fragmented, output being divided between some 40 to 45 firms, the large majority of which were single-yard establishments.^{xxi} As each producer's relative demand for particular types of skills varied over time, they would hire and lay off workers with specialized skills who continually moved between the numerous yards in a region.^{xxii} In this manner regional pools of skilled labor were built up and maintained and in terms of the division of labor the region as a whole achieved what the individual yard could not.

The French shipbuilding industry was small in comparison to the British. Industry output in terms of tonnage launched averaged about 5 percent of that in Britain over the period.^{xxiii} The three main regions located in the Loire-Inférieure, along the Seine Estuary, and on the Mediterranean coast were composed of a comparatively few yards. The Loire-Inférieure, the largest region, consisted of five yards, three located in Nantes and two in St. Nazaire.^{xxiv}

The few yards in any one region meant that French builders as a group were not able to achieve the same continuity in demand for workers with specialized skills as their British counterparts. Due to the pervasive problem of skilled labour scarcity, however, pursuing a "hire and fire" policy as in Britain was precluded, if builders were to avoid a possibly permanent loss of trained labour. Responding to these constraints, French builders tended to employ their skilled

workers in a less specialized manner. In this way they attempted to avoid the necessity of laying off workers with every change in demand for specialized skills.^{XXV}

The more flexible use of skilled labour in French yards responded to the problem of non-cyclical based instability in demand for specialized skills, but not to the problem of instability in overall demand for labor. The shipbuilding industry experienced severe and protracted depressions between 1890 and 1939.

Laying off workers during cyclical downswings potentially posed the problem of loss of labour with shipyard skills to competing sectors, possibly offering more stable employment prospects.^{XXVI}

British builders were clearly less concerned by this problem than their French counterparts. There is little evidence to suggest that British producers were seriously constrained by labour supply bottlenecks. This can partly be explained by the lesser severity of output fluctuations in Britain.^{XXVII} Another factor was the role played by the well developed system of craft unionism in British shipbuilding.

By the end of the nineteenth century a high degree of union organization had been achieved by the skilled trades in British shipbuilding. Seventeen unions organized the majority of the skilled workers and the closed shop prevailed in the major yards. The most important numerically was the Boilermakers' Society which organized most of the hull construction trades including platers, angle-iron smiths, riveters, caulkers, and holders-up. Loftsmen and shipwrights were organized by the Associated Shipwrights' Society. Blacksmiths were organized by four competing unions prior to 1914 when a series of mergers were completed resulting in the formation of a single national union, the Associated Blacksmiths' Society.^{XXVIII}

The outfitting trades were organized by a diverse group of craft unions, the principal of which were the Amalgamated Society of Carpenters and Joiners, the United Operative Plumbers Association, the Electrical Trades Union, and the National Society of House and Ship Painters.^{XXIX} Assistants and unskilled labourers, less well organized than the skilled trades, were mostly in the Tyneside and National Labourers Union and the National Union of Gas Workers and General Labourers.^{XXX}

Competition among the craft unions for the control of jobs and the right to man machines frequently resulted in sectional strikes.^{XXXI} Union imposed restrictions clearly constrained employers' ability to reorganize the division of labour and introduce new machinery. In particular, the skilled unions had considerable success in preventing the employers from exploiting possibilities that technical change offered for substituting less skilled and lower paid workers for skilled workers.^{XXXII} Such negative effects were balanced, though, by the unions' positive role in organizing the local labour market. The unions both facilitated the transfer of workers among

yards in a district and by providing unemployment and sick benefits helped ensure that the work force was retained for the industry.^{xxxiii}

Craft unionism in French shipbuilding was extremely weak by British standards. Archive sources show that in Nantes in 1907 fourteen craft unions organized a total of 918 workers in the shipbuilding and engineering sectors combined. In St. Nazaire at this time thirteen unions organized 1,911 workers in these sectors.^{xxxiv} Using figures from a number of sources giving employment levels just prior to 1914, it can be estimated that between 10 and 15 percent of shipyard workers were organized in Nantes and somewhat over 30 percent in St. Nazaire.^{xxxv}

Lacking a developed network of craft unions that might have provided social welfare benefits as in Britain, French employers sought other solutions to the problem of retaining an adequate work force. One possible response was to shift trained labour into alternative employment. For example, in the Marseille region there is evidence that builders maintained shipyard factories (usines navales) in other but related branches of industry such as locomotive and boiler production. Skilled workers were transferred to these sites during periodic crises.^{xxxvi}

In the case of the Loire-Inférieure there is no evidence that employers maintained usines navales. Rather a solution emerged involving a unique symbiosis between agriculture and industry. For some 30 to 40 percent of their skilled work force, shipbuilders in St. Nazaire drew on workers who maintained a partial attachment to the land. These half peasants/half workers would return to the countryside during periodic slumps to plots maintained by their families.^{xxxvii}

2. The Development of Internal Labor Markets, 1945-1970

The traditional patterns of labor mobility in British and French shipbuilding regions described above were profoundly transformed by economic and political changes after the Second World War. The state in each country intervened in the economy on an unprecedented scale, significantly altering intersectoral patterns of capital investment and labor deployment. At the regional level, industrial structure and conditions of labor supply were altered in ways that encouraged employers to pursue new strategies towards their workers.

In Britain, by the mid-1960s, competition for skilled labor from rising new industries was leading shipbuilding employers for the first time to offer their workers employment guarantees. The traditional pattern of a high degree of interyard mobility for occupationally specialized workers was rapidly disappearing. In France, the breakdown of the traditional symbiosis between agriculture and industry was also leaving shipyard workers increasingly dependent on individual yards for their employment prospects. In order to explain these developments the discussion turns first to the wider forces generating changes in the composition of regional labor supply.

2.1 The Changing Labor Supply Context

The immediate post-World War II years were a period of rapid industrial growth in France by historical standards. Industrial output grew at 5.3 percent per annum between 1949 and 1963, a rate only previously attained during the boom preceding the First World War and between 1924 and 1929.^{xxxviii} This expansion took place in the context of a virtually stagnant working population. Between 1946 and 1962 the work force nationally increased by a mere 1.6 percent, from 19.4 to 19.7 millions. The labor for industrial expansion came primarily from agriculture, and also to an extent from interindustry shifts from declining to expanding sectors.^{xxxix}

Starting in the 1920s, the rural exodus in France had begun to acquire a different character from that of the nineteenth century, affecting not only the underemployed fringes of the population who were pushed by necessity into urban employment, but also peasant producers, increasingly attracted by the higher and more stable earnings to be gained in industry. The post-World War II years then saw an acceleration of these trends, as the population engaged in agricultural production fell sharply from 7.04 million in 1946 to 3.82 million in 1962 or from 36 percent to 21 percent of the working population. During the same time, the industrially employed work force increased from 5.65 to 7.45 million.^{xl}

These changes in the structure of the French economy cannot be interpreted simply as the rational outcome of producers responding to a growth in market incentives. State intervention was critical. In France the state pursued an explicit policy of industrial modernization at the expense of traditional rural interests. Its ability to do this depended on a number of factors. Firstly, the increasing independence of the executive from parliament that came with the administrative reforms of the Fourth Republic and particularly the Fifth Republic. This tended to insulate the executive, which was dominated by the "modernizers," from the rural and small business interests which dominated parliament.^{xli} Secondly, the state pursued a creative policy of subsidies and credits to finance industrial expansion. Agriculture was subsidized sufficiently to prevent major dislocations, yet not so much that incentives to invest in industry were undermined.^{xlii}

Thus the shipbuilding industry was one of the major beneficiaries of the first plan and under the 1950 Loi Defferre the industry enjoyed a generous rate of subsidy. This encouraged investment and allowed yards to offer the wages and conditions of employment that would attract the additional labor needed for expansion.^{xliii} Between 1948 and 1960 shipbuilding output in terms of tons launched increased three-fold nationally. Shipyard employment in St. Nazaire rose from a pre-war peak of 7,000 to 10,000 in 1959. At the Chantiers Dubigeon in Nantes employment increase from a little over 1,000 in 1948-49 to about 1,300 in 1955-56.^{xliv}

The rapid expansion of the shipbuilding industry in the Loire-Atlantique based primarily on transfers of labor from agriculture posed two interrelated labor supply problems: firstly, to train a body of agricultural laborers with little or no prior industrial experience; and secondly, to retain these workers for the firm. The strategy employers pursued to these ends was to institute a

system of internal job promotion.^{xlv} The possibility of job promotion provided workers with an incentive to stay with the firm. It also served a training function as workers could be upgraded from less to more skilled positions as they acquired experience on the job. L. Oury in his autobiographical account of his years as a boilermaker at the Chantiers de l'Atlantique in St. Nazaire has described how the system worked in that yard.^{xlvi}

Semi-skilled workers (O.S.) are recruited in various ways but in general these are the lads who have just arrived from behind the plough, whose only experience with technical problems is using a tree to take a sighting to ensure the straightness of a furrow. They are hired as laborers and in a few months, after being ensured of their soberness, of their constancy at the job, and their personal qualities, they are classified O.S. with the associated relative advantages.

He (the new recruit) is satisfied with his good fortune until the day when the possibility of progressing from O.S. 1 to O.S. 2 arouses his ambitions. Then he looks for a way to free himself from his machine and to acquire the boilermaker's tool box and the classification O.P. 1 (lowest skilled grade) which goes with it. Sometimes the lad will go up to O.P. 2, but that's all, the classification O.P.3 being reserved for those skilled workers with the professional certificate of C.A.P. (certificat d'aptitude professional) and even then only after some fifteen years of experience at the job.

In the case of the British shipbuilding industry, labor supply problems had an entirely different basis. Rather than the problem of attracting additional labor for industrial growth as in France, the difficulties of British builders stemmed from increasing competition for skilled labor from rising new industries. During the 1950s, while the output of the shipbuilding industry and other traditional staples stagnated or declined, such sectors as vehicles, electronics, and chemicals expanded rapidly.^{xlvii} By the mid-1960s the traditional dominance of shipbuilding and connected industries in the regional economies of Clydeside and the northeast coast of England was being progressively undermined.^{xlviii}

As in the case of France, state intervention in Britain played a role in the process of structural change. By protecting certain claims and not others, the state reshaped regional labor supply. Shortly after the war the northeast coast of England and Clydeside were designated development areas. New industries were attracted by means of investment incentives and expenditure on infrastructure. Most studies on the impact of the government's regional policy suggest that its effectiveness increased from the early 1960s.^{xlix}

In the Tyne and Wear region, for example, planning proposals just after the war were based on the assumption that the traditional industries in riverside areas (shipbuilding, heavy engineering, and coal) would continue to provide the bulk of employment, and provisions for housing and infrastructure were made correspondingly.¹ By the late 1950s, with the decline in demand for coal and the beginnings of recession in shipbuilding, the incorrectness of this vision was recognized. Planning aims were correspondingly altered towards attracting new industries to

the region. During the 1960s new manufacturing employment was primarily attributable to greenfield sites located in the outer belt surrounding the riverside towns. This new employment was largely in light manufacturing, particularly light electrical and mechanical

engineering. The main employment gainer for the region, though, was the service sector.^{li}

In this economic context the British shipbuilding industry began to experience the problem of a net loss of skilled labor. The primary cause appears to have been the pull or attraction of new sectors offering greater security of employment.^{lii} This view is supported by the fact that the largest net loss was amongst apprentices who normally were not laid off during periodic slumps. During the 1967-68 period alone the industry lost 10 percent of its skilled apprentices. In the case of first year apprentices the figure was closer to 20 percent. As the 1968 Shipbuilding Industry Training Board (SITB) report noted, this was in “marked contrast to the increase in the volume of training received.”^{liii}

Due to these changed conditions of labor supply, British shipbuilders for the first time became concerned to offer their workers employment guarantees or attempted to internalize them. Such a policy, however, posed the problem of leaving specialized workers periodically idle. British builders adopted a strategy comparable to that used historically by their French counterparts: they attempted to widen the range of tasks a skilled worker would perform. This aim was clearly expressed in the 1962 proposals of the Shipbuilding Employers’ Federation for increased flexibility and interchangeability between the trades.^{liv}

Flexibility...means that the workers in each group shall be versatile in their employment and shall in the course of their work carry out any work of the group to further their job, using the tools of the group as necessary to do so.

Interchangeability...envisages the transfer of workers from one class of work to another class of work within the same group and between groups as may be necessary.

In accordance with the broad principles of flexibility and interchangeability...workers shall carry out other work of the group...either to progress their own work, or to meet *shortages* of labor or to obviate temporary *unemployment* (my emphasis).

The aim of greater labor flexibility was incorporated into the training recommendations of the SITB after its formation in 1965. The Board’s recommendations called for an initial year of “common basic” training in which all craft workers were given a basic appreciation of all phases of ship construction, both hull construction and outfitting.^{lv} For the hull construction trades, this initial year was to be followed by a further year in which a worker became fully versatile in all aspects of hull construction including welding, burning, caulking, assembling, drilling, and loftwork. Only at this stage, after two years of general training, would a metal-using worker specialize in one of the three basic trade groups: caulker/burner/driller/riveter combined; plater/shipwright combined; or welder.^{lvi}

British and French shipbuilders in common pursued strategies of work force internalization after the war. Yet the differences are equally apparent. In Britain, this strategy was associated with growing flexibility and interchangeability among skilled apprenticed workers, while the traditional “horizontal” demarcations between skilled and unskilled were rigorously maintained. In France, divisions among workers tended to be “vertical” in character, workers being tied to a yard and moving up vertical job ladders specific to the occupational group. Critical to this difference in employment policies and the division of labor were intercountry variations in industrial structure and in industrial relations.

2.2 The Importance of Industrial Structure

The French and British shipbuilding industries were both traditionally fragmented, output being divided among a number of yards producing on a relatively small scale. Product mix was highly diversified, most vessels being bespoke. After the Second World War the volume of production of individual French yards increased rapidly. Average output per yard rose from 10.6 thousand tons in 1950 to 120 thousand in 1970. Yard output mix became more standardized.^{lvii} In part these changes are to be attributed to wider international market changes, in particular the comparatively rapid and stable post-war expansion in world demand for ships and the increasing acceptance of standard vessels that came with the market success of Swedish and Japanese builders.^{lviii} However, the intervention of the state helps explain French builders’ ready adaptation to these particular market opportunities.

State intervention in France took place in two stages. Immediately after the war the government provided credit for the reconstruction of war damaged yards. The 1950 Loi Defferre then established a generous system of subsidies designed to bridge the gap between French and international prices. This assisted producers in securing the home market and gaining a foothold in the expanding international market. In the second stage of intervention starting in 1960, the state selectively withdrew subsidies from firms in an effort to force a series of mergers and closures. By 1968 the industry had been reduced from sixteen to eight fairly specialized yards.^{lix}

The larger and more stable output levels of individual French yards and their greater product standardization provided a firmer basis for continuously employing workers with specialized skills and led to greater intra-firm division of labor than in the past. The introduction of welding and prefabrication techniques contributed to this process. These changes in technique encouraged a shift to flow line production methods for hull construction in substitution for traditional job-ship methods in which components were produced in the sheds and then assembled piece-by-piece at the berth. The result was a division of labor based more on location in the flow of production than general type of activity or craft.^{lx}

This change in job structure in turn facilitated the process of expanding the yards' work force by drawing on agricultural laborers. These inexperienced workers could be integrated easily into production after receiving only narrow based training while job vacancies higher up could be filled from within through the provision of additional on-the-job training. In short a job structure emerged suitable for the institution of internal labor markets based on workers' promotion.

The structure of the British shipbuilding industry in contrast to the French remained essentially unchanged until the end of the 1960s. Average output per yard increased only marginally, from 24.1 thousand tons in 1950 to 30.9 thousand in 1970. In most cases yard output was highly diversified, the large majority of contracts bespoke as in the past.^{lxi} These distinctive market and structural characteristics clearly precluded the more specialized divisions of labor emerging at the time in French yards and fully justified British employers' emphasis on flexibility and interchangeability as a prerequisite for employment continuity.

State led restructuring of the industry at the end of the 1960s to some extent reduced employers' need for interchangeability. The government's 1966 *Shipyard Inquiry Committee Report* (Geddes Report) recommended a regrouping of firms to form larger regional consortia with an annual capacity ranging between 400,000 and 600,000 tons and comprising four to six specialized yards. The 1967 Shipbuilding Industry Act provided financial backing for the scheme.^{lxii} During the following three years a considerable regrouping took place, though somewhat below the committee's initial expectations.^{lxiii} In the case of the larger multi-yard firms this structural change did ease the process of providing employment guarantees. These larger firms were in a position to negotiate agreements with the unions for the transfer of specialized workers among the firm's various yards to meet supply bottlenecks. In effect, as firms grew in size they were more able to achieve individually what in the past had only been possible through the workings of regional craft labor markets.

2.3 The Impact of Trade Unionism

In order to understand the differential impact of industrial relations on British and French shipbuilding it will be necessary to go beyond our preliminary observations about differences in the organizational strength of the unions in each country. The very logic of trade union action in Britain and France differed in significant respects that both make direct comparisons liable to mislead and help to explain the varying response of the unions to employers' post-war employment strategies. In Britain, as the discussion of pre-World War II developments suggested, collective action centered around the efforts of occupational based unions to limit access to jobs and control the content of jobs. These controls began in the labor market, with apprenticeship requirements restricting entry to the skilled trades, and extended into the labor process, with detailed jurisdictional controls or demarcations over the use of machines and types of materials. By means of such restrictions the unions aimed to improve their members' earnings and working conditions and protect their job opportunities on a regional and national basis.^{lxiv}

In French shipbuilding, on the other hand, there is little evidence of occupational groups trying to control the content of their jobs and access to them. Union institutional controls at the yard level were comparatively weak, and insofar as action was taken at this level it tended to have a wider basis amongst the work force, rather than being exclusive to a particular trade.^{lxv} To some extent this contrast with Britain can be explained by differences in the structure of trade unionism in the two countries. Between 1909 and 1914 in France, a series of amalgamations among the various national craft unions organizing the metalworking trades took place, resulting in the formation of a national industrial federation. Mergers between the local craft unions in Nantes and St. Nazaire resulted in the formation of separate metalworkers' unions, each affiliated to the national federation. Industrial unionism subsequently may have encouraged greater solidarity between the trades.^{lxvi} As F. Blanco, Secretary of the St. Nazaire Union of Metallurgists, noted in a retrospective *memoire* describing trade unionism prior to the amalgamations:^{lxvii}

Without any solidarity among the trades because there did not exist among them a trade union link, instead of struggling together for common aims, the trades fought separately and only achieved, of course, a minimum of success.

Another factor explaining the different nature of trade union action in France was the considerable importance of state intervention in industrial relations, with laws and decrees regulating conditions normally subject to collective bargaining at the yard level in Britain. State intervention arguably encouraged the French unions to organize at higher levels than in Britain, so as to put strategic pressure on local and national state officials. This was to the detriment of strong yard-based institutional controls.^{lxviii}

Given the different basis for union organizations in each country, it can well be appreciated that shipbuilding employers' post-World War II employment strategies generated a differential response from the unions. In France the main thrust was to organize around the new "vertical" job promotion ladders to the work force's advantage, rather than attempt to restrict management's ability to make the organizational changes. The unions negotiated agreements at the district level which aimed to improve and formalize the conditions for promotion by restricting management's ability to make use of external hiring. The 1955 collective agreement for St. Nazaire specified the following conditions.^{lxix}

The employers will do their best to further workers' promotion in the enterprise by assigning, insofar as possible, to members of the existing personnel the work stations (postes du travail) available.

To this effect, the workers will have the option to show their capabilities for promotion to a vacant or newly created station or their transfer to another station. Their requests in this regard will be examined and a response will be given within the delay of a month.

A comparable agreement was negotiated for the Nantes district in 1957.^{lxx} With the advent of enterprise bargaining in the region, following the events of 1968, agreements over promotion became progressively more elaborate and firm specific in their details.^{lxxi}

By pressing for improvements in classification, regardless of the actual job performed, the unions were able to substantially alter the classification hierarchy in the yards, progressively increasing the proportion of the work force classified as fully skilled or P3. At the Chantiers Dubigeon-Normandie in Nantes, for example, the fraction classified as skilled increased from 63 percent in 1953 to 96 percent in 1976.^{lxxii} These gains both undermined the promotion system by concentrating most workers in the top categories and inflated the firm's wage bill.

In Britain, on the other hand, it can be appreciated that employers' proposals for increased flexibility and interchangeability between the trades were highly controversial. Such strategies posed a fundamental challenge to the traditional basis of trade union organization in the industry. Despite this, starting with the Fairfields yard on the Clyde, a series of productivity deals were negotiated providing for the relaxation of demarcation rules. Issues which in the past had been claimed as the unilateral prerogatives of both sides were placed on the bargaining table for negotiation.^{lxxiii}

A number of historically specific factors help account for the development of productivity bargaining at this time. The severity of the economic crisis in British shipbuilding was certainly influential. Most employers saw restrictive practices, limiting the ability of a worker to progress his work or to move temporarily outside his trade boundaries as important (if not the principal) causes of low labor productivity in British shipbuilding.^{lxxiv} This was an argument that found at least a

degree of acceptance among the officials of the unions, who for the first time were willing to countenance productivity bargaining at the district and yard level.^{lxxv}

Related to changes in the attitudes of the union officials were changes in trade union structure, which altered the occupational base of unions and so the boundaries they were committed to defend. The most significant structural change was the amalgamation of the Boilermakers', Shipwrights', and Blacksmiths' Societies, bringing together the large majority of the hull construction trades in one union, the Amalgamated Society of Boilermakers, Shipwrights, Blacksmiths, and Structural Workers. From the perspective of the defense of the A.S.B.'s occupational base, rigid demarcation lines between platers and shipwrights or welders and blacksmiths, for example, were no longer necessary. This helps to account for the National Executive's generally positive support for productivity agreements, insofar as relaxation was restricted to A.S.B. member trades.^{lxxvi} Of course, for the "shop floor" and from the perspective of individual trades, the logic of job control as a strategy to protect future job opportunities remained intact. The successful negotiation of relaxation was at once both a question of internal union politics and dependent on individual employers being able to offer a *quid pro quo*.^{lxxvii}

The question of firms offering a *quid pro quo* brings us to a third point, the importance of the formation of regional multi-yard consortia during the second half of the 1960s and the greater ability of these large firms to offer employment guarantees in exchange for relaxation. During the 1960s, the casual nature of employment in the industry became a focal point of discontent amongst the workers. As the 1960s progressed, this increasingly resulted in the loss of skilled labor to other sectors offering greater security of employment. By operating interyard mobility agreements in conjunction with interchangeability between the trades, the multi-yard firms were in a position to offer a greater degree of security of employment than in the past. To this extent, the post-1965 yard amalgamations were a necessary economic condition for the negotiation of demarcation relaxation.

3. Conclusion

This essay has described the changing strategies of French and British shipbuilding employers in the interrelated policy areas of labor recruitment, job tenure, and training. The analysis has shown the connections between employers' strategies and the wider political context of conflict between social groups. In particular, it has pointed to the importance of state intervention.

Consider first the question of labor supply. State intervention in France was directly related to the changing ability of rural interests to defend their property rights in land. This in turn influenced the composition of regional labor and the nature of the constraints employers faced. In Britain, the efforts of the state to attract new industries into the traditional shipbuilding districts after the Second World War made it extremely hard for builders to attract and retain skilled labor for shipbuilding. This was interrelated with the nature of the national industrial relations system. Given the absence of state regulation of working conditions such as in France it can reasonably be argued that a well developed system of institutional controls restricting access to jobs was the most effective union strategy. While union organization in Britain traditionally had the beneficial effect of helping to organize the local labor market, in the changed economic context of the 1950s and 1960s it contributed to the development of labor supply bottlenecks.

The state also played an active role in the process of industrial restructuring. In France industrial concentration was fostered by the state's decision to withdraw subsidies from certain yards to the benefit of the others. The comparatively tardy rationalization of the British industry took place in the context of economic collapse, when the contingent promise of subsidies had considerable coercive force.

In summary, state intervention proved critical because it affected the ability of social classes or economic groups to defend their interests and shaped the ways in which they sought to do this.

What implications can be drawn from this discussion for efforts to develop general theories or typologies of managerial strategies? Such theories come in two basic forms but share the common property of connecting the development of internal labor markets to an underlying dynamic of capitalist development. The first is economically deterministic. It argues that internal labor markets are a uniquely efficient institutional arrangement under conditions of monopoly capitalism. This is due to the increasing firm-specificity of skills at this stage of development and management's concern to protect its investments in training.^{lxxviii} The second is politically deterministic. It argues that internal labor markets rise from management's systemic need to consolidate its control over labor due to labor's inherent drive to subvert capitalist relations of production.^{lxxix}

The historical evidence of this paper suggests that the economic argument is lacking on two grounds. Firstly, as discussed above, the development of oligopolistic industrial structures in British and French shipbuilding cannot be interpreted as the inevitable result of competition between the firms. The efforts of the state in each country to restructure the industries after the Second World war played an important role. Secondly, the connection made between industry structure and firm specific skills seems arbitrary. Most skills in shipbuilding remained industry specific and worker internalization was motivated by the problem of skilled labor scarcity as such. There is no reason to associate this problem with any particular period in capitalist development. This essay has referred to the pervasiveness of the problem in nineteenth century France and has noted that it is easy to find examples of firms adopting policies designed to attach their workers to the firm in response to it.

The general political argument has been criticized on a number of grounds. For example, this view of workers' interests overlooks that capital/labor relations necessarily have cooperative as well conflictual dimensions. It also discounts the actual content of industrial conflict by ignoring workers' conception of its basis.^{lxxx} In the case of British shipbuilding, for example, it is difficult to see how sectional demarcation strikes between competing groups of skilled workers can be reconciled with a perspective that only understands labor's unified opposition to capital. In general, this approach proves inadequate because it fails to take into account that conflict is shaped by institutions and conditions of a nationally specific character.

The difficulties encountered by the deterministic theories when faced with the disparate experiences of different nations suggests that a more fruitful approach would be to investigate the sources of this national diversity. This paper has pointed to one promising line of inquiry, the varying relations of the state to social classes or economic groups and how such political arrangements are related to the economic constraints in which employers operate.

An improved understanding of the sources of national diversity should contribute to the task of developing a more general framework for analyzing employers' labor strategies. However, if theory is to provide real insight into the nature of employment relations, it will be necessary to allow for nationally specific determinants. It will be necessary to eschew deterministic approaches that reduce complex processes to one underlying dynamic of capitalism.

END NOTES

- 1 See H. Gospel and C. Littler (eds.), *Managerial Strategies and Industrial Relations*, Heinemann, 1983; C. Littler, *The Development of the Labour Process in Capitalist Societies*, Heinemann, 1982; C. Sabel, *Work and Politics: The Division of Labour in Industry*, Cambridge University Press, 1982.
- 2 The principal studies are H. Braverman, *Labor and Monopoly Capital*, Monthly Review Press, 1974; M. Freyssenet, *Le Processus de déqualification - surqualification de la force du travail*, Centre de Sociologie Urbaine, 1974; and C. Palloix, "The Labor Process and Class Strategy," Conference of Socialist Economists, Pamphlet No. 1, 1976, p. 46-67.
- 3 See B. Elbaum, W. Lazonick, F. Wilkinson, and J. Zeitlin, "The Labor Process, Market Structure and Marxist Theory: A Symposium," *Cambridge Journal of Economics*, III, 3, 1979; and S. Wood (ed.), *The Degradation of Work?* Hutchinson, 1982. For studies focussing specifically on differences in work organization and managerial policy in comparable British and French firms, see P. Dubois, "Niveaux de main-d'oeuvre et organization du travail ouvrier: Etudes de cas français et anglais," *Sociologie du Travail*, No. 3, 1980, p. 257-74; and D. Gallie, *In Search of the New Working Class*, Cambridge University Press, 1978.
- 4 For other contributions discussing the role of politics in shaping employment relations, see S. Berger and M. Piore, *Dualism and Discontinuity in Industrial Societies*, Cambridge University Press, 1980; J. Rubery, R. Tarling, and F. Wilkinson, *Labour Market Segmentation Thesis: An Alternative Framework for Analysing the Employment System*, Department of Applied Economics Working Paper, University of Cambridge, 1984; C. Sabel, op. cit. (1982); P. Villa, "The Structuring of the Labor Market: A Comparison of the Steel and Construction Industries in Italy," Ph.D. Thesis, University of Cambridge, 1984; F. Wilkinson, "Productive Systems," *Cambridge Journal of Economics*, Vol. 7, No. 3/4, Sept./Dec. 1983.
- 5 The most careful treatment of the evidence is P. O'Brien, and C. Keyder, *Economic Growth in Britain and France, 1780-1914: Two Paths to the Twentieth Century*, George Allen and Unwin, 1978. Their empirical results have recently been questioned by N. Crafts, "Economic Growth in France and Britain, 1830-1910: A Review of the Evidence," *The Journal of Economic History*, Vol. XLIV, No. 1, March (1984). Crafts argues that O'Brien and Keyders' use of commodity production (excluding the service sector) for a comparison of economic performance is misleading and that in terms of gross national product (including services) British performance was superior. Crafts concludes, however, that the performance of the French economy during the nineteenth century was considerably more respectable than suggested by earlier accounts stressing France's "retardation." See for example, T. Kemp, *Economic Forces in French History*, 1971; and C.P. Kindleberger, *Economic Growth in France and Britain, 1851-1950*, Harvard University Press, 1964.
- 6 For early formulations, see M. Levy-Leboyer, "Les processus d'industrialisation: Le cas de l'Angleterre et de la France," *Revue Historique*, 92 Année, Vol. 239, 1968, pp. 281-98; and R. Roehl, "French Industrialisation: A Reconsideration," *Explorations in Economic History* 13 (July 1976). For a recent and systematic account stressing the analytical parallels between nineteenth century French industrial development and recent tendencies towards industrial decentralization in Western European economies, see C. Sabel and J. Zeitlin, "Historical Alternatives to Mass production," *Past and Present*, 1985. Also see H.D. Clout, *Themes in the Historical Geography of France*, 1977.
- 7 For technical and organizational change in the iron, cotton, and coal industries, see D.S. Landes, *The Unbound Prometheus*, Cambridge University Press, 1972, Ch. 2. For general accounts, also see E.J. Hobsbaum, *Industry and Empire*, Weidenfeld and Nicolson, 1969, pp. 40-59; and P. Mathias, *The First Industrial Nation*, 2nd edition, Methuen, 1983, pp. 110-148.

- 8 P. O'Brien, and C. Keyder, op. cit. (1978), pp. 160-74; C. Sabel and J. Zeitlin, op. cit. (1983). For the retention of traditional forms of organization in the French garment industry, see C.H.J. Johnson, "Patterns of Proletarianization: Parisian Tailors and Lodève Woollens Workers," in J.M. Merriam (ed.), *Consciousness and Class Experience in Nineteenth-Century Europe*, 1979. For the case of the French hosiery industry, see C. Heywood, "The Rural Hosiery Industry of the Lower Champagne Region, 1750-1850," *Textile History*, 7, (1976).
- 9 J.H. Clapham, *An Economic History of Modern Britain*, Cambridge University Press, 1950, Ch. 5. For a wealth of empirical evidence on the importance of small-scale labor intensive forms of production during the nineteenth century, see R. Samuel, "The Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain," *History Workshop Journal*, III (1977).
- 10 For developments during the first half of the nineteenth century, see B. Gille, *Recherches sur la formation de la grande entreprise capitaliste, 1814-1848*, Paris, 1959; and M. Levy-Leboyer, *Les banques européennes et l'industrialisation internationale dans la première moitié du 19e siècle*, Paris, 1964.
- 11 F. Caron, *An Economic History of Modern France*, Columbia University Press, 1979, pp. 164-65.
- 12 For a general discussion of French labor supply during the nineteenth and twentieth centuries, see Y. Lequin, "Labor in the French Economy since the Revolution," *The Cambridge Economic History of Europe*, Vol. VII, Part 1, Cambridge University Press, 1978.
- 13 P. O'Brien and C. Keyder, op. cit. (1978), pp. 94.
- 14 See, for example, E. Labrousse, "The Evolution of Peasant Society in France," in E.M. Acomb and M.L. Brown (eds.), *French Society and Culture Since the Old Regime*, New York, 1966; E. Le Roy Ladurie, "La civilization rurale," in his *Le territoire de l'historien*, Gallimard, 1973; and F.O. Sargent, "From Feudalism to Family Farms in France," *Agricultural History*, July (1961).
- 15 O'Brien and Keyder, op. cit. (1978), pp. 132-35. O'Brien and Keyder's interpretation is based substantially on the work of M. Bloc, in particular his *Seigneur française et manoir anglais*, Armand-Colin, 1967, Part 2. Also see M. Bloc, *Les caractères originaux de l'histoire rurale française*, Armand-Colin, 1952.
- 16 O'Brien and Keyder, op. cit. (1978), pp. 134-136.
- 17 Marx's characterization of French attitudes at mid-nineteenth century are much to the point. "The position of a proprietor, the possession of a house, of a plot of ground, is the chief object also of the factory operative, and also of almost every poor man who has not already a property; in fact all look to the land." K. Marx, *Capital*, Vol. 1, Penguin Book Edition, 1976, Appendix, pp. 1075-76.
- 18 M. Levy-Leboyer, "Innovation and Business Strategies in Nineteenth and Twentieth Century France," in Carter, Forster, and Moody (eds.), *Enterprise and Entrepreneurs in Nineteenth and Twentieth Century France*, John Hopkins Press, 1976, pp. 94-95; and P.N. Stearns, *Paths to Authority*, University of Illinois Press, 1978, pp. 42-48. The existence of an immobile and underemployed work force in the countryside helps to account for the importance of home work in the French economy. The number of home workers rose to 1.5 million in 1896 and was about 1 million in 1936. Levy-Leboyer, op. cit. (1976), p. 95.

- 19 See C.A. Holms, *Practical Shipbuilding*, Longmans, Green and Co., 1918, for a detailed description of shipbuilding technology of the era that is easily understood by the non-specialist. Good descriptions are also contained in W.A. Abell, *The Shipwright's Trade*, Cambridge University Press, 1948; C. Benoist, *L'Organisation du travail: la crise de l'état moderne*, Tome 1, Librairie Plon, 1905; E.H. Lorenz, "The Labor Process and Industrial Relations in the British and French Shipbuilding Industries from 1880 to 1970," Ph.D. Thesis, University of Cambridge, 1983, Ch. 2; and A. Reid, "The Division of Labour in the Shipbuilding Industry 1880-1920, with Special Reference to Clydeside," Ph.D. Thesis, University of Cambridge, 1980, Ch. 5.
- 20 See S. Pollard and P.L. Robertson, *The British Shipbuilding Industry, 1890-1914*, Harvard University Press, 1979, pp. 6-7, 28-30, and 231-21 for the impact of unstable demand conditions on the pattern of capital investment in the industry. See A. Reid, op. cit. (1980), p. 46 for the absence of shipbuilding on spec. Also see L. Basso, "Les Entreprises française de construction navales," Thèse, Faculté de Droit, Université de Paris (1910), pp. 88-93; and J. Hardy, "L'Industrie de constructions navales en France," Thèse, Faculté de Droit de Rennes (1951), p. 34.
- 21 Pollard and Robertson, op. cit. (1979), pp. 58-69 and 92-102. In 1910, of the eighty-five firms in the industry, six were multi-yard enterprises. These were: Swan Hunter and Wigham Richardson, Palmers, Armstrong Whitworth, Barclay Curle, Beardmores, and the Northumberland Shipbuilding Co.
- 22 S. Price's study of labor mobility for the Clyde region between 1889 and 1913 supports this view. Based on figures collected by the Clyde Shipbuilding Association, Price has estimated that about 50 percent of the work force can be classified as "floaters" or as not having been regularly employed by any one yard. For the group defined as "regulars," the average length of the employment contract varied between 28 and 38 weeks depending on the trade. For the "floaters," the average employment contact varied between 10 and 22 weeks. In other words, the figures show that considerably less than 50 percent of the work force (how much less is not clear from Price's analysis) enjoyed anything approaching stable employment with one shipyard. S. Price, "Labor Mobility in Clyde Shipbuilding 1889-1913," discussion paper for the Gothenberg Conference on Shipbuilding History, University of Gothenberg, 27-29 November (1981), pp. 6-8 and 12.
- 23 Lloyd's Register of Shipping, Annual Shipbuilding Returns.
- 24 In 1913 in France there were thirteen firms operating fifteen yards. In Nantes and St. Nazaire four firms operated five yards. These were the Chantiers de la Loire with a yard in Nantes and in St. Nazaire; Chantiers de l'Atlantique in St. Nazaire; and Chantiers Dubigeon and Chantiers de Bretagne located in Nantes. Chantiers de l'Atlantique also operated a yard in grand Quévilly on the site of the abandoned yard of Chantiers Normandie. See J. Latty, *Traité d'Economie Maritime*, Tome 1, *La construction navale dans l'économie nationale*, Imprimerie Nationale, Paris, 1951, p. 250; and R. Puech, "Evolution de la construction navale française depuis 1913," *Journal de la Marine Marchande*, April, 1969, p. 151.
- 25 On the problem of skilled labour scarcity in French shipbuilding regions, see M. Barbance, "Saint Nazaire: le port, la ville, le travail," Thèse, Faculté de Droit, Université de Rennes (1948), p. 388; L.E. Bertin, "Rapport sur une seconde mission en Angleterre: 5 août-15 sept. 1884," Collection de la Bibliothèque de la Marine Marchande, Paris, 1885; M. Roux-Freissineng, "L'Industrie des constructions navales en France," Thèse Faculté de Droit d'Aix (1929), p. 34; M. Pinczon, "Mission en Angleterre et en Ecosse avec la délégation du Conseil National Economique," Enquête du Conseil National Economique, 1929-30, Chambre Syndical des Constructeurs de Navires, Circulaire 11B, Paris (1930). For evidence on the comparative lack of specialization of French shipyard workers, see R. Dugas, "L'Industrie de la

construction navale," Enquête du Conseil National Economique, 1929-30, Chambre Syndical des Constructeurs de Navires, Circulaire 11 B, Paris, 1930, p. 59.

- 26 AREMORS, *Etudes et documents sur Saint Nazaire et le mouvement ouvrier de 1920-1939* (1983), pp. 16-17; Dugas, op. cit. (1930), p. 59.
- 27 Lorenz, op. cit. (1983), pp. 261-62.
- 28 For the official histories of these three unions, see respectively: J.E. Mortimer, *The History of the Boilermakers' Society*, George Allen and Unwin, 1973; D. Dougan, *The Shipwrights*, F. Graham, Newcastle-upon-Tyne, 1975; and A. Tuckett, *The Blacksmiths' History*, Lawrence and Wishart, 1974.
- 29 See H.A. Clegg, *General Union in a Changing Society*, Basil Blackwell, 1964, p. 47; Reid, op. cit. (1980), Ch. 5.
- 30 Clegg, op. cit. (1964), pp. 25 and 38-41. The TNLU later became known as the National Amalgamated Union of Labour. This union and the Gasworkers were two of the three unions that came together in 1924 to form the National Union of General and Municipal Workers.
- 31 Two types of strikes should be distinguished: *demarcation* strikes over the allocation of work among competing groups of skilled workers, and *dilution* strikes over the substitution of less-skilled for skilled apprenticed workers. For a general discussion on demarcation conflict during this period, see R. Okaama, "Employers' Policy and Craft Unionism: A Study of British Industrial Relations in Shipbuilding from the 1870s to the War," *The Bulletin of the Institute of Social Sciences*, Meiji University, Vol. 2, No. 2, (1979); Pollard and Robertson, op. cit. (1979), pp. 166-69; Robertson, "Demarcation Disputes in British Shipbuilding Before 1914," *International Review of Social History*, 1975; and Reid, op. cit. (1980), pp. 100-03, 171-78, and 212-13.
- 32 For disputes between platers and their assistants over the control of plating work in the 1880's, see Reid, op. cit. (1980), pp. 117-21. For conflict over the use of apprentice labour on pneumatic machine tools just after 1900, see Lorenz, op. cit. (1983), pp. 57-66. For conflict over manning rights on welding equipment during the 1930's, see Lorenz, op. cit. (1983), pp. 197-207; and J. McGoldrick, "Crisis and the Division of Labor: Clydeside Shipbuilding in the Inter-War Period," in A. Dickson (ed.), *Capital and Class in Scotland*, Donald and Co., 1982; and S.R.N.A. Archives, Federation Circulars, 1931-35, passim.
- 33 E.H. Lorenz, and F. Wilkinson, "The Decline of the British Shipbuilding Industry," in B. Elbaum, and W. Lazonick, (eds.), *The Decline of the British Economy*, Oxford University Press, 1986.
- 34 Archives Nationales, Series F7 13606, Etats des Syndicats, Nantes 1907; Ibid., St. Nazaire, 1907.
- 35 In Nantes, just prior to 1914, average employment in the three main yards was about 4,500: Chantiers de la Loire (3,000); Chantiers de Bretagne (1,155); and Chantiers Dubigeon (380). See Y. Guin, *Le mouvement ouvrier Nantais*, Editions Masperio, 1976, p. 377. The Coueron foundry employed 800 in 1907 and the Basse Indré Smith Works employed 800. P. Thébaud, *L'Activité économique de la basse-loire de 1852-1939*, Memoire de Maitrise, Université de Nantes, pp. 74-75. The two principal engineering works were Voruz, and Buissonneau, and Lotz. Including these and the various smaller engineering establishments, it is likely that the total employment of metallurgical workers in Nantes was in the range of 9,000 to 10,000 giving a percentage unionized of about 10 percent. In St. Nazaire Chantiers de la Loire employed between 1,200 and 1,400 at the turn of the century, while Chantiers de

l'Atlantique employed 4,500 during the 1900-01 boom, but only 3,900 in 1911. See Barbance, op. cit. (1948), pp. 373, 386. With associated engineering works, total employment for the metal-working trades probably varied between 5,500 and 6,500, giving a percentage unionized between 30 and 35 percent.

- 36 Roux-Freissineng, op. cit. (1929), p. 34.
- 37 Barbance, op. cit. (1948), pp. 367 and 493; Royal Commission on Depression in Trade, 1886, Third Report, qn, 12,013.
- 38 Caron, op. cit. (1979), pp. 178-80.
- 39 Caron, op. cit. (1979), pp. 190 and 230-39. The chemical, electrical, and mechanical engineering, petroleum and petroleum products, and electricity industries increased their relative share of the industrial work force. The share of textiles, clothing, leather products, and coal declined sharply. J.J. Carré, P. Dubois, and E. Malinvaud, *French Economic Growth*, Oxford University Press, 1979.
- 40 Caron, op. cit. (1979), p. 206.
- 41 J. Zysman, *Government, Markets and Growth*, Martin Robertson, 1984, pp. 133-35. For Parliament's lack of influence on economic planning under the 4th Republic, see S. Cohen, *Modern Capitalist Planning: The French Model*, Weidenfeld and Nicolson, 1969, pp. 229-37.
- 42 S. Cohen, "Twenty Years of the Gaullist Economy," in W.G. Andrews and S. Hoffmann (eds.), *The Fifth Republic at Twenty*, State University of New York Press, 1981; and Zysman, op. cit. (1984), p. 133-38.
- 43 J. Chardonnet, *L'Economie Française: Les grandes industries*, Tome II, Dalloz, 1971, pp. 415-17; H. Ehrmann, *Organized Business in France*, Princeton University Press, 1957, pp. 245-46 and 289-90.
- 44 Barbance, op. cit. (1948), p. 607; Archives des Chantiers Dubigeon-Normandie; Archives de l'Observatoire de l'Ouest, Direction Regional de Nantes, INSEE.
- 45 Firms arguably could have aimed to fill skilled positions by poaching from their competitors, given the industry-specific nature of most skills. There is no evidence of this in the Loire-Inférieure. The likely explanation is that the few yards in the region, long associated in district employers' associations, tacitly agreed to avoid such a policy, which in the extremely tight labor market conditions prevailing would have driven up labor costs. For the history of the shipbuilding employers' association in Nantes, see G. Dubigeon, "Du salaire ouvrière dans la métallurgie Nantaise de 1914 a 1927," Thèse, Faculté de Droit de Rennes (1928).
- 46 L. Oury, *Les prolos*, Editions Denoel, 1973, pp. 122-23.
- 47 See, for example, R. Matthews, C. Feinstein, and J. Odling-Smee, *British Economic Growth 1856-1973*, Clarendon Press, 1982, Ch. 9.; and S. Pollard, *The Development of the British Economy, 1914-1980*, 3rd Edition, Edward Arnold (1983), pp. 274-300. During the 1950s shipbuilding output in terms of tons launched stagnated at about 1.3 million tons annually. During the 1960s output declined, fluctuating around 1.1 million tons. Lloyd's Register of Shipping, Annual Shipbuilding Returns.
- 48 For structural change in the Scottish economy, see T.L. Johnston, N.K. Buxton, and D. Maire, *Structure and Growth of the Scottish Economy*, Colin, 1971.

- 49 A.J. Brown, *The Framework of Regional Economics in the United Kingdom*, Cambridge University Press, 1972, pp. 301-18; D. Keeble, *Industrial Location and Planning in the United Kingdom*, Methuen, 1976, Ch. 5; and B. Moore and J. Rhodes, "Evaluating the Effects of British Regional Economic Policy," *Economic Journal*, Vol. 83 (1973), pp. 87-110.
- 50 This was the Peplar and McFarlane Plan. For a review of post-war plans for the Tyne and Wear region and a description of changes in the structure and location of employment, see Northern Region Strategy Team Working Paper, Project No. B1A, "Settlement Patterns and Policies in Tyne and Wear" (1976).
- 51 *Ibid.*, pp. 21-23; 43-50; 72-73.
- 52 F. Wilkinson, "Demarcation in Shipbuilding," Department of Applied Economics Working Paper, University of Cambridge (1973), pt. 6.
- 53 Report and Statement of Accounts for the Period ending March 1968, SITB (1968), pp. 6 and 13.
- 54 S.R.N.A. Archives, Federation Circulars, Oct. 1962, "Scheme for the Reorganisation of Labour and Conditions of Employment in U.K. Yards."
- 55 Recommendations for the Training of Shipyard Metal Using Trainees, SITB Training Policy Statement No. 3, Revised, August 1972.
- 56 *Ibid.*, p. 13-16.
- 57 Lorenz, *op. cit.* (1983), pp. 137 and 151-54. For specialization in the production of liquid gas carriers at chantiers de France and LaCiotat, see J. Buret, "L'évolution de la spécialisation des chantiers navales de la Ciotat dans le domaine des navires transports de gaz," *Nouveautés Techniques Maritimes* (1960), pp. 88-91; Chardonnet, *op. cit.*, pp. 410-11; and M. Morreaux, "La restructuration du secteur de la construction navale en France," *Economie et Humanisme*, No. 240 (1978), pp. 90-95. For specialization at the Chantiers de France, see "La Modernization de France-Gironde-Dunkerque," *Nouveautés Techniques Maritimes* (1964).
- 58 See K. Ollson, "Tankers and Technical Development in the Swedish Shipbuilding Industry," *Proceedings of the SSRC Conference on Scottish and Scandinavian Shipbuilding*, University of Gothenberg (1980), for specialization in standard tankers and bulk carriers in the principal Swedish yards. Also see J.R. Parkinson, *The Economics of Shipbuilding in the United Kingdom*, Cambridge University Press, 1960, pp. 150, 182-83 and 215.
- 59 Chardonnet, *op. cit.* (1971), pp. 417-44; and Le Commissariat General du Plan, "La Construction Navale" (1971).
- 60 CEGOS, "Organisation technique du Chantier de Port-de-Bouc; Lorenz, *op. cit.* (1983), pp. 162-78; A. Ravaille, "Le planning en construction navale," *Nouveautés Techniques Maritimes* (1964), pp. 192-211. These comments apply less to out-fitting where the varied nature and location of the work assured that it retained more of its traditional craft character. See "Les ouvriers de la siderurgie et de la metallurgie a Dunkerque, BETURE, Secretariat d'Etat aux Transports, Trappes (June 1978), p. 64 and 8.
- 61 Lorenz, and Wilkinson, *op. cit.* (1986). The notable exception was the Furness yard which concentrated on the production of tankers, often of standard design. See Parkinson, *op. cit.* pp. 139-53; and *The Shipbuilding Inquiry Committee Report, 1965-66* (Geddes Report), VII, cmnd. 2937, pp. 75-76.

- 62 B. Hogwood, *Government and Shipbuilding: The Politics of Industrial Change*, Saxon House, 1979, pp. 87-93.
- 63 The Committee proposed the formation of one as opposed to two groups on the Wear and suggested that Vickers, which remained independent, be attached to the combined Tyne and Tees group. The Tyne and Tees group formed around Swan Hunter was the largest of the new firms, consisting of six shipyards and twelve repair facilities. Other large firms were created on the lower Clyde through the merger of Scotts and Lithgow, and on the upper Clyde through the merger of the principal yards to form Upper Clyde Shipbuilders. Booz-Allen and Hamilton report, *British Shipbuilding 1972*, A Report to the Department of Trade and Industry (1973); and *Shipbuilding Inquiry Committee Report*, op. cit. (1966).
- 64 For the wider importance of these forms of trade union action in Britain prior to the First World War, see H. Clegg, A. Fox, and J. Thompson, *A History of British Trade Unionism Since 1889*, Vol. 1, 1889-1910, Clarendon Press, 1964. For historical and contemporary condition in the steel industry, see respectively B. Elbaum and F. Wilkinson, "Industrial Relations and Uneven Development: A Comparative Study of the American and British Steel Industries," *Cambridge Journal of Economics*, Sept. 1979; and E. Owen-Smith, *Productivity Bargaining*, Pan Books, 1971, pp. 192-94 and 288-89. For the car industry see E. Batstone, I. Boraston, and S. Frenkel, *Shop Stewards in Action*, Basil Blackwell, 1979, pp. 142-43; and J. Zeitlin, "The Emergence of Shop Stewards Organisations and Job Control in the British Car Industry," *History Workshop Journal*, No. 10, (1980). For a detailed study of workers' stratification in the shipbuilding industry based on condition at the Swan Hunter yard on the Tyne, see R. Brown, P. Brannen, J.M. Cousins, and M.L. Sampler, "The Contours of Solidarity—Stratification and Industrial Relations in Shipbuilding," *British Journal of Industrial Relations*, Vol. 10 (1972).
- 65 For similar comparative observations with respect to skilled workers in the engineering industry, See F. Eyraud, "Action Syndical et Salaire: Une comparaison Français-Grande Bretagne dans l'industrie métallurgique," Thèse pour le Doctorat des Sciences Economique, Faculté de Science Economique, Université d'Aix-Marseille II (1981), pp. 195-215. For the case of maintenance workers in various industrial sectors, see P. Dubois and D. Monjardet, *La division du travail dans l'industrie: France-Angleterre*, Tome 1, *Les ouvriers*, Université de Paris VII, (1979); and D. Gallie, *In Search of the New Working Class*, Cambridge University Press, 1978.
- 66 One justification for this argument is straightforward. Occupational based unions have an interest in reinforcing job demarcations in order to preserve their occupational base, while industrial unions have no need for such action.
- 67 *Le travailleur de l'Ouest*, July 8, 1922.
- 68 For the importance of state intervention in French industrial relations, see M. Laroque, "Les conventions collectives de travail," Rapport du Conseil National Economique, *Journal Officiel*, Annexe, 3 Jan. 1935; J.D. Reynaud, *Les Syndicats, les Patrons et l'Etat*, Les Editions Ouvrières, 1978, pp. 116-17; F. Sellier, *Stratégie de la lutte sociale: France 1939-1960*, Les Editions Ouvrières, 1961. For the metallurgical sector, see Sellier, "L'évolution de France, 1950-1969," *Droit Social*, Nos. 9 and 10, Sept.-Oct. (1970), pp. 439-44. For the case of the shipbuilding industry in Nantes and St. Nazaire, see Lorenz, op. cit. (1983), pp. 78-88.
- 69 Convention Collective de la Métallurgie de St. Nazaire, Article 16, Classement-Promotion, pp. 12-13 (1955).
- 70 Convention Collective de Travail des Industries Mécaniques et Navales de Nantes (1957).

- 71 Accord d'Entreprise, "Profil de Carrière," Archives des Chantiers Dubigeon-Normandie, Nantes (1976).
- 72 Archives des Chantier Dubigeon-Normandie, Nantes.
- 73 The following discussion of the relaxation of demarcation draws substantially on the unpublished work of F. Wilkinson, "Demarcation in Shipbuilding," Department of Applied Economics Working Paper, University of Cambridge (1973). I would like to thank Mr. Wilkinson for allowing me to refer to his manuscript. For productivity bargaining at Fairfields, see Alexander and Jenkins (1970). Also see the Commission on Industrial Relations, Report No. 22, "Shipbuilding and Shiprepairing" (1971), pp. 219-237; J.E.T. Eldridge, *Industrial Disputes*, Routledge and Kegan Paul, 1968; G. Roberts, "Demarcation Rules in Shipbuilding," Department of Applied Economics Occasional Paper No. 14, University of Cambridge (1967); and J. McGoldrick, "Industrial Relations and the Division of Labor in the Shipbuilding Industry," *British Journal of Industrial Relations*, Vol. XXI, No. 2 (1983).
- 74 This was the clearly expressed opinion of the Shipbuilding Employers' Federation. See S.R.N.A. Archives, Federation Circulars, "Scheme for the Reorganisation of Labor and Conditions of Employment in United Kingdom Shipyards," Oct. (1962).
- 75 For the changing attitudes of the officials of the Boilermakers' Society, see Wilkinson, op. cit. (1973), Ch. 6, pp. 10-13.
- 76 Ibid., Ch. 6, pp. 22-27. In general the A.S.B. was not willing to countenance of a breakdown of demarcation lines among competing unions. Similarly, in the case of the outfitting trades, often organized in competing unions, flexibility and interchangeability were notably less successful. Thus, while it is clear that craft regulations were relaxed, trade union structure set the parameters within which it took place.
- 77 See Wilkinson's discussion of resistance to relaxation agreements by welders on the northeast coast of England due to their negative impact on welders' established wage differential. A.S.B. officials in the district refused to support the welders in two major strike actions. This led to an unsuccessful breakaway attempt by welders, with demands for separate bargaining rights. Wilkinson, op. cit. (1973), Ch. 6, pp. 20-21.
- 78 This human capital argument is usually connected with the work of G. Beker, *Human Capital*, Columbia University Press, 1969; and P. Doeringer and M. Piore, *Internal Labor Markets and Manpower Analysis* (1972). The same basic argument may be found in C. Littler, "A Comparative Analysis of Managerial Structures and Strategies" in H. Gospel and C. Littler (eds.), *Managerial Strategies and Industrial Relations*, Heinemann, 1983.
- 79 R. Edwards, *Contested Terrain: The Transformation of the Workplace in the Twentieth Century*, Basic Books, 1979; D. Gordon, R. Edwards, and M. Reich, *Segmented Work, Divided Workers: The Historical Transformation of Labor in the United States*, Cambridge University Press, 1982. On the basis of this understanding of capital-labor relations, Gordon et al. have developed a typology of managerial control strategies, arguing that there is a progression over time in capitalism from the stage of "initial proletarianization" to "homogenization" and to "segmentation" of labor. At each stage, labor's success in undermining management's control strategy leads to the development of a more sophisticated approach. For critical reviews of the work of Gordon et al., see P.N. Nolan and P.K. Edward, "Homogenise, Divide and Rule: An Essay on *Segmented Work, Divided Workers*," *Cambridge Journal of Economics*, Vol. 8, No. 2 (June 1984); F. Wilkinson, "Institutionalism Applied: A Review of *Segmented Work, Divided Workers*," *Contributions to Political Economy*, (1983); and J. Zeitlin, "Social Theory and the History of Work," *Social History* (Oct. 1983).

80 P. Joyce, "Labour, Capital and Compromise: A Response to Richard Price," *Social History*, Vol. 9, No. 1 (1984); C. Sabel, *Work and Politics*, Cambridge University Press, 1982; and F. Wilkinson, "Productive Systems," *Cambridge Journal of Economics*, Vol. 7, No. 3/4 (Sept./Dec. 1983).

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- i See H. Gospel and C. Littler (eds.), *Managerial Strategies and Industrial Relations*, Heinemann, 1983; C. Littler, *The Development of the Labour Process in Capitalist Societies*, Heinemann, 1982; C. Sabel, *Work and Politics: The Division of Labour in Industry*, Cambridge University Press, 1982.
- ii The principal studies are H. Braverman, *Labor and Monopoly Capital*, Monthly Review Press, 1974; M. Freyssenet, *Le Processus de déqualification - surqualification de la force du travail*, Centre de Sociologie Urbaine, 1974; and C. Palloix, "The Labor Process and Class Strategy," Conference of Socialist Economists, Pamphlet No. 1, 1976, p. 46-67.
- iii See B. Elbaum, W. Lazonick, F. Wilkinson, and J. Zeitlin, "The Labor Process, Market Structure and Marxist Theory: A Symposium," *Cambridge Journal of Economics*, III, 3, 1979; and S. Wood (ed.), *The Degradation of Work?* Hutchinson, 1982. For studies focussing specifically on differences in work organization and managerial policy in comparable British and French firms, see P. Dubois, "Niveaux de main-d'oeuvre et organization du travail ouvrier: Etudes de cas français et anglais," *Sociologie du Travail*, No. 3, 1980, p. 257-74; and D. Gallie, *In Search of the New Working Class*, Cambridge University Press, 1978.
- iv For other contributions discussing the role of politics in shaping employment relations, see S. Berger and M. Piore, *Dualism and Discontinuity in Industrial Societies*, Cambridge University Press, 1980; J. Rubery, R. Tarling, and F. Wilkinson, *Labour Market Segmentation Thesis: An Alternative Framework for Analysing the Employment System*, Department of Applied Economics Working Paper, University of Cambridge, 1984; C. Sabel, op. cit. (1982); P. Villa, "The Structuring of the Labor Market: A Comparison of the Steel and Construction Industries in Italy," Ph.D. Thesis, University of Cambridge, 1984; F. Wilkinson, "Productive Systems," *Cambridge Journal of Economics*, Vol. 7, No. 3/4, Sept./Dec. 1983.
- v The most careful treatment of the evidence is P. O'Brien, and C. Keyder, *Economic Growth in Britain and France, 1780-1914: Two Paths to the Twentieth Century*, George Allen and Unwin, 1978. Their empirical results have recently been questioned by N. Crafts, "Economic Growth in France and Britain, 1830-1910: A Review of the Evidence," *The Journal of Economic History*, Vol. XLIV, No. 1, March (1984). Crafts argues that O'Brien and Keyders' use of commodity production (excluding the service sector) for a comparison of economic performance is misleading and that in terms of gross national product (including services) British performance was superior. Crafts concludes, however, that the performance of the French economy during the nineteenth century was considerably more respectable than suggested by earlier accounts stressing France's "retardation." See for example, T. Kemp, *Economic Forces in French History*, 1971; and C.P. Kindleberger, *Economic Growth in France and Britain, 1851-1950*, Harvard University Press, 1964.
- vi For early formulations, see M. Levy-Leboyer, "Les processus d'industrialisation: Le cas de l'Angleterre et de la France," *Revue Historique*, 92 Année, Vol. 239, 1968, pp. 281-98; and R. Roehl, "French Industrialisation: A Reconsideration," *Explorations in Economic History* 13 (July 1976). For a recent and systematic account stressing the analytical parallels between nineteenth century French industrial development and recent tendencies towards industrial decentralization in Western European economies, see C. Sabel and J. Zeitlin, "Historical Alternatives to Mass production," *Past and Present*, 1985. Also see H.D. Clout, *Themes in the Historical Geography of France*, 1977.

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- vii For technical and organizational change in the iron, cotton, and coal industries, see D.S. Landes, *The Unbound Prometheus*, Cambridge University Press, 1972, Ch. 2. For general accounts, also see E.J. Hobsbaum, *Industry and Empire*, Weidenfeld and Nicolson, 1969, pp. 40-59; and P. Mathias, *The First Industrial Nation*, 2nd edition, Methuen, 1983, pp. 110-148.
- viii P. O'Brien, and C. Keyder, op. cit. (1978), pp. 160-74; C. Sabel and J. Zeitlin, op. cit. (1983). For the retention of traditional forms of organization in the French garment industry, see C.H.J. Johnson, "Patterns of Proletarianization: Parisian Tailors and Lodève Woollens Workers," in J.M. Merriam (ed.), *Consciousness and Class Experience in Nineteenth-Century Europe*, 1979. For the case of the French hosiery industry, see C. Heywood, "The Rural Hosiery Industry of the Lower Champagne Region, 1750-1850," *Textile History*, 7, (1976).
- ix J.H. Clapham, *An Economic History of Modern Britain*, Cambridge University Press, 1950, Ch. 5. For a wealth of empirical evidence on the importance of small-scale labor intensive forms of production during the nineteenth century, see R. Samuel, "The Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain," *History Workshop Journal*, III (1977).
- x For developments during the first half of the nineteenth century, see B. Gille, *Recherches sur la formation de la grande entreprise capitaliste, 1814-1848*, Paris, 1959; and M. Levy-Leboyer, *Les banques européennes et l'industrialisation internationale dans la première moitié du 19e siècle*, Paris, 1964.
- xi F. Caron, *An Economic History of Modern France*, Columbia University Press, 1979, pp. 164-65.
- xii For a general discussion of French labor supply during the nineteenth and twentieth centuries, see Y. Lequin, "Labor in the French Economy since the Revolution," *The Cambridge Economic History of Europe*, Vol. VII, Part 1, Cambridge University Press, 1978.
- xiii P. O'Brien and C. Keyder, op. cit. (1978), pp. 94.
- xiv See, for example, E. Labrousse, "The Evolution of Peasant Society in France," in E.M. Acomb and M.L. Brown (eds.), *French Society and Culture Since the Old Regime*, New York, 1966; E. Le Roy Ladurie, "La civilization rurale," in his *Le territoire de l'historien*, Gallimard, 1973; and F.O. Sargent, "From Feudalism to Family Farms in France," *Agricultural History*, July (1961).
- xv O'Brien and Keyder, op. cit. (1978), pp. 132-35. O'Brien and Keyder's interpretation is based substantially on the work of M. Bloc, in particular his *Seigneur française et manoir anglais*, Armand-Colin, 1967, Part 2. Also see M. Bloc, *Les caractères originaux de l'histoire rurale française*, Armand-Colin, 1952.
- xvi O'Brien and Keyder, op. cit. (1978), pp. 134-136.
- xvii Marx's characterization of French attitudes at mid-nineteenth century are much to the point. "The position of a proprietor, the possession of a house, of a plot of ground, is the chief object also of the factory operative, and also of almost every poor man who has not already a property; in fact all look to the land." K. Marx, *Capital*, Vol. 1, Penguin Book Edition, 1976, Appendix, pp. 1075-76.

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- xviii M. Levy-Leboyer, "Innovation and Business Strategies in Nineteenth and Twentieth Century France," in Carter, Forster, and Moody (eds.), *Enterprise and Entrepreneurs in Nineteenth and Twentieth Century France*, John Hopkins Press, 1976, pp. 94-95; and P.N. Stearns, *Paths to Authority*, University of Illinois Press, 1978, pp. 42-48. The existence of an immobile and underemployed work force in the countryside helps to account for the importance of home work in the French economy. The number of home workers rose to 1.5 million in 1896 and was about 1 million in 1936. Levy-Leboyer, op. cit. (1976), p. 95.
- xix See C.A. Holms, *Practical Shipbuilding*, Longmans, Green and Co., 1918, for a detailed description of shipbuilding technology of the era that is easily understood by the non-specialist. Good descriptions are also contained in W.A. Abell, *The Shipwright's Trade*, Cambridge University Press, 1948; C. Benoist, *L'Organisation du travail: la crise de l'état moderne*, Tome 1, Librairie Plon, 1905; E.H. Lorenz, "The Labor Process and Industrial Relations in the British and French Shipbuilding Industries from 1880 to 1970," Ph.D. Thesis, University of Cambridge, 1983, Ch. 2; and A. Reid, "The Division of Labour in the Shipbuilding Industry 1880-1920, with Special Reference to Clydeside," Ph.D. Thesis, University of Cambridge, 1980, Ch. 5.
- xx See S. Pollard and P.L. Robertson, *The British Shipbuilding Industry, 1890-1914*, Harvard University Press, 1979, pp. 6-7, 28-30, and 231-21 for the impact of unstable demand conditions on the pattern of capital investment in the industry. See A. Reid, op. cit. (1980), p. 46 for the absence of shipbuilding on spec. Also see L. Basso, "Les Entreprises française de construction navales," Thèse, Faculté de Droit, Université de Paris (1910), pp. 88-93; and J. Hardy, "L'Industrie de constructions navales en France," Thèse, Faculté de Droit de Rennes (1951), p. 34.
- xxi Pollard and Robertson, op. cit. (1979), pp. 58-69 and 92-102. In 1910, of the eighty-five firms in the industry, six were multi-yard enterprises. These were: Swan Hunter and Wigham Richardson, Palmers, Armstrong Whitworth, Barclay Curle, Beardmores, and the Northumberland Shipbuilding Co.
- xxii S. Price's study of labor mobility for the Clyde region between 1889 and 1913 supports this view. Based on figures collected by the Clyde Shipbuilding Association, Price has estimated that about 50 percent of the work force can be classified as "floaters" or as not having been regularly employed by any one yard. For the group defined as "regulars," the average length of the employment contract varied between 28 and 38 weeks depending on the trade. For the "floaters," the average employment contact varied between 10 and 22 weeks. In other words, the figures show that considerably less than 50 percent of the work force (how much less is not clear from Price's analysis) enjoyed anything approaching stable employment with one shipyard. S. Price, "Labor Mobility in Clyde Shipbuilding 1889-1913," discussion paper for the Gothenberg Conference on Shipbuilding History, University of Gothenberg, 27-29 November (1981), pp. 6-8 and 12.
- xxiii Lloyd's Register of Shipping, Annual Shipbuilding Returns.
- xxiv In 1913 in France there were thirteen firms operating fifteen yards. In Nantes and St. Nazaire four firms operated five yards. These were the Chantiers de la Loire with a yard in Nantes and in St. Nazaire; Chantiers de l'Atlantique in St. Nazaire; and Chantiers Dubigeon and Chantiers de Bretagne located in Nantes. Chantes de l'Atlantique also operated a yard in grand Quévilly on the site of the abandoned yard of Chantiers Normandie. See J. Latty, *Traité d'Economie Maritime*, Tome 1, *La construction navale dans l'économie nationale*, Imprimerie Nationale, Paris, 1951, p. 250; and R. Puech, "Evolution de la construction navale française depuis 1913," *Journal de la Marine Marchande*, April, 1969, p. 151.

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- xxv On the problem of skilled labour scarcity in French shipbuilding regions, see M. Barbance, "Saint Nazaire: le port, la ville, le travail," Thèse, Faculté de Droit, Université de Rennes (1948), p. 388; L.E. Bertin, "Rapport sur une seconde mission en Angleterre: 5 août-15 sept. 1884," Collection de la Bibliothèque de la Marine Marchande, Paris, 1885; M. Roux-Freissineng, "L'Industrie des constructions navales en France," Thèse Faculté de Droit d'Aix (1929), p. 34; M. Pinczon, "Mission en Angleterre et en Ecosse avec la délégation du Conseil National Economique," Enquête du Conseil National Economique, 1929-30, Chambre Syndical des Constructeurs de Navires, Circulaire 11B, Paris (1930). For evidence on the comparative lack of specialization of French shipyard workers, see R. Dugas, "L'Industrie de la construction navale," Enquête du Conseil National Economique, 1929-30, Chambre Syndical des Constructeurs de Navires, Circulaire 11 B, Paris, 1930, p. 59.
- xxvi AREMORS, *Etudes et documents sur Saint Nazaire et le mouvement ouvrier de 1920-1939* (1983), pp. 16-17; Dugas, op. cit. (1930), p. 59.
- xxvii Lorenz, op. cit. (1983), pp. 261-62.
- xxviii For the official histories of these three unions, see respectively: J.E. Mortimer, *The History of the Boilermakers' Society*, George Allen and Unwin, 1973; D. Dougan, *The Shipwrights*, F. Graham, Newcastle-upon-Tyne, 1975; and A. Tuckett, *The Blacksmiths' History*, Lawrence and Wishart, 1974.
- xxix See H.A. Clegg, *General Union in a Changing Society*, Basil Blackwell, 1964, p. 47; Reid, op. cit. (1980), Ch. 5.
- xxx Clegg, op. cit. (1964), pp. 25 and 38-41. The TNLU later became known as the National Amalgamated Union of Labour. This union and the Gasworkers were two of the three unions that came together in 1924 to form the National Union of General and Municipal Workers.
- xxxi Two types of strikes should be distinguished: *demarcation* strikes over the allocation of work among competing groups of skilled workers, and *dilution* strikes over the substitution of less-skilled for skilled apprenticed workers. For a general discussion on demarcation conflict during this period, see R. Okaama, "Employers' Policy and Craft Unionism: A Study of British Industrial Relations in Shipbuilding from the 1870s to the War," *The Bulletin of the Institute of Social Sciences*, Meiji University, Vol. 2, No. 2, (1979); Pollard and Robertson, op. cit. (1979), pp. 166-69; Robertson, "Demarcation Disputes in British Shipbuilding Before 1914," *International Review of Social History*, 1975; and Reid, op. cit. (1980), pp. 100-03, 171-78, and 212-13.
- xxxii For disputes between platers and their assistants over the control of plating work in the 1880's, see Reid, op. cit. (1980), pp. 117-21. For conflict over the use of apprentice labour on pneumatic machine tools just after 1900, see Lorenz, op. cit. (1983), pp. 57-66. For conflict over manning rights on welding equipment during the 1930's, see Lorenz, op. cit. (1983), pp. 197-207; and J. McGoldrick, "Crisis and the Division of Labor: Clydeside Shipbuilding in the Inter-War Period," in A. Dickson (ed.), *Capital and Class in Scotland*, Donald and Co., 1982; and S.R.N.A. Archives, Federation Circulars, 1931-35, passim.
- xxxiii E.H. Lorenz, and F. Wilkinson, "The Decline of the British Shipbuilding Industry," in B. Elbaum, and W. Lazonick, (eds.), *The Decline of the British Economy*, Oxford University Press, 1986.
- xxxiv Archives Nationales, Series F7 13606, Etats des Syndicats, Nantes 1907; *Ibid.*, St. Naziare, 1907.

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- xxxv In Nantes, just prior to 1914, average employment in the three main yards was about 4,500: Chantiers de la Loire (3,000); Chantiers de Bretagne (1,155); and Chantiers Dubigeon (380). See Y. Guin, *Le mouvement ouvrier Nantais*, Editions Masperio, 1976, p. 377. The Coueron foundry employed 800 in 1907 and the Basse Indré Smith Works employed 800. P. Thébault, *L'Activité économique de la basse-loire de 1852-1939*, Memoire de Maitrise, Université de Nantes, pp. 74-75. The two principal engineering works were Voruz, and Buissonneau, and Lotz. Including these and the various smaller engineering establishments, it is likely that the total employment of metallurgical workers in Nantes was in the range of 9,000 to 10,000 giving a percentage unionized of about 10 percent. In St. Nazaire Chantiers de la Loire employed between 1,200 and 1,400 at the turn of the century, while Chantiers de l'Atlantique employed 4,500 during the 1900-01 boom, but only 3,900 in 1911. See Barbance, op. cit. (1948), pp. 373, 386. With associated engineering works, total employment for the metal-working trades probably varied between 5,500 and 6,500, giving a percentage unionized between 30 and 35 percent.
- xxxvi Roux-Freissineng, op. cit. (1929), p. 34.
- xxxvii Barbance, op. cit. (1948), pp. 367 and 493; Royal Commission on Depression in Trade, 1886, Third Report, qn, 12,013.
- xxxviii Caron, op. cit. (1979), pp. 178-80.
- xxxix Caron, op. cit. (1979), pp. 190 and 230-39. The chemical, electrical, and mechanical engineering, petroleum and petroleum products, and electricity industries increased their relative share of the industrial work force. The share of textiles, clothing, leather products, and coal declined sharply. J.J. Carré, P. Dubois, and E. Malinvaud, *French Economic Growth*, Oxford University Press, 1979.
- xl Caron, op. cit. (1979), p. 206.
- xli J. Zysman, *Government, Markets and Growth*, Martin Robertson, 1984, pp. 133-35. For Parliament's lack of influence on economic planning under the 4th Republic, see S. Cohen, *Modern Capitalist Planning: The French Model*, Weidenfeld and Nicolson, 1969, pp. 229-37.
- xlii S. Cohen, "Twenty Years of the Gaullist Economy," in W.G. Andrews and S. Hoffmann (eds.), *The Fifth Republic at Twenty*, State University of New York Press, 1981; and Zysman, op. cit. (1984), p. 133-38.
- xliii J. Chardonnet, *L'Economie Française: Les grandes industries*, Tome II, Dalloz, 1971, pp. 415-17; H. Ehrmann, *Organized Business in France*, Princeton University Press, 1957, pp. 245-46 and 289-90.
- xliv Barbance, op. cit. (1948), p. 607; Archives des Chantiers Dubigeon-Normandie; Archives de l'Observatoire de l'Ouest, Direction Regional de Nantes, INSEE.
- xlv Firms arguably could have aimed to fill skilled positions by poaching from their competitors, given the industry-specific nature of most skills. There is no evidence of this in the Loire-Inférieure. The likely explanation is that the few yards in the region, long associated in district employers' associations, tacitly agreed to avoid such a policy, which in the extremely tight labor market conditions prevailing would have driven up labor costs. For the history of the shipbuilding employers' association in Nantes, see G. Dubigeon, "Du salaire ouvrière dans la métallurgie Nantaise de 1914 a 1927," Thèse, Faculté de Droit de Rennes (1928).
- xlvi L. Oury, *Les prolos*, Editions Denoel, 1973, pp. 122-23.

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- xlvi See, for example, R. Matthews, C. Feinstein, and J. Odling-Smee, *British Economic Growth 1856-1973*, Clarendon Press, 1982, Ch. 9.; and S. Pollard, *The Development of the British Economy, 1914-1980*, 3rd Edition, Edward Arnold (1983), pp. 274-300. During the 1950s shipbuilding output in terms of tons launched stagnated at about 1.3 million tons annually. During the 1960s output declined, fluctuating around 1.1 million tons. Lloyd's Register of Shipping, Annual Shipbuilding Returns.
- xlvi For structural change in the Scottish economy, see T.L. Johnston, N.K. Buxton, and D. Maire, *Structure and Growth of the Scottish Economy*, Colin, 1971.
- xlvi A.J. Brown, *The Framework of Regional Economics in the United Kingdom*, Cambridge University Press, 1972, pp. 301-18; D. Keeble, *Industrial Location and Planning in the United Kingdom*, Methuen, 1976, Ch. 5; and B. Moore and J. Rhodes, "Evaluating the Effects of British Regional Economic Policy," *Economic Journal*, Vol. 83 (1973), pp. 87-110.
- l This was the Peplar and McFarlane Plan. For a review of post-war plans for the Tyne and Wear region and a description of changes in the structure and location of employment, see Northern Region Strategy Team Working Paper, Project No. B1A, "Settlement Patterns and Policies in Tyne and Wear" (1976).
- li Ibid., pp. 21-23; 43-50; 72-73.
- lii F. Wilkinson, "Demarcation in Shipbuilding," Department of Applied Economics Working Paper, University of Cambridge (1973), pt. 6.
- liii Report and Statement of Accounts for the Period ending March 1968, SITB (1968), pp. 6 and 13.
- liv S.R.N.A. Archives, Federation Circulars, Oct. 1962, "Scheme for the Reorganisation of Labour and Conditions of Employment in U.K. Yards."
- lv Recommendations for the Training of Shipyard Metal Using Trainees, SITB Training Policy Statement No. 3, Revised, August 1972.
- lvi Ibid., p. 13-16.
- lvii Lorenz, op. cit. (1983), pp. 137 and 151-54. For specialization in the production of liquid gas carriers at chantiers de France and LaCiotat, see J. Buret, "L'évolution de la spécialisation des chantiers navales de la Ciotat dans le domaine des navires transports de gaz," *Nouveautés Techniques Maritimes* (1960), pp. 88-91; Chardonnet, op. cit., pp. 410-11; and M. Morreaux, "La restructuration du secteur de la construction navale en France," *Economie et Humanisme*, No. 240 (1978), pp. 90-95. For specialization at the Chantiers de France, see "La Modernization de France-Gironde-Dunkerque," *Nouveautés Techniques Maritimes* (1964).
- lviii See K. Ollson, "Tankers and Technical Development in the Swedish Shipbuilding Industry," *Proceedings of the SSRC Conference on Scottish and Scandinavian Shipbuilding*, University of Gothenberg (1980), for specialization in standard tankers and bulk carriers in the principal Swedish yards. Also see J.R. Parkinson, *The Economics of Shipbuilding in the United Kingdom*, Cambridge University Press, 1960, pp. 150, 182-83 and 215.
- lix Chardonnet, op. cit. (1971), pp. 417-44; and Le Commissariat General du Plan, "La Construction Navale" (1971).

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- ix CEGOS, "Organisation technique du Chantier de Port-de-Bouc; Lorenz, op. cit. (1983), pp. 162-78; A. Ravaille, "Le planning en construction navale," *Nouveautés Techniques Maritimes* (1964), pp. 192-211. These comments apply less to out-fitting where the varied nature and location of the work assured that it retained more of its traditional craft character. See "Les ouvriers de la sidérurgie et de la métallurgie à Dunkerque, BETURE, Secrétariat d'Etat aux Transports, Trappes (June 1978), p. 64 and 8.
- lxi Lorenz, and Wilkinson, op. cit. (1986). The notable exception was the Furness yard which concentrated on the production of tankers, often of standard design. See Parkinson, op. cit. pp. 139-53; and *The Shipbuilding Inquiry Committee Report, 1965-66* (Geddes Report), VII, cmd. 2937, pp. 75-76.
- lxii B. Hogwood, *Government and Shipbuilding: The Politics of Industrial Change*, Saxon House, 1979, pp. 87-93.
- lxiii The Committee proposed the formation of one as opposed to two groups on the Wear and suggested that Vickers, which remained independent, be attached to the combined Tyne and Tees group. The Tyne and Tees group formed around Swan Hunter was the largest of the new firms, consisting of six shipyards and twelve repair facilities. Other large firms were created on the lower Clyde through the merger of Scotts and Lithgow, and on the upper Clyde through the merger of the principal yards to form Upper Clyde Shipbuilders. Booz-Allen and Hamilton report, *British Shipbuilding 1972*, A Report to the Department of Trade and Industry (1973); and *Shipbuilding Inquiry Committee Report*, op. cit. (1966).
- lxiv For the wider importance of these forms of trade union action in Britain prior to the First World War, see H. Clegg, A. Fox, and J. Thompson, *A History of British Trade Unionism Since 1889*, Vol. 1, 1889-1910, Clarendon Press, 1964. For historical and contemporary condition in the steel industry, see respectively B. Elbaum and F. Wilkinson, "Industrial Relations and Uneven Development: A Comparative Study of the American and British Steel Industries," *Cambridge Journal of Economics*, Sept. 1979; and E. Owen-Smith, *Productivity Bargaining*, Pan Books, 1971, pp. 192-94 and 288-89. For the car industry see E. Batstone, I. Boraston, and S. Frenkel, *Shop Stewards in Action*, Basil Blackwell, 1979, pp. 142-43; and J. Zeitlin, "The Emergence of Shop Stewards Organisations and Job Control in the British Car Industry," *History Workshop Journal*, No. 10, (1980). For a detailed study of workers' stratification in the shipbuilding industry based on condition at the Swan Hunter yard on the Tyne, see R. Brown, P. Brannen, J.M. Cousins, and M.L. Sampler, "The Contours of Solidarity—Stratification and Industrial Relations in Shipbuilding," *British Journal of Industrial Relations*, Vol. 10 (1972).
- lxv For similar comparative observations with respect to skilled workers in the engineering industry, See F. Eyraud, "Action Syndical et Salaire: Une comparaison Français-Grande Bretagne dans l'industrie métallurgique," Thèse pour le Doctorat des Sciences Economique, Faculté de Science Economique, Université d'Aix-Marseille II (1981), pp. 195-215. For the case of maintenance workers in various industrial sectors, see P. Dubois and D. Monjardet, *La division du travail dans l'industrie: France-Angleterre*, Tome 1, *Les ouvriers*, Université de Paris VII, (1979); and D. Gallie, *In Search of the New Working Class*, Cambridge University Press, 1978.
- lxvi One justification for this argument is straightforward. Occupational based unions have an interest in reinforcing job demarcations in order to preserve their occupational base, while industrial unions have no need for such action.
- lxvii *Le travailleur de l'Ouest*, July 8, 1922.

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- lxviii For the importance of state intervention in French industrial relations, see M. Laroque, "Les conventions collectives de travail," Rapport du Conseil National Economique, *Journal Officiel*, Annexe, 3 Jan. 1935; J.D. Reynaud, *Les Syndicats, les Patrons et l'Etat*, Les Editions Ouvrières, 1978, pp. 116-17; F. Sellier, *Stratégie de la lutte sociale: France 1939-1960*, Les Editions Ouvrières, 1961. For the metallurgical sector, see Sellier, "L'évolution de France, 1950-1969," *Droit Social*, Nos. 9 and 10, Sept.-Oct. (1970), pp. 439-44. For the case of the shipbuilding industry in Nantes and St. Nazaire, see Lorenz, *op. cit.* (1983), pp. 78-88.
- lxix Convention Collective de la Métallurgie de St. Nazaire, Article 16, Classement-Promotion, pp. 12-13 (1955).
- lxx Convention Collective de Travail des Industries Mécaniques et Navales de Nantes (1957).
- lxxi Accord d'Entreprise, "Profil de Carrière," Archives des Chantiers Dubigeon-Normandie, Nantes (1976).
- lxxii Archives des Chantier Dubigeon-Normandie, Nantes.
- lxxiii The following discussion of the relaxation of demarcation draws substantially on the unpublished work of F. Wilkinson, "Demarcation in Shipbuilding," Department of Applied Economics Working Paper, University of Cambridge (1973). I would like to thank Mr. Wilkinson for allowing me to refer to his manuscript. For productivity bargaining at Fairfields, see Alexander and Jenkins (1970). Also see the Commission on Industrial Relations, Report No. 22, "Shipbuilding and Shiprepairing" (1971), pp. 219-237; J.E.T. Eldridge, *Industrial Disputes*, Routledge and Kegan Paul, 1968; G. Roberts, "Demarcation Rules in Shipbuilding," Department of Applied Economics Occasional Paper No. 14, University of Cambridge (1967); and J. McGoldrick, "Industrial Relations and the Division of Labor in the Shipbuilding Industry," *British Journal of Industrial Relations*, Vol. XXI, No. 2 (1983).
- lxxiv This was the clearly expressed opinion of the Shipbuilding Employers' Federation. See S.R.N.A. Archives, Federation Circulars, "Scheme for the Reorganisation of Labor and Conditions of Employment in United Kingdom Shipyards," Oct. (1962).
- lxxv For the changing attitudes of the officials of the Boilermakers' Society, see Wilkinson, *op. cit.* (1973), Ch. 6, pp. 10-13.
- lxxvi *Ibid.*, Ch. 6, pp. 22-27. In general the A.S.B. was not willing to countenance of a breakdown of demarcation lines among competing unions. Similarly, in the case of the outfitting trades, often organized in competing unions, flexibility and interchangeability were notably less successful. Thus, while it is clear that craft regulations were relaxed, trade union structure set the parameters within which it took place.
- lxxvii See Wilkinson's discussion of resistance to relaxation agreements by welders on the northeast coast of England due to their negative impact on welders' established wage differential. A.S.B. officials in the district refused to support the welders in two major strike actions. This led to an unsuccessful breakaway attempt by welders, with demands for separate bargaining rights. Wilkinson, *op. cit.* (1973), Ch. 6, pp. 20-21.
- lxxviii This human capital argument is usually connected with the work of G. Beker, *Human Capital*, Columbia University Press, 1969; and P. Doeringer and M. Piore, *Internal Labor Markets and Manpower Analysis* (1972). The same basic argument may be found in C. Littler, "A Comparative Analysis of Managerial Structures and Strategies" in H. Gospel and C. Littler (eds.), *Managerial Strategies and Industrial Relations*, Heinemann, 1983.

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- lxxix R. Edwards, *Contested Terrain: The Transformation of the Workplace in the Twentieth Century*, Basic Books, 1979; D. Gordon, R. Edwards, and M. Reich, *Segmented Work, Divided Workers: The Historical Transformation of Labor in the United States*, Cambridge University Press, 1982. On the basis of this understanding of capital-labor relations, Gordon et al. have developed a typology of managerial control strategies, arguing that there is a progression over time in capitalism from the stage of "initial proletarianization" to "homogenization" and to "segmentation" of labor. At each stage, labor's success in undermining management's control strategy leads to the development of a more sophisticated approach. For critical reviews of the work of Gordon et al., see P.N. Nolan and P.K. Edward, "Homogenise, Divide and Rule: An Essay on *Segmented Work, Divided Workers*," *Cambridge Journal of Economics*, Vol. 8, No. 2 (June 1984); F. Wilkinson, "Institutionalism Applied: A Review of *Segmented Work, Divided Workers*," *Contributions to Political Economy*, (1983); and J. Zeitlin, "Social Theory and the History of Work," *Social History* (Oct. 1983).
- lxxx P. Joyce, "Labour, Capital and Compromise: A Response to Richard Price," *Social History*, Vol. 9, No. 1 (1984); C. Sabel, *Work and Politics*, Cambridge University Press, 1982; and F. Wilkinson, "Productive Systems," *Cambridge Journal of Economics*, Vol. 7, No. 3/4 (Sept./Dec. 1983).

An explanation of factors that determine supply of labour. Income and substitution effect. Impact of rising supply of labour. Also look at effect of net migration on labour supply and wages. A look at factors that determine an individual's supply of labour and the market supply of labour. Higher wages usually will encourage a worker to supply more labour because work is more attractive compared to leisure. Therefore the supply curve for labour tends to be upwardly sloping. However, a worker isn't just interested in earning money; they are also interested in leisure. Therefore, there is a choice between working more (higher wage) and working less (more leisure). Not backward: comparative labour productivity in British and Russian manufacturing, Circa 1908. We also provide a new estimate of the number employed in Russian industry as a whole and compare it to the employment in British, German, and French industries. We find that Russia's labour productivity, calculated based on net output data and net output weights, was at 81.9 per cent of the U.K. level. A player in the industrialisation of the 1890s. According to him, state expenditure on industrial products, such as military hardware, were too small to affect industrial growth. McKay (1970) goes even further by arguing that the government's role was 'largely one of public relations, propaganda, and the radiation of enthusiasm' (p. 10). The employment strategies of French and British shipbuilding employers are contrasted for the period 1890 to 1970. The focus is on the differences in their recruitment, training, and job tenure policies. The paper begins by considering the political determinants of labor supply conditions in each country. This discussion is followed by an analysis of the impact of these labor supply conditions on the yards' employment policies and consideration is given to the influence of collective bargaining institutions in each country. The study shows that strikingly different employment practices were established in the French and British shipbuilding industries despite the firms sharing a common technology and often competing in the same international markets. Resumen. 1) Labor supply responses to taxation are of fundamental importance for income tax policy [efficiency costs and optimal tax formulas]. Requires a selection correction pioneered by Heckman in 1970s (e.g. Heckit, Tobit, or ML estimation): problem is that identification is based on strong functional form assumptions [See Killingsworth and Heckman (1986) for implementation]. Natural Experiment Labor Supply Literature Literature exploits variation in taxes/transfers to estimate Hours and Participation Elasticities 1) Return to simple model where we ignore non-linear budget set issues 2) Large literature in labor/Public economics estimates effects of taxes and wages on hours worked and participation 3) Now discuss some estimates from this older literature.