

WORK AROUND THE GLOBE: HISTORICAL COMPARISONS AND CONNECTIONS

Edited by Raquel Varela, Hugh Murphy and Marcel van der Linden

Shipbuilding and Ship Repair Workers around the World

Case Studies 1950-2010

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Work Around the Globe: Historical Comparisons and Connections

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Most human beings work, and growing numbers are exposed to labour markets. These markets are increasingly globally competitive and cause both capital and labour to move around the world. In search of the cheapest labour, industries and service-based enterprises move from West to East and South, but also, for example, westwards from China's east coast. People move from areas with few employment opportunities to urban and industrial hubs, both between and within continents. However, labour relations have been shifting already for centuries, labour migrations go back far in time, and changing labour relations cannot be comprehended without history. Therefore, understanding these developments and their consequences in the world of work and labour relations requires sound historical research, based on the experiences of different groups of workers in different parts of the world at different moments in time, throughout human history.

The research and publications department of the International Institute of Social History (IISH) has taken on a leading role in research and publishing on the global history of labour relations. In the context of Global Labour History, three central research questions have been defined: (1) What labour relations have emerged in parallel with the rise and advance of market economies? (2) How can their incidence (and consequently the transition from one labour relation to another) be explained, and are these worldwide transitions interlinked? (3) What are the social, economic, political, and cultural consequences of their changing incidence, and how do they relate to forms of individual and collective agency among workers? These three questions are interconnected in time, but also in space. Recent comparative Global Labour History research demonstrates that shifts in one part of the globe have always been linked to shifts in other parts.

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Raquel Varela, Hugh Murphy, and Marcel van der Linden

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1 Introduction

Marcel van der Linden, Hugh Murphy, and Raquel Varela

Seaborne trade is the backbone of the world economy. About 90 per cent of world trade is transported by ships. Good reasons for studying shipbuilding and ship repairing labour include the importance of the industry for transport and world trade, its linkages to domestic heavy industries, the military apparatus, myriad suppliers of finished goods and services in domestic economies, local and regional employment, and its productive character. For the labour historian, shipbuilding and ship repair workers are of great interest for at least three reasons. Their worksites are an important part of heavy industry, while labour processes at shipyards are much more diverse than labour processes in factories with their assembly lines and standardised production – shipyards combine many different segments of the working class in ever changing configurations. In addition, shipyards bring together large numbers – often thousands – of labourers in one place, thus shaping the culture and social life of the regions in which they are located. And, finally, these huge working-class conglomerations have often played a key role in industrial relations and politics, for example during the years of upheaval at the end of the First World War (Petrograd, Hamburg, Bremen, Kiel, Belfast, Glasgow, Seattle, Tokyo, Kobe, etc.), or in anti-dictatorial struggles, such as the Portuguese Revolution of 1974-1975, or the struggles of *Solidarność* in Poland, 1980-1981.

Underpinning these case studies is the sense that shipbuilding is an internationally competitive industry on the supply side, whose expansion or contraction is dependent on demand, whether from individual shipowners, ship-owning companies, or state-sponsored shipping lines. Workers' livelihoods, setting aside crude economic nationalism, and protectionist tariffs and subsidies dulling competitiveness, are in the medium to longer term ultimately dependent on how internationally competitive their respective industries are. These aspects and their consequences for workers and employment relations form this volume's central theme.

Over the past century and a half, shipbuilding has gone through major changes. In the final decades of the nineteenth century, Britain became the undisputed leader on the global market, producing about three-quarters of the world's output in the 1890s. Shortly after the turn of the century, however, Germany and the United States slowly started to increase their market share. By the eve of the First World War, Britain's share had declined

to “only” 60 per cent. Shipbuilding was largely based on bespoke production methods in those days because specifications varied greatly, depending on the purpose of the ship’s operation. Shipyards could and did adapt their production quickly to accommodate changing circumstances, with many building warships and merchant vessels in the same establishments, and also engaging in ship repair and marine-engine building. Ordinarily, craft systems and sub-contracting were used, and relatively limited hierarchies ensured sufficient flexibility. The predominantly skilled workers could transition to a different product mix quickly, without needing to be closely monitored by their superiors.

Before the 1930s, in craft systems such as shipbuilding, through the squad system of work organisation, the highly skilled workers had a major say in the important elements of the work process, namely: “(1) the location at which a particular task will be done, (2) the movement of tools, of materials, and of workers to this work place, and the most efficient arrangement of these workplace characteristics, (3) sometimes the particular movements to be performed in getting the task done, (4) the schedules and time allotments for particular operations, and (5) inspection criteria for particular operations (as opposed to inspection criteria for final products).” Communication took place largely among the manual workers; while there were obviously some administrative personnel, they were limited in number and significance.

Although shipbuilding is essentially an assembly industry producing capital goods, any attempt by entrepreneurs to “rationalise” the tried-and-tested craft methods had to acknowledge that producing ships was essentially different from, for example, car manufacturing. After all, shipbuilding involves producing a small number of products, characterised by their specificity, complexity, and large size. Their specificity and small number virtually precluded mass production, not only increasing production costs but also complicating streamlining individual steps in the work process. Moreover, experimental production of prototypes was largely out of the question – except in some war situations, where governments are willing to take major financial risks. Because the product is complex in terms of the organisation of production, shipyards needed to rely on many supplier companies, which varied in numbers depending on the type of ship.

However, these time-craft methods have been increasingly undermined since the 1930s. The Great Depression marked the start of a gradual transition from what the sociologist Arthur Stinchcombe has called craft administration of production to bureaucratic administration of production

1 Stinchcombe, “Bureaucratic and Craft Administration of Production”, 170.

– a process that happened in fits and starts and has yet to be completed. Several factors were conducive to this course of events. First, technological innovations came into play. During the 1930s, welding gradually replaced riveting, though it truly got under way only after the Second World War. Eventually it superseded riveting as the industry’s principal method of hull construction. The process strengthened connections between metal plates and sections, resulted in more hydrodynamic and lighter vessels than their riveted counterparts, and made the connections impenetrable to water and oil. And while riveting ordinarily required at least five workers,² welding could be done by individual welders, thereby reducing manpower. It was also conducive to semi- and fully automatic machine-welding, especially on flat plates, but crucially, to get the best out of the process, welding required a reorganisation of production away from the berth to purpose-built sheds and building docks, in tandem with ever more sophisticated plant and equipment.³

Welding was perfectly compatible with the techniques developed in the United States during the Second World War for enabling prefabrication of sections. Under the US Emergency Shipbuilding Program, newly built shipyards, largely using semi-skilled labour, began assembly of Liberty ships to a British design. These were serially produced cargo carriers – and were initially intended mainly to replace British ships torpedoed by German submarines. Liberty ship construction took advantage of flow-line methods of production pioneered in other industries, and sections (“blocks”) of these vessels were prefabricated elsewhere and subsequently transported by rail or crane to the berth, where they were welded together. The workforce was newly trained – largely with no experience of building welded ships. As the United States entered the war the shipbuilding yards employed women, to replace men who were enlisted in the armed forces.⁴ During the decades that followed, block construction was progressively elaborated. The prefabricated segments grew in size, and components (electric cables, pipes, etc.) were increasingly installed during the “block stage”, speeding up the subsequent assembly.

2 A fully manned riveting squad would comprise a rivet heater (boy), catcher (boy), holder on (labourer), and a left- and right-handed riveter (both trade-qualified, normally by five-year apprenticeship in British shipbuilding yards). Payment was by results, that is, number of rivets deposited, which were counted on a daily basis by a member of the yard’s administrative staff. For this, see McKinlay, “The Interwar Depression and the Effort Bargain”.

3 For this, see Murphy, “The Health of Electric Arc Welders”.

4 Herman, *Freedom’s Forge*, 178-180.

The second major change came about thanks to the rapid rise of the oil industry. Between 1938 and 1955 production of crude oil tripled from 250 mn to 772 mn metric tons annually.⁵ This trend obviously increased demand for tankers. Tankers were fairly simple structures to build, with long, flat surfaces conducive to welding, and did not require extensive outfitting. From 1956, when President Gamal Abdel Nasser closed the Suez Canal, tanker sizes increased to reap economies of scale. With the route from the Persian Gulf to Europe now extending around Africa, shipping companies started to build considerably larger tankers. In 1959 the first 100,000-ton tanker was launched, and around 1980 the first 500,000-tonners came into use. "Operating costs fell drastically. In 1956 the *extra* cost of moving one ton of oil around Africa instead of through Suez was \$7.50. By 1970 the *total* cost of moving one ton of oil from the Persian Gulf to Europe around Africa had fallen to \$3."⁶

Economic cycles were the third factor. During the extended boom in trade from the 1950s to the early 1970s, global demand for ships increased continuously. "By lessening the danger of high overhead costs during cyclical downswings, stable growth in demand favoured the adoption of larger-scale and more capital-intensive methods of shipbuilding. The average size of vessels also increased, and there was a growing acceptance of standard designs for tankers, bulk carriers, and cargo ships."⁷ Demand for flexible, highly skilled workers declined concurrently. "The larger volume of production in individual yards and the greater standardization of output provided a firmer basis for stabilizing work flows, while greater mechanization increased the amount of semi-skilled, machine-tending work." Systematic planning techniques reflected this trend.⁸

As the production process became more bureaucratic, workers lost their autonomy. Increasingly, decisions were taken by a central management aiming to plan the production process in the greatest possible detail. Permanent channels of legitimate communications were established, thereby enabling "routine methods of processing information upward and authoritative communication downward."⁹

The world market changed drastically as a consequence of all these shifts. German industry, which had initially emerged from the war almost in ruins, turned into a force of innovation and rapidly recovered. Sweden

5 Rostow, *The World Economy. History and Prospect*, 232-233.

6 Huggill, *World Trade Since 1431*, 150; Corlett, *The Ship*.

7 Lorenz, "An Evolutionary Explanation for Competitive Decline", 923.

8 Lorenz, "An Evolutionary Explanation for Competitive Decline", 924.

9 Stinchcombe, "Bureaucratic and Craft Administration of Production", 176.

became an important producer too, in part because block construction had been introduced there early on for civilian purposes. This international competition began to erode the market share of the leading shipbuilding nation, the United Kingdom, which also had the world's largest merchant fleet.¹⁰ The most important newcomer, however, was Japan, which since the nineteenth century had formed a shipbuilding industry thanks to massive state support and was advancing in tanker construction by the 1930s. At the end of the Second World War, shipbuilding was largely destroyed in this country as well. Nonetheless, after its defeat, the country progressed very rapidly towards recovery. By 1956 Japan had overtaken the United Kingdom in shipbuilding output, and by 1965 Japanese shipbuilding output alone exceeded that of Western Europe combined.

The rapidly growing world share of Japan ushered in the shift to East Asia. Shipbuilding is essentially an assembly industry and therefore one which late-industrialising countries have found attractive.¹¹ In the initial stages of setting up a shipbuilding industry in such countries, state-supported companies imported advanced technology and expertise, and crucially directed labour (for example, China, South Korea, Taiwan) to suitable locations. As an "industry of synthesis", shipbuilding is an important customer of the steel, foundry, and general engineering industries and, as the industry grows, it requires specific qualifications from its workforce. The so-called New International Division of Labour, which from the 1960s promoted de-industrialisation in the North Atlantic region, leading *inter alia* to the collapse of the textile industry, at the same time accelerated the rise of Asian economies, where forceful state intervention was conducive to industrialisation. This trend was hastened by the oil crisis in 1973-74. In its wake, the tanker market all but collapsed and this had serious ongoing effects on the shipbuilding industries of Argentina, Brazil, West Germany, Italy, Japan, the Netherlands, Norway, Portugal, South Korea, Spain, Taiwan, and the United Kingdom.¹² Between 1974 and 1976 the annual volume of ship orders placed worldwide had dropped by more than half and had not recovered by the mid-1980s.¹³

Japanese dominance in shipbuilding came under increasing competitive strain from the 1980s onwards. In the 1990s South Korea attempted

10 For this, see Murphy, "No Longer Competitive with Continental Shipbuilders".

11 A very good introduction to this topic is Todd, *Industrial Dislocation*.

12 For an excellent country study on the effects of the tanker market collapse, see, Tenold, *Tankers in Trouble*. See also this volume's Appendix 1.

13 Amsden, *Asia's Next Giant*, 270.

Table 1.1 World shipbuilding market share in terms of construction volume (in percentages)

Ranking	1955	1965	1975	1985	1998	2000	2005	2010
1	Britain (18.3)	Japan (43.9)	Japan (50.1)	Japan (52.3)	Japan (42.0)	South Korea (40.7)	South Korea (35.2)	China (41.1)
2	Norway (14.5)	Sweden (9.6)	Germany (7.1)	South Korea (14.4)	South Korea (28.9)	Japan (39.0)	Japan (28.6)	South Korea (31.3)
3	Ger- many (9.9)	Britain (8.8)	Sweden (6.9)	Germany (3.1)	China (4.8)	Germany (3.3)	China (14.5)	Japan (21.8)
4	France (4.7)	Germany (8.4)	Spain (4.6)	Spain (3.0)	Germany (4.2)	China (3.2)	Germany (3.6)	Philip- pines (1.2)
5	Japan (4.6)	France (3.9)	Britain (3.6)	France (1.1)	Italy (3.2)	Taiwan (2.1)	Poland (2.3)	Romania (0.6)

Sources: For 1955-2005: Sohn, Chang, and Song, "Technological Catching-up and Latecomer Strategy", 27 (Table 1); for 2010: Review of Maritime Transport 2011, 147 (Table 6.1)

to overtake Japan in overall output, aided by huge government support. Few commentators could have foreseen how successful it would become. Without prior experience, South Korea's major shipbuilder, Hyundai Heavy Industries, with British technical and logistical support, began building its first very large crude carrier in 1973 on a greenfield site at Ulsan. Less than a decade later Hyundai was easily the world's largest shipbuilding firm. Japan, in contrast to South Korea, had a far larger domestic mercantile marine, and remained the world's leading shipbuilding nation to the end of the century, sustaining its shipyards by building for domestic shipowners, with government support for exports; by intensifying concentration of industrial groups and retaining their share of a shrinking global market owing to strict control of costs and technological efficiency, and by increasingly concentrating on constructing high value-added ships.

During the global economic crisis from 2008 onwards, the People's Republic of China then overtook South Korea in tonnage constructed. The cumulative result of all these shifts is that more than 90 per cent of world production now takes place in East Asia (Table 1.1).

Labour costs have been an important driving force behind these changes. Although average productivity in Japan is presently seven or eight times higher than in China, net output cost in China is lower because average wages are less than one-tenth what they are in Japan, as can be seen in Table 1.2.

Table 1.2 Average industrial wages and labour productivity in East Asia, 2000 and 2009

Year	China		South Korea		Japan	
	Wage (USD/mh)	Productivity (cgt/mh)	Wage (USD/mh)	Productivity (cgt/mh)	Wage (USD/mh)	Productivity (cgt/mh)
2000	0.57	0.009	11.38	0.045	14.17	0.071
2009	1.97	0.016	21.29	0.074	20.24	0.121

Source: Jiang, "Assessing the Cost Competitiveness of China's Shipbuilding Industry", Appendix 1, 27 Note: mh = man-hour; cgt = compensated gross tonnage

Other significant factors, however, are steel prices and equipment costs. In China around the turn of the century labour costs accounted for about one-tenth of total production costs, whereas in South Korea and Japan they were about a fifth of the total.¹⁴

Of course these global shifts did not occur smoothly. Their consequences for local economies and working populations were immense. By the early 1980s, largely in the face of East Asian competition, shipyards in Western Europe had begun to close.¹⁵ In the United Kingdom the bulk of the industry was nationalised in 1977 only to be broken up and privatised from 1984 onwards.¹⁶ Sweden, often seen by commentators as a real competitor to Japan in bulk shipbuilding, after nationalising its shipyards into one state holding company in 1977, abandoned the mercantile side of its industry in the 1980s. Although state control of shipbuilding in the UK and Sweden was ultimately unsuccessful, it was arguably too little and too late in any event. In Western Europe as a whole the total number of shipbuilding employees declined by nearly half between 1975 and 1985, from 467,000 to 257,900.¹⁷

This process of de-industrialisation through closures met with massive resistance. The thousands – and possibly tens of thousands – of shipyard workers maintained an intricate internal communications network, had considerable occupational pride, and wielded considerable bargaining power when in full employment. Most trade unions in the shipbuilding industry were strong and as such were amenable to pressuring their employers for

14 Jiang, "Assessing the Cost Competitiveness of China's Shipbuilding Industry", 14.

15 For this period, see Stråth, *The Politics of De-Industrialization*.

16 The first British shipbuilding firm to be privatised was the loss-making Scott Lithgow at Greenock and Port Glasgow. By 1990 all other nationalised firms had been privatised. See Johnman and Murphy, *Scott Lithgow*, and Johnman and Murphy, *British Shipbuilding and the State Since 1918*.

17 Hesel, *Europäische Schiffbaukrise und lokale Arbeitsmärkte*, 10.

better terms and conditions. However, even in the “good years” from 1950 to 1970, many had regularly struggled to improve their working conditions and obtain higher wages.¹⁸ The ongoing decline of the “old” shipbuilding industry led to several defensive actions. Some of these conflicts became known internationally. One such case is the famous “work-in” campaign against closing the Scottish Upper Clyde Shipbuilders (UCS) from June 1971, in which the workers occupied the company emphasising the “right to work” but, with the liquidator’s consent, continued to fill the orders still pending at the yard to demonstrate that the company remained viable. The struggle was supported through solidarity strikes and demonstrations, drawing many tens of thousands of participants, and through numerous financial donations to the workers’ shop stewards committee from around the world.¹⁹ In Gijón in Spain the shipyard was converted to a producers’ cooperative.²⁰ In Eastern Europe the Polish shipyards in Gdańsk, Gdynia, and Szczecin were hotbeds of social unrest in 1980–81.²¹

The economic crises of the 1970s and their effects on shipping through to the 1980s globally led to a structural change in labour processes and labour relations. Shipyards in Finland, Italy, France, West Germany, and Norway reoriented their productive resources to high-value cruise ships, container ships, gas carriers, oil production platforms, tugboats, and offshore supply ships where they held a comparative advantage – albeit temporarily, as first Japanese, South Korean, and now Chinese shipyards have entered these markets. The centres of production, due to intense international competition in the market for relatively unsophisticated ships began to be relocated to East Asia and elsewhere. However, Japanese and South Korean firms had begun to directly invest in foreign shipyards, usually by taking minority shares in shipyards in countries such as Brazil, China, Finland, France, Norway, the Philippines, Romania, and Vietnam. Outsourcing of hull production to low-cost producers became a feature of modern shipbuilding, with hulls being towed for fitting-out elsewhere. Naval warship building is still present in the Atlantic region, because governments wish to retain control over production of their own military weaponry, and many repairs are performed there.²²

18 See, e.g., Cameron, “Post-War Strikes”; Jüres and Kühl, *Gewerkschaftspolitik der KPD nach dem Krieg*; Birke, *Wilde Streiks im Wirtschaftswunder*.

19 UCS has been covered extensively in the literature. See, for example, Thompson and Hart, *The UCS Work-In*; McGill, *Crisis on the Clyde*; Herron, *Labour Market in Crisis*.

20 See Ruben Vega García’s chapter (Chapter 9) in this volume.

21 See Sarah Graber Majchrzak’s chapter (Chapter 12) in this volume.

22 Under the Treaty of Rome, warship building is exempt from European Economic Community-wide competitive tendering. Merchant shipbuilding, on the other hand, is not.

These methods had a distinct effect on employment and encouraged the increased use of sub-contract and fixed-term labour over the retention of permanent mostly unionised workforces. Such was the effect of increased international competition that the world's leading shipbuilder for decades, Japan, reorganised its shipbuilding industry to combat South Korean advances in the market. In April 1976, 23 Japanese shipbuilding companies and 51 yards employed in their shipbuilding divisions a total of 110,235 employees, of whom 28,869 were staff and 81,366 workers. In addition there were 31,340 sub-contract workers. By April 2013, the total of employees in 17 companies and 35 yards had been reduced to 22,295, of which 9,034 were staff and 13,261 workers, with an additional 24,218 sub-contract workers.²³

This contraction of employment in Japan was mirrored elsewhere and also reflected changing technology and methods of construction and assembly, such as block welding in building docks enabling faster delivery of ships. These methods of construction required initial heavy and continued capital investment in facilities, plant, and equipment, aided in Japan and South Korea by the conglomerate structures of firms and by government aid. Such is the huge cost of setting up a greenfield shipyard to be internationally competitive that most private companies would balk at doing so without substantial state support. It is likely, then, given the huge costs involved in establishing a modern shipbuilding industry, that the three leading shipbuilding countries at present, China, South Korea and Japan, which account for more than 90 per cent of new orders, will remain so in future, and that communist China will increasingly concentrate on sophisticated tonnage.

Social relations in the remaining shipyards have largely changed. In many, the various tasks are no longer performed by different groups of craft workers employed by one large company but are outsourced. The core company has become much smaller and relies on several divested or autonomous suppliers. In addition, the core company and suppliers have far fewer employees and recruit more fixed-term or self-employed workers.

* * *

The historiography of these developments since the Second World War has been sketchy. For some countries (e.g., Britain, Germany, Sweden), in addition to business and economic historians writing thorough business histories about shipyards, labour historians have devoted considerable attention to

23 The Shipbuilders Association of Japan, Shipbuilding Statistics at September 2013, employment figures at 1 April 2013.

work and employment relations of shipbuilding workers, However, research is still rudimentary for other countries. This is especially the case for the People's Republic of China, about which remarkably little is known. In some cases, historians have examined economic aspects of shipbuilding, but have yet to address the social and labour aspects. The second problem is that specialists in the history of individual shipyards, regions, or countries have thus far communicated little with one another. This is in part due to language barriers, as well as to organisational and financial restrictions that all too often impede transcontinental academic co-operation.

In 2010 in this context at the International Institute of Social History in Amsterdam the idea arose of studying changes in shipbuilding worldwide since 1950 with a team of like-minded historians. (The Institute had previously formed similar teams dedicated to dockers and textile workers, and these projects were completed successfully.²⁴) The project was conceived as an international-comparative enterprise from a global-history perspective.²⁵ A team of authors was assembled and at a meeting in Amsterdam in 2013, following lengthy discussion, a list of twenty points for consideration was adopted for each contributor to address if possible. Together, these points reflect the volume's central themes: the political and economic contexts and environments of separate shipyards; the social characteristics of the employed workers, and their work, struggles, and cultures; and the power relations within and beyond the shipyards.

1 Production

- 1 What was the role of the shipyard in the national economy?
- 2 Which type of shipbuilding labour (construction or repair) was prevalent?
- 3 Which kind of ships were/are built in the shipyard(s) and what changes in production occurred?
- 4 What technological developments took place in shipbuilding? How did this influence production and labour relations?

24 Davies *et al.* (eds), *Dock Workers*; Heerma van Voss, Hiemstra, and van Nederveen Meerkerk (eds), *The Ashgate Companion to the History of Textile Workers*.

25 On global labour history, see, for example, van der Linden and Lucassen, *Prolegomena for a Global Labour History*; Lucassen (ed.), *Global Labour History*; and van der Linden, *Workers of the World*.

- 5 What was the size of the shipyard(s), and what percentages and numbers were involved in production?
- 6 What changes occurred in the nature and extent of production and workforce? How can these changes be explained?
- 7 What was the role of the state in the shipyard(s)? Were they state- or privately owned? If private, did the firm get any kind of subsidies?

2 The workers

- 1 How were/are shipbuilding workers recruited? What was/is their social background? What changes took place and how can they be explained?
- 2 What was the specific age and gender composition of the workforce?
- 3 What were/are the labour conditions of the workers (hours, payment, etc.)?
- 4 What were/are the living circumstances of the workers?
- 5 What are the influences of these workers on the social environment they live in?
- 6a What forms of labour protest occurred? How they were organised and who took part?
- 6b What were/are the labour strategies of resistance to privatisation?
- 6c What were/are labour strategies of resistance to the relocation?
- 6d What was/is the role of the unions, workers' committees, workers' commissions, organisations, in labour struggles?
- 7 To what extent did a specific work culture develop?
- 8 To what extent was/is there international solidarity between shipyard workers?

3 Production relations

- 1 How was shipbuilding production organised? What were/is the position of the owners/management and workers?
- 2 What changes occurred in the organisation of the production, and how can they be explained?
- 3 How did specialisation and managerial policy relate to strategies to handle crises in the industry?
- 4 What role did trade unions, employers' organisations (both national and international) and other forms of labour organisation play?
- 5 What was/is the influence of the state/regime in labour relations and labour struggles?

It was clear from the outset that the data available would be insufficient to answer all these questions: the existing scholarship is far too uneven at this time. This is clearly reflected in the present collection of essays. In some parts entrepreneurial aspects receive greater emphasis, while in others the workers are the main focus.

* * *

Hugh Murphy, in his study of Britain, analyses the relative and then absolute decline of volume shipbuilding in what was the world's major shipbuilding country for nearly a century, against the background of international competition and its effects on labour. In an industry with a plethora of trade unions, where entry and apprenticeship were strictly controlled, unions over time achieved security of employment, better working conditions, and a shorter working week. The institutional nature of industrial relations and its procedural intricacies were not conducive to rapid change as the encroachment of international competition became serious from the 1960s onwards. Only when the industry was in dire straits post-OPEC and under nationalisation did trade unions and management attempt a truly constructive dialogue. The old method of individual collective bargaining was swept aside, and managed contraction of the workforce through a state-funded redundancy programme was instituted. A change of government in 1979 eventually ushered in a programme of privatisation in 1984, by which stage the rump of merchant shipbuilders remaining under nationalised control was rapidly shrinking. By 1990, volume merchant shipbuilding in Britain had disappeared in what was a long-drawn-out dénouement. The warship-building sector was quickly rationalised, and ship repair was only a shadow of its former self. Social provisions ameliorated hardship, and workers with industry-transferrable skills, such as electricians and plumbers, found alternative employment. Most of the older metal-working workforce failed to find alternative employment as the UK economy became more service-oriented, and manufacturing declined during the 1990s and thereafter.

Johanna Wolf reflects on the history of the Bremer Vulkan shipyard until its closure in 1997, and the West German shipbuilding industry in general. Following the relevant historiography she notes how certain narratives were established as a result of developments in the West German shipbuilding industry. The historical situation makes it clear why the narrative of decline was sharply pronounced. West German shipbuilding workers belonged to one super-union, IG Metall, which had cross-sectoral

membership across German industry. Not least through the importance of IG Metall in the German economy as a whole, subsidies and aid packages to shipbuilding from the federal government and by the regional *Länder* were commonplace, and were used to support mergers and restructurings, and latterly to avoid bankruptcies. In her conclusion, she suggests some aspects of how comparative approaches and entangled history could generate a new impetus.

Tobias Karlsson shows that Kockums in Malmö, Sweden, was one of the major ship producers globally in the 1950s and 1960s. The shipyard experienced a final boom in the early 1970s but could not be saved from nationalisation and restructuring in the aftermath of the OPEC oil crisis of 1973-1974. By 1979, Kockums had been nationalised under the state-owned Svenska Varv, and in 1986 production of ships for civilian use ceased at Kockums, ending a tradition of more than a century. Karlsson analyses how production, workers, and production relations developed at Kockums during the period 1950-1986, and notes that Kockums' national, regional, and international importance makes it a relevant case in a global history of shipbuilding workers. Around 1960, as in Finland, about 90 per cent of the work done in Sweden was by piecework. As the average serial length of production became shorter, the costs of rationalisation – for example, in the form of excess personnel turnover and absenteeism – became increasingly obvious. Contemporaneously, Swedish shipyards were not immune to international competition, but the situation appeared to improve in the early 1970s when the industry experienced a boom. Huge investments in dry docks and cranes were made in Gothenburg, Malmö, and Uddevalla. Capacity increases were supported by the Swedish government. By 1973, Kockums was the biggest shipyard outside Japan, and the self-confidence of management was at its peak. With the immediate and ongoing effects of the OPEC crisis, particularly in very large crude carrier (VLCC) construction, boom quickly turned to bust. Kockums did not receive a single order in 1974. By 1975, the total number of shipbuilding workers in Sweden was at the same level as in 1960. Thereafter, there followed a period of rationalisation, nationalisation, and plant closures. By 1990, the total number of shipbuilding workers was below 10,000 and corresponded to less than 1 per cent of blue-collar employment in the manufacturing sector. The big shipowners, who had been close allies to the shipyards, had deserted the industry. Post-1977, nationalisation and the subsequent restructuring and reductions in the labour force were generally accepted by the trade unions. Although there were local protests, the main response of the Swedish Metal Workers' Union to demand replacement jobs for redundant workers.

Hans-Jakob Ågotnes and *Jan Heiret* give an overview of the path of development of the Norwegian shipbuilding industry after 1945, and discuss the changing conditions of the labour force and labour relations in the industry, both nationwide and in individual workplaces. They posit three main questions: what industrial relations were established in the shipbuilding industry, what social relations in the workplace did they correspond to, and how did they develop during the differing phases of the post-war era? They argue that a basic precondition for the Norwegian shipbuilding industry's growth phase up to the OPEC crisis was continuous productivity gains, which they state must be understood as a result not of mechanisation, but of changes in the organisation of work, and consider the rationale of both investments in heavy mechanical plant and equipment and changes in the wage system as a means to organise work more efficiently. By way of case studies they consider the shipyards of Bergens Mekaniske Verksteder (BMV) and Stord Verft. Both subsumed into the Aker group of shipyards, with Stord concentrating on VLCC construction. Post-OPEC the Norwegian government at first met the situation with counter-cyclical measures, giving financial support to the shipbuilding industry. However, by the end of the decade the state declared that it would not in the future favour any given branches of production. Fortunately, oil and gas extraction in the Norwegian sector of the North Sea gave both the Aker and the Kvaerner group of shipyards the opportunity to remain prominent post-OPEC, and both successfully diversified their production into offshore platforms on the back of Norway's oil and gas boom. By 2002, these two principal groups merged. This Aker-owned group was formed in 2004 with the merger with the French conglomerate Alstom, with yards at St Nazaire and Lorient. But in 2007 Aker sold out of Aker Yards, and the South Korean-controlled STX Europe took over. Aker then organised its activities in the offshore installations market in the multi-national Aker Solutions. BMV had been sold to local interests in 1983, and underwent other changes of ownership afterwards. By 2007, the firm changed its name to the Bergen Group; its strategy is to supply high-tech products in shipbuilding and in offshore work.

Kari Teräs's chapter analyses how production reforms and labour relations of the shipbuilding industry in Turku, Finland, were interrelated in the shipyard of Crichton-Vulcan in the post-1945 period. As was the case in the UK, production reforms were slowed down by strong craft traditions, which characterised the operation of the shipyard until the 1980s. There were rigid boundaries between different occupational groups, and each group promoted its own interests with regard to separate payment; all essential

occupational groups had their own shop stewards. Under these conditions, the employees had relatively extensive control over the production process, as part of the design work that was still carried out at the factory floor level. As new technology such as welding gained ground in the late 1950s and later work processes such as block assembly became more centralised, industrial relations began to change. Despite this, however, in the 1970s and at the beginning of the 1980s, shipbuilding was the most strike-prone branch in the heavy engineering sector and in the Finnish economy as a whole. Only at the end of the 1980s was the idea of abandoning piecerates accepted by workers at the Turku shipyard. The markets and employment levels of Finnish shipyards fell nearly a decade later than their Western competitors as the Finnish shipyard crisis did not start until the late 1980s. Exports to the USSR, hitherto a staple of the industry, began to decrease, and the shipyards were unable to find a substitute market. To compound the situation, the implosion of the Soviet Union in 1991 brought to an end most of the bilateral trade between the countries. Throughout the recession the state refused to pay direct production subsidies to the shipyards. Thereafter, the Turku yard was subject to numerous changes of name and ownership including Norwegian, South Korean, and now German control. To date, its future remains uncertain.

Sjaak van der Velden examines the highly unionised Dutch shipbuilding industry, which grew steadily to the end of the 1950s and peaked in the mid-1970s. Nominal wages rose year after year until the mid-1970s as well. Strike frequency was very high during the 1950s, declined during the 1960s, rose again in the 1970s, and then returned to the level of the 1950s. Since the mid-1960s shipbuilding had been confronted by the full force of international competition. The Dutch state became involved and urged mergers of the big companies (“the seven sisters”) to reap economies of scale and scope. These mergers did not result in Dutch shipbuilding remaining competitive, and job losses ensued, though the yards could still occupy some vibrant market niches. As in the UK, social provisions ameliorated the effects of unemployment.

Giulia Strippoli, Davide Tabor, and Luciano Villani examine the historical profile of Sestri Ponente shipyard, Genoa, in relation to three themes: employment and labour composition; production trends and changes in the organisation of work; and workplace struggles that took place during the Republican period to affirm the role of the workers in the company, and to avoid the closure of a highly productive shipyard. The importance of the local Italian context in which the shipyard stands seems to go beyond the issue of employment, embracing the physiognomy of a territory in its

broadest sense, embedded in cultural and communal identity processes over a long period. This identity has flourished in the past two centuries and has been forged around the knowledge and special skills learned and passed down through generations by the Sestri Ponente shipyard workers. Although many of its constituent elements remained intact, Sestri Ponente eventually declined as a result of economic, productive, and social changes, but the construction of cruise liners under the state-owned Fincantieri gave the yard an alternative to closure.

José Gómez Alén's study of Bazán-Ferrol in Galicia encompasses the growth of Spanish shipbuilding and the struggles of workers in the Francoist era to influence their collective futures. The percentage of Spanish output produced in the shipyards in Ferrol-Bazán and the nearby ASTANO shipyard at Fene more than doubled during the mid-1960s rising from 20 per cent of the Spanish total in 1964 to 43 per cent in 1967. ASTANO had been laid out for VLCC construction, and in the post-OPEC climate it and much of the industry suffered from lack of demand and overcapacity, which required reorientation of productive resources of Bazán-Ferrol to both mercantile and naval work to the internal market for the Spanish navy. Modernisation of the yard's facilities and retraining of the workforce to undertake more demanding warship construction ensued. The building of a new dry dock gave the option of lucrative repair work. In the run-up to Spain's accession to the European Union in 1986, Bazán-Ferrol did not remain unaffected. The company thereafter implemented a series of measures to reduce production costs and to reduce its workforce, which gradually diminished in successive viability plans until 1999 when the Plan for the Future gave 2,125 workers early retirement. In 2000, the Spanish government commitment to the restructuring of the public shipbuilding sector led to Bazán-Ferrol joining the newly created state conglomerate IZAR, founded in December 2000 following the merger of Astilleros Españoles SA (AESAs) and Empresa Nacional Bazán. IZAR's activities were spread throughout Spain and it had around 10,700 employees. Around half of the sales concerned warship production. Its component companies contained loss-making shipyards, and then profitable yards such as Bazán-Ferrol had to take a share of the losses of IZAR as a whole. Spanish government attempts to prop up IZAR through subsidies occasioned an investigation by the European Union Commission, which ruled in October 2004 that state aid to IZAR was not compatible with EC state aid rules and had to be recovered. In response, the Spanish state transferred IZAR's warship-building yards to a new public company, Navantia, owned by the state-holding company, Sociedad Estatal de Participaciones Industriales (SEPI). The former Bazán-Ferrol

shipyard building was to be supplemented by the old ASTANO shipyard at Fene. Navantia also had yards at Cadiz, San Fernando-Puerto Real, and Cartagena. Under Navantia, Bazán-Ferrol concentrated on warship work for the Norwegian and Australian navies, while workers' representatives attempted to stabilise employment around a core group of workers. Today the future of Navantia Bazán-Ferrol-Fene is uncertain.

Rubén Vega García traces the history of shipbuilding in Gijón, Asturias, before and after the Franco dictatorship, through its various reincarnations and changes of ownership. What is apparent throughout is the extraordinarily antagonistic and confrontational nature of labour relations as Gijón shipbuilding struggled to remain in business in the decades following the 1970s through to the formation of a new company (Naval Gijón) in 1985 and beyond, resulting in widespread social unrest as strikers barricaded parts of the municipality on a regular basis and strike leaders were arrested and imprisoned. Naval Gijón closed its gates and ceased all activity on 31 May 2009. In the following months, its facilities were dismantled, and cranes and gates that enclosed the dry dock were scrapped. The speed that administrators of property exhibited in this scrapping and the passive attitude shown by the authorities seemed to indicate a desire to erase as soon as possible the most visible vestiges of an uncomfortable memory starring an extraordinarily confrontational collective of workers.

Jorge Fontes establishes the context for the opening of the giant Setenave shipyard some 40 km south of Lisbon and 12 km from Setúbal. Estaleiros Navais de Setúbal was officially formed on 6 August 1974 at Mitrena in Setúbal to cope with increased demand, both for ship repairing and shipbuilding, and in the latter case was expected to undertake VLCC construction. This strategy was dashed by the continuing effects of the world economic crisis of 1973-1974; the company commenced operations on 16 June 1975, by which stage it had been nationalised by the Portuguese state. From the outset Setenave built ship hulls and block sections of oil tankers for Swedish shipyards, which were then towed to Sweden to be fitted out. In this international division of labour, Setenave provided a cheap and flexible labour force and Swedish yards retained overall control including design. The shipyard was initially projected to build VLCCs on its own account, but the contraction of the world market post-OPEC forced this change in strategy. Subsequently, a decision to readapt the shipyard towards ship repairing activities was crucial to the economic survival of the enterprise, repairing not only VLCCs but also other types of ships as well as oil platforms, or even assisting shipyards in the former Portuguese colonies. The election of a neo-liberal government in 1987 paved the way

for the denationalisation of the Portuguese economy, and by 1989 Setenave was acquired by a private company, Solisnor, a consortium between Lisnave, Sopotona, and a Norwegian company. Solisnor managed the Mitrena facilities for five years, after which control was passed to Lisnave, which closed its own shipyard on the south bank of the Tagus and focused solely on Mitrena, reorienting it to ship repair, modernising its facilities from 1997, and adding three Panamax-size drydocks at the turn of the millennium. Fontes traces the evolution of labour relations in the shipyard through various social pacts and changes of ownership and product orientation. Under Lisnave, the yard was reoriented solely towards repair and conversion work, a strategy confirmed in 2000 when the Lisnave shipyard in Margueira was closed. That flexibility of labour was pursued was indicative of the company's strategy. With a high average employee age, Lisnave instigated a youth training programme. In response to opposition from trade unions, Lisnave formed a new company in 2009 to hire all future employees, Lisnave Naval Services (LDA). This fundamentally changed labour relations in the company and remains the case today.

Raquel Varela and *Ana Rajado* trace the history of the Rocha shipyards in Lisbon including Lisnave to 1974. They note that Lisnave was from 1967 (when a new shipyard at Margueira was opened with the aid of Dutch and Swedish shipbuilding firms) to 1984 the locus of Portugal's highest concentration of workers (at its peak it had 9,000 permanent employees), and that Lisnave's workers played a seminal part in the Portuguese social revolution of 1974, when 7,000 workers marched in the streets of the capital against the Popular Front government. These popular protests eventually led to the establishment of a new Portuguese Constitution in 1976. However, political instability remained a feature of Portuguese government. It was also in these shipyards during the early 1980s that the first company agreement that helped consolidate the social pact in Portugal was signed. Portugal's accession to the EU in 1986 altered the political and economic dynamics of the country. However, by the 1990s, the model of restructuring applied in Lisnave saw a massive replacement of workers on standard terms and conditions of employment (guaranteed working week, agreed wages and conditions, pensions etc.) towards more precarious short-term contracts, and increased use of sub-contractors. The closure of Margueira in 2000 and the move to one location at Mitrena, to concentrate on ship repair and conversion, led to an increasing emphasis on precarious employment practices as older workers with consolidated rights retired.

Sarah Graber Majchrzak's chapter on the state-owned (from 1946) Lenin shipyard in Gdańsk, Poland, concentrates on production relations and

workers' conflicts in the 1970s and 1980s, and the shipyard's iconic status in the changing political landscape of Poland before and after the foundation of the *Solidarność* (Solidarity) labour movement there in 1980. Like Romania, Poland was an original member of COMECON, and orders from the Soviet Union in the immediate post-war period and thereafter aided the Polish shipbuilding industry but also challenged it. As in Romania, in the People's Republic of Poland the means of production were the property of the state. Thus, the profit motive was absent, but firms had to bargain with the centralised state for resources, materials, plant, investments, and workforces etc., to maintain or increase output. Accordingly, there was a year-on-year lack of certainty of the level of resources firms would be allocated. Scarcity, and management's responses to it, influenced the labour process and labour relations in the Polish shipbuilding industry. In the centralised bureaucratic system, management accumulated resources to win workers' support to fulfil planned targets, and demanded from the workers at least minimal co-operation to secure the plan's fulfilment. In turn, workers expected management to secure their living standards, and to enhance workplace conditions. Management largely ceded production to workers; and compensated for their insufficient control of output by the bargaining process with the state. Accordingly, labour standards were lax. Throughout the 1960s the Polish economy, with its emphasis on heavy industry, stagnated in other sectors, notably agriculture. Shortages became commonplace. By December 1970 workers at the Lenin shipyard went on strike, but their protest was brutally repressed by the Gomułka regime, and resulted in significant fatalities. These events prompted a change of leadership in the Polish Communist Party, and a change of economic priorities, with a willingness to seek co-operation from the workers. The process of modernising the Polish economy was to be pursued by importing Western know-how and technology, and drifting away from economic orientation towards the Eastern bloc. The ambitious aim was to integrate Poland into the global market by modernising its economy. This, in train, for a time brought moderate liberalisation at every social level and led to growth in the level of consumption and average incomes. From the mid-1970s onwards the economy contracted after the global economic crisis sparked by the oil price rises of 1973-1974. Exports stagnated and the costs of imports rocketed. The consequent recession was not due only to external factors but also to the internal problems of the Polish planned economy. Decades of underinvestment, barriers to innovation, a corrupt bureaucratic elite, rigid management, and a general disorganisation prevalent in the economy contributed to the socio-economic problems of the late-1970s.

Accordingly, at the Lenin shipyard, the modernisation programme that had begun post-1974 stalled and remained unfinished, and productivity decreased dramatically. By the advent of the 1980s the Polish economy had stagnated, and in the summer of 1980 workers at the Lenin shipyard embarked on a major strike, which soon spread to other shipyards. The strikers' most important demand was to legalise an independent free trade union. Ultimately, in August 1980, the first independent union, *Solidarność*, was founded. The union was allowed to operate until 13 December 1981, when General Wojciech Jaruzelski proclaimed martial law; most of the union activists were arrested and the union was again forbidden. The 1980s proved economically and politically challenging for Poland and the Lenin shipyard, which was threatened with closure from 1988; a year later Poland abandoned communism and embraced free market capitalism. The state took a 60 per cent share in the Lenin Shipyard, with the workers taking 40 per cent, with the yard renamed the Gdańsk Shipyard. Thereafter, the yard was more successful, but the situation changed from 2005 onwards and experienced a radical turn in 2008 when the EU Commission on 6 November 2008 concluded that state aid granted to the shipyards in Gdynia and Szczecin was in breach of EC state aid rules and had to be repaid. Contemporaneously, the looming global economic crisis, which had begun in the USA in 2008, hit the Polish shipbuilding industry hard. Due to this and the ending of state subsidisation, the Gdynia (2009) and the Szczecin Shipyards (2011) were closed and all their machinery was sold off. Since then the Gdańsk Shipyard has hovered on the edge of bankruptcy, work has been intermittent, and the workforce has been drastically reduced.

Constantin Ardealanu's chapter on shipbuilding in the Danubian port city of Galați, which remained the centre of Romania's shipbuilding industry throughout the socialist era, highlights the all-encompassing nature of state control of industry in Romania. From 1947, the communist authorities imposed an ambitious programme of industrialisation. Romanian industrialisation closely followed the Soviet model; COMECON membership gave Romania a ready market, although a more nationalist-centred approach had emerged by the late 1950s, as political relations between Bucharest and Moscow gradually strained. About half of Romania's total capital investments were directed towards developing industrial facilities, with four-fifths allocated to the heavy and machine construction industry, as the basis of further economic progress. Between 1950 and 1965 industry grew 6.5 times and heavy industry 8.2 times. Following Nicolae Ceaușescu's accession to power in 1965, Romania took a more independent course towards industrial independence. Ambitious growth targets meant that industry had

to be further streamlined and modernised, a goal aided during the 1970s with Western funding, technology and know-how. By this stage, the Soviet decision of curtailing transfers of shipbuilding licences forced Romania to further invest in developing its shipbuilding industry by constructing a national riverine and maritime fleet to diminish the country's dependence on foreign ships, increase its exports, and earn hard currency. Each shipyard had a clear specialisation in a strongly centralised shipbuilding industry. Galați was to build ships of 20,000-25,000 dwt and to gradually increase its capacity to vessels of 38,000-40,000 dwt as the yard was modernised. Romania's intent to build up its shipbuilding industry led to shipyards being built from scratch at Tulcea, Mangalia, and Hârșova, enabling the country to enter VLCC construction for export purposes. Ceaușescu's regime, backed up by his secret police, the Securitate, became increasingly dictatorial, and an export drive that began in the early 1980s to reduce foreign debt led to internal dissent as shortages of food and other essentials intensified. By December 1989 the Romanian people could no longer endure Ceaușescu's tyranny, and his regime was overthrown, with Ceaușescu and his wife executed by an army firing squad. Clearly, with Romania in a state of revolutionary flux, the old shibboleths that had sustained the Galați shipyard and that had resulted in the exponential growth of the city were no longer applicable. The workforce now had to face the harsh realities of Western and East Asian competition and cuts to jobs. During the 1990s in an extremely difficult market, the yard survived by building ship hulls for Western contractors, and was finally privatised in 1999, when 99 per cent of the shares were purchased by the Dutch Damen Shipyards Group.

Robin Dearmon Muhammad sets the trajectory of the high cost and protectionist US shipbuilding industry in the first half of the twentieth century in context; she then explores the impact of the declining industry on shipyard workers after 1950. During this period US industrial workers faced many challenges particularly as urban de-industrialisation led to wage stagnation and accelerated unemployment. However, US shipyard workers who remained employed were also among the highest-paid industrial workers in the country. As US merchant shipbuilding declined, the role of federal government and specifically the US Maritime Administration (MARAD) became increasingly important as private output of large merchant ships rapidly diminished by the end of the twentieth century. For the shipyard workers who remained in the industry, an increased dependence on federal naval contracts meant comparatively stable wages, but at the expense of shrinking employment. Moreover, labour legislation in the late twentieth century extended protections and forms of redress to US shipyard and other

industrial workers, but such protective labour policies proved inadequate for many who worked in welding and other shipyard trades. She examines how and why US shipbuilding shifted from supporting both private and naval production to an almost exclusive reliance on naval shipbuilding, and demonstrates the transformation of the US shipyard worker during the late twentieth century.

Cintia Russo's chapter analyses the growth and survival of one of the oldest and largest ship repair yards in Argentina, Talleres Dársena Norte (TANDANOR), founded in 1879, and today known as the Complejo Industrial Naval Argentino (CINAR). In addition to contextualising the history of the Argentine shipbuilding industry, she highlights the roles played by the state and by trade unions. In addition to its symbolic status as one of the oldest shipyards in Argentina, TANDANOR was the first to be privatised in 1991, following a neo-liberal agenda, which encompassed privatisation of state-owned companies, market deregulation, and commercial liberalisation. The yard continued under private ownership until 1999, when it reverted to workers' control until renationalisation in 2007. After 1950, TANDANOR's unions were Peronist in inclination and their belief in the state and industry interests coalescing in a form of national corporatism remained. Following the army-led *coup d'état* of March 1976, union activists were targeted repeatedly and persecuted by official and paramilitary repression. During the military dictatorship (1976-83), TANDANOR had a strong link with the interests of the Argentinean navy, and controls on the workers and the work process within the shipyard were intensified. After renationalisation, in 2009 TANDANOR and the Almirante Storni shipyard formed the Complejo Industrial Naval Argentino (CINAR), a company 90 per cent owned by the Argentinean Ministry of Defence, with 10 per cent of its equity in the hands of workers. Russo sees TANDANOR as a representative example of the peaks and troughs of the Argentinean economy.

In her chapter, *Juliana Frasso* concurs with *Cintia Russo* that the development of the shipbuilding industry in Argentina was characterised by strong state intervention. She adopts a case-study approach in analysing Argentina's largest and most significant state-owned shipyard: Astillero Río Santiago (ARS) and highlights the most significant developments in production, employment, working conditions, and industrial relations at the shipyard in the last half-century. In doing so, she traces the history of ARS, its relationship with the National Industrial Policy and the role of the state. She describes the characteristics of production and organisation of labour in the shipyard, working conditions and the features of the internal labour market, and the specific work culture built around the

shipyard, highlighting the material and symbolic aspects that supported it, and analyses the recent history and current characteristics of labour relations in the company. She also focuses on two key points in the history of labour disputes in the shipyard: workers' strategies during the last military dictatorship in Argentina (1976-1983) and resistance to privatisation in the 1990s. Lastly, she reflects upon developments in ARS, remarking on the current organisational and productive challenges, and the place that social actors (especially unions) have within the enterprise.

Claudiana Guedes de Jesus's chapter analyses the changes that took place in labour relations and activities within the Brazilian shipbuilding industry during the recovery period in activity in the main shipyards from the late 1990s onwards. She describes the beginning of and subsequent increase in the regional employment decentralisation process in the country's shipbuilding industry; and considers variables, mainly those linked to the number of jobs, school level attained, time working in the same company, age and wage rates, and analyses information regarding manpower costs and productivity. The Brazilian shipbuilding industry's recovery relied on a significant increase in the number of jobs to satisfy mainly domestic demand in shipbuilding and offshore work. Improved certainty in the provision of domestic orders gave rise to an increase in the need for trained manpower linked to shorter work contracts and to the hiring of younger individuals as well as to lower salaries and the use of outsourcing programmes. With the exception of China, Brazil has lower manpower costs and a lower number of engineers relative to the total number of employees in the industry globally. The recovery of the Brazilian shipbuilding industry has been marked, substantially aided by demand from Petrobras/Transpetro. Guedes concludes that a potentially new era for the shipbuilding industry in Brazil, which goes beyond the "recovery period", is possible, not only in fulfilling domestic demand but also in reducing dependence on foreign technologies.

Elina G. da Fonte and *Luisa Barbosa Pereira's* chapter analyses how labour relations developed in the shipyards Caneco/Rio Nave and Mauá (Rio de Janeiro) from 1950 to 2011, with emphasis on production relations and workers' conditions. They also reflect on the essential role of the state in the Brazilian shipbuilding industry; the labour process under different conditions, including military rule; the profile of the workers and their culture; forms of collective resistance; and the trajectory of their trade unions. They aim to show the centrality of Caneco/ Rio Nave and Mauá to the development of the shipbuilding industry in Brazil. Although both are privately owned shipyards, government financial support was vital to their continued survival. Despite the huge changes that took place in the

Brazilian shipbuilding industry from the 1950s until today, shipbuilding workers did not lose their degree of autonomy and have retained a distinct workers' culture: it is a culture of solidarity, that has made them one of the most important categories of workers in Brazil, and that, in recent years, aided them in improving their terms and conditions of employment through various forms of collective action. Foreign direct investment in shipbuilding was encouraged. By 1978, Brazilian shipbuilding output, largely due to VLCC construction at the Japanese-owned Ishibrás and Dutch-owned Verolme shipyards, was second only to that of Japan. A year later, the shipbuilding workforce in Brazil comprised 39,155 workers. This high point of activity did not last. A prolonged recession ensued from the late 1980s and 1990s resulting in dwindling orderbooks and underutilisation of capacity, and from the mid- to late 1990s onwards the vast majority of workers in all Brazilian shipyards lost their jobs. By 1998, with a mere 149,117 dwt delivered, only 1,880 workers were employed. During the 1990s neo-liberal approaches to the economy were in the ascendancy. Subsidies and government financial support to the shipbuilding industry had ended in the late 1980s. The political situation changed only in the 2000s, when the government of president Lula da Silva introduced a strong policy to rebuild and reorient the Brazilian shipbuilding industry through support from the state-owned Petrobras.

Lisa Milner's chapter on Cockatoo Island Dockyard, Sydney, Australia's largest post-First World War Commonwealth employer, highlights the complexity of its trade union membership, where, although there were twenty-two trade unions on site, most workers were covered by six. Compulsory arbitration of disputes had been in force since 1906, but despite this there was a long history of demarcation and industrial disputes. The dockyard went through a number of changes of ownership, but from 1946 to 1986 it was owned by the British shipbuilder Vickers Armstrong (later Vickers Ltd). Prior to this, workers were essentially casualised, as was the case in the United Kingdom, but this precariousness of employment was largely ameliorated in times of high demand, particularly during the two world wars. As was the case in the UK, Australian shipbuilding and repair workers were highly unionised and membership gave exclusive entry to the workplace. From 1946, however, the old casualised system of recruitment was replaced by a union-administered roster system, which led to a more equitable distribution of work for union members in the dockyard. The dockyard's post-war history was nevertheless characterised by antagonistic industrial relations, and by the end of the 1970s the global effects of competition began to have a marked effect on its prospects. The Australian federal government's decision to privatise its shipbuilding

and repair functions in the 1980s marked a turning point for Cockatoo Dockyard, but one that led to closure rather than renewal. In 1989, with the threat of closure imminent, the workforce occupied the dockyard for 14 weeks, an action which only delayed its eventual closure. By 1992 the dockyard had closed, bringing to a permanent end in to shipbuilding and repair on Cockatoo Island, where industrial relations where perhaps the most disputatious in the nation.

S. Fahimuddin Pasha's chapter studies the Indian shipbuilding industry with special reference to Maharashtra. Although there has always been some shipbuilding in India after independence, the industry's upturn took place in the early 1970s. The government then tried to unify and synergise shipbuilding activities, but this did not lead to the results anticipated, due to poor management and excessive bureaucracy. A change occurred in the 1990s, when the government opted for a neo-liberal approach. The year 2002 was a watershed: the government introduced a subsidy scheme and so-called public-private partnerships. These changes are illustrated for the Bharati Shipyards Ltd (BSL), the second-largest private-sector shipbuilding company in India. The composition of the workforce changed considerably: prior to the 1980s most workers had been employed on a permanent basis, but afterwards workers were increasingly migrants hired by sub-contractors on a temporary basis.

Nicola Mocci examines the modern trajectory of Thai shipbuilding. He concludes that in newly industrialising countries shipbuilding has often been a primary source of export potential, and therefore of foreign currency accumulation. However, in order to reach these objectives and to build ships to sufficient scale, a great deal of initial and subsequent working capital is needed either from private, or in most cases, from state sources. In theory, technology and sufficient know-how can, to a large extent, be bought in or acquired, and labour, which in an Asia country is usually plentiful, can be trained to attain the desired objectives. In the Thai case, however, he points out that the state has made a different choice, concentrating its resources on other economic activities, and causing the de facto retreat of what used to be a main and Asia-wide competitive industry. Mocci points to the labour situation in the reduced shipbuilding industry that is presently active in Thailand. He notes that the majority of the country's shipyards, large, medium, or small, have deliberately chosen to organise their work on a family level, adopting a paternalistic attitude, whose officially declared aim is to improve direct training, safety, and ultimately worker productivity. However, he further notes that these dynamics clearly often have another effect, namely, the depoliticisation of workers through the constant erosion

of the rights of their organisations, which simultaneously prevents any of the evident underlying labour conflicts from rising to the surface.

Takeshi Haraguchi and *Kazuya Sakurada* note that from the 1950s shipbuilding was seen as a fundamental industry for Japan's pursuit of high economic growth. Thereafter until the oil crisis of 1973-74, the Japanese shipbuilding industry continued to progressively expand its share of the world market, dominating with more than 50 per cent of world shipbuilding production until rationalisation and reorientation of its productive facilities became critical in the coming decades. They clarify particular characteristics of the Japanese shipbuilding industry, in light of its experience of dramatic expansion and decline, and focus on two areas: first, the 1970s, and second on the labour market, particularly the lower labour market. Their rationale is that the basis of shipbuilding expansion in Japan was formed on sub-contract labour, and in the mid- to late 1970s these labourers were the first to be sacrificed in the restructuring of the shipbuilding industry. They explore how the production system of the post-1945 Japanese shipbuilding industry was formed and how it shifted, examining aspects of national policy, corporate systems, and technological innovation. Focusing on the 1970s, they discuss how shipbuilding labourers engaged in resistance, and what kind of opposing strategies were taken by employers in response to this. Finally, they consider Osaka's riverside shipbuilding industry as a case study and discuss specifically how the capital/labour conflict played out. Moreover, by focusing on Kamagasaki, known as a lower labour market in Japan, they clarify what relations exist between the shipbuilding industry and the lower labour market.

Wonchul Shin outlines the evolution of labour relations of Hanjin Heavy Industries (HHI) located on Youngdo island near Busan, the largest port city in South Korea. Initially formed by Japanese capital in 1937 as Choseon Heavy Industries Inc. (CHI), to build and repair steel ships; after the defeat of Japan in the Second World War, CHI became a semi-state-owned enterprise and was renamed Korea Shipbuilding and Engineering Corporation (KSEC) in 1950. In 1968, KSEC was privatised, retaining its name. In 1989, the Hanjin industrial conglomerate took over KSEC, which had gone bankrupt, and set up HHI. Until the huge Hyundai shipyard was established at Ulsan between 1972 and 1974, HHI's Youngdo shipyard was the largest in South Korea. By the millennium, HHI had become one of the world's top shipbuilders, especially in the large container ship market. In tandem, from 2007, HHI operated another shipyard at Subic Bay in the Philippines. Faced with the decreased demand for shipbuilding since the 2008 world financial crisis, HHI has reduced its workforce at the Youngdo shipyard, which unleashed

intense labour disputes from 2010 to 2012. Instead of modernising Youngdo shipyard, HHI sought to build larger vessels at lower costs in the Subic shipyard. In tandem with outlining the evolution of labour relations at HHI, this chapter also highlights major changes in labour relations at the shipyard, focusing on the enterprise (firm-specific wage bargaining) union system, sub-contracting arrangements, and militant unionism, which are major features of South Korean shipbuilding labour history.

The regional coverage provided by the various chapters is clearly far from perfect. At present, as we have observed, China is the world's leading shipbuilding nation by volume and is likely to retain this status in the years to come. Given China's current position in shipbuilding, the omission of a chapter in this book on Chinese shipbuilding labour presents a sizeable lacuna. Despite our attempts to locate a suitable Chinese scholar, these efforts were ultimately in vain. As there is a lack of research in English on Chinese shipbuilding, we have included a short explanatory chapter on China, and on four other countries in which we were unable to identify suitable scholars: the Philippines, Singapore, Taiwan, and Vietnam. Although this chapter is far from exhaustive, it offers the reader perspective and a sense of comparison. For Argentina, Brazil, Portugal, and Spain we have included two chapters per country because the shipyards studied in the separate chapters differed markedly (private vs state-owned, shipbuilding vs ship repair, etc.). Given the seminal impact of the oil price shocks on shipbuilding and employment therein in the 1970s and 1980s, we have included an appendix on this as well as an appendix on the latest available shipbuilding statistics to give added context.

In analysing labour relations, labour conditions, composition of the workforce, workers' recruitment, workers' living conditions, labour cultures, labour conflicts, organisation and leadership, shifts in production, technological developments and subsequent influence on production and labour relations, the role of shipyards in national and international economy, government policies and regulations, and the social and economic effects and impacts on closely knit communities of workers of closures of shipyards, this collection of essays offers an international perspective on a largely underresearched area of study.

Labour history is also important for the study of social history in general, whether by emphasising workers' roles and identities in the workplace, or by highlighting neglected groups such as sub-contracted or agency workers. It is hoped that this project will lead to new avenues of research applicable to a wider audience than just labour historians, although we offer a contribution

to the history of labour itself, in a global perspective. In a second volume we hope to relate the many case studies to each other.

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