Women manual workers' introduction into a Norwegian shipyard 1965-1989.

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Richard Croucher*

Business School

Middlesex University

The Burroughs

Hendon

London NW44BT

Tel. no. +44 (0)20 8411 5159

Email: R.Croucher@mdx.ac.uk

Gunnar Magne Økland

Department of Strategy and Management

NHH Norwegian School of Economics

Helleveien 30, NO-5045 Bergen, Norway

Tel. no. +47 5595 9574

Email: Gunnar.Okland@nhh.no

*Corresponding author. Email: R.Croucher@mdx.ac.uk

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Abstract

We investigate women's introduction to skilled production jobs in Norway's largest shipyard, 1965-80, estimating the experiment's success. We analyze the difficulties experienced in adapting working conditions and culture to the women entrants, using a theoretical industrial relations/occupational health and safety lens. Working conditions resulted in considerable occupational illness among the women. Job tenure was therefore short, helping sustain an intra-occupational gender pay gap. A management-union alliance established and maintained women's 'reserve' and 'helper' statuses. Women's collective voice was highly circumscribed. Our evidence supports previous arguments that social and industrial relations configurations were among Norwegian yards' problems in responding to powerful global competitive pressures. However, we argue that management-union cooperation, rather than conflict, underlay this experiment's limited success.

Keywords: women manual workers, Norway, intra-occupational gender pay gap, occupational health and safety, women's voice, trade unions, shipbuilding

Introduction

We analyse women's introduction into a Norwegian shipyard, Solheimsviken in Bergen, in the fifteen years following 1965 to assess its success. This was the first peacetime experiment (as many contemporaries dubbed it) in introducing women to production roles in Norwegian shipbuilding. Experts considered Solheimsviken's experiment typical of firms in the Norwegian National Shipbuilders' Federation, most of which recruited women in these years ('Lecture - women in heavy industry' 1975. Bergen Public Archive (BPA) Box 74).

From the 1960s, a new generation of young, unmarried women which had not undergone the debilitating experience of wartime forced industrial labour entered Norwegian workplaces (Hatlehol, 2018). They wished to combine work and family roles, seeking higher remuneration than that offered in retail, and gender pay equality (Jensen, 1981). Norwegian women's demands for industrial involvement had a long political pedigree (Moksnes, 1984, p. 152) and popular gender egalitarian ideas ('feminism without feminists') existed among these women (Skjeie & Siim, 2000; Holter, 1970; Jensen, 1981). Tension therefore existed between their expectations and the situation in society and heavy industry. The women studied here entered jobs graded as skilled; their entry therefore challenged long-established exclusionary practices by unions dominated by skilled men and managements that came from similar backgrounds. Government policy post-1945 strongly encouraged married women through a range of incentives to work in the home (Holter, 1970) and Norway therefore had low rates of women's employment. By 1965, Norwegian women had registered little improvement on previously low levels of workplace gender equality (Jensen, 1981; Danielsen et al, 2013). Average hourly pay for women blue collar workers in manufacturing was by 1960 just 67 percent of that of men (Statistics Norway, 2018). The pioneering feminist

sociologist Harriet Holter (1970) argued that this was partly because women employees were stereotyped as unreliable by male managers.

We contribute to debates on the precise nature of the difficulties faced by Norwegian (and, by extension, European) shipbuilding in meeting the challenges posed by increasingly fierce foreign competition. Our major contribution is however to show that a previously under-acknowledged body of theory which we identify and denominate Industrial Relations Occupational Health and Safety (IROHS) theory offers a useful lens when analysing women's involvement in heavy industrial environments. The theory originated in the late 1960s, continues to develop and we contribute to it. Because of its focus on workers' experience of work, IROHS helps us contribute to an area in which neither business nor- somewhat ironically- labour history have been strong. We do not argue that IROHS provides a complete explanation of the difficulties faced by the women recruits in our case. Still less does it offer a comprehensive explanation of European shipbuilding's decline. Rather, we simply suggest that it offers a novel and fruitful set of insights helping to answer our research issue which may have previously unrecognised uses in other cognate contexts.

The remainder of the article is structured as follows. Initially, we outline previous historiographic perspectives and explain IROHS theory. Our method and sources are then described. Next, we provide background on Solheimsviken and how the recruitment initiative developed. In the subsequent section we use archival and newspaper sources with recent interviews to develop our multi-facetted argument. In outline, this is that women's opportunities were strictly limited by the ways that management conceived of their contribution. Management attitudes and policies on women's employment and OHS broadly defined were important to women's experience both *per se* and also because they were linked to recruits' turnover. These links constitute a contribution to the ways in which labour processes and their results have been conceived of in historical writing on post-war

shipbuilding, illustrates the difficulties encountered in one significant initiative and provides insight into one of the profound company-and workplace-level issues involved in Norwegian yards' response to global competition.

Historiography

It is widely recognised that the state-coordinated economies of East Asia, beginning with Japan and subsequently followed by South Korea and China (currently the world's largest shipbuilding nation) challenged European shipbuilding's global role from the 1950s onwards. Competition gradually intensified until European yards began to close from the 1980s as world demand reduced; revived demand in the 1990s primarily benefitted Asian producers (OECD, 2017). Asian shipbuilders innovated extensively, employed women in considerable numbers and set new international production standards (for Japan, see Abe & Fitzgerald, 1995).

Despite some success for two yards in moving into the niche of chemical container shipping (Murphy & Tenold, 2008), most of Norway's shipbuilding industry post-1945 was characterised by the low innovation intensity typical of that economy (Grønning et al 2008). Debates have occurred on why Norwegian shipbuilders had initially been slow to diversify into new product markets such as oil tankers, particularly as their British competitors were latecomers to that important market. Had they responded more rapidly to other possibilities, they might have mitigated the speed of their national industry's decline, as Danish shipbuilders proved able to do (Poulsen & Sornn-Friese, 2011). Scholars have argued that explanations for Norwegian shipbuilding's limited capacity to adapt to the changing environment may lie in numerous directions. These include the interactions between international and national regulatory systems (Brautaset & Tenold, 2008), inadequate

investment, under-developed technology and business strategies rooted in their technological and organisational bases (for a summary of debates around the latter factors, see Andersen, 1997, p. 489). The factors are clearly inter-related, but we show in detail how the final aspect of Andersen' s persuasive explanation—strategies based on existing technological and social bases-- operated in one important workplace. Some treatments emphasise management-worker conflict and worker-worker division. Thus, Barnett (1996), referring primarily to British shipbuilding, presents a developed, politically conservative, polemical account which tends to enlarge certain factors which also feature in analyses provided by other authors referring to Norwegian and European shipbuilding (for just two examples, see Andersen, 1997; OECD 2017). Barnett emphasises manager-worker conflict and high strike rates and draws attention to demarcations between groups of skilled workers reflected in multiple-union workplaces. Finally, he stresses an extreme lack of flexibility between groups of tradesmen, allegedly limiting technological and organisational innovation. We examine the relevance of this account. The 'shock' of women's introduction into Solheimsviken appears likely to throw light on social relations in the yard and, by extension, to their adaptive capacity.

Socio-economic theory

We deploy two socio-economic theories to inform our historical analysis. We use IROHS, relevant to heavy industry because it highlights work's physical consequences and locates them within organisational realities. We nest the IROHS framework in the wider context of 'gendered organisation' theory since the latter provides a broader yet complementary perspective on women's shipyard experience.

IROHS firmly situates occupational health and safety within workplace power relations. Its key tenets are enunciated in Nichols and Armstrong (1973). They explain that it was initiated by a cohesive international group of industrial researchers, stimulated by numerous dramatic accidents which occurred across the world in the 1970s, affecting both industrial workers and the public. The context was one of state awareness that previous piecemeal approaches to workplace health and safety required revision. At that point, the linked subjects of industrial relations and industrial sociology were both much researched and discussed in universities, and the IROHS pioneers connected these streams of discussion with that concerned with industrial accidents and ill-health. Consistent with the political *Zeitgeist*, they presented a coherent and internally consistent pro-worker alternative to the academic orthodoxy of the time, later summarised by Theo Nichols (1994: 387) as 'blaming the victim.' They sought to explain the long-term persistence of industrially-generated injury and ill-health, why it was especially prevalent in certain countries, industries and workplaces, and advanced ways of addressing these problems (Nichols, 1994).

IROHS theory differentiates itself from mainstream OHS research. The latter operates in a quasi-medical paradigm, and has a unitary vision of manager-worker relations in which OHS is abstracted from tensions between different workplace actors' interests (Walters et al, 2016). It has nonetheless long provided strong empirical evidence of serious health consequences including high incidences of spontaneous abortion among women working in Nordic shipyards in the 1970s (Hemminki et al, 1983), which provides grounds for supposing that IROHS is relevant to women's experience in Solheimsviken. Overall, IROHS theory suggests that working environments, management attitudes, practices and rhetoric based on OHS, women's self-activity and voice are inter-related and condition women's experience. IROHS emphasises how managers *interpret and use* task allocation and OHS to exercise control over labour within structural drives towards cost reduction (Walters et al, 2016). It

stresses managements' ultimate responsibility for working environments and the importance of long-term health issues. This contrasts with managers' common stress on *workers*' individual responsibilities for the safety of themselves and others as part of an emphasis on *accident* prevention. Managers construct OHS as primarily a matter of individual worker characteristics and behaviours, and appropriate it as a disciplining tool on individual workers (Nichols & Armstrong, 1973; James and Walters, 2002). IROHS therefore also underlines the centrality of collective worker voice to challenging managerial policies; the extent to which this challenge exists helps explain variations in worker health and safety. In the ideal model, voice initiates bargaining, leading to negotiated outcomes rather than unilaterally-determined management ones. Unions may also through political action influence state regulatory structures such as legislation and inspection to the same end. The relative strength of these arrangements help explain international differences in problem solution (James and Walters, 2002). Collective voice on OHS should therefore be backed by strong governmental regulation. Where regulation is weak, workers may exit where they see OHS risk as unacceptably high but this tends to leave the status quo unchallenged (Nichols and Armstrong, 1973; James and Walters, 2002).

Voice is viewed less in the individualised or 'business-case' senses advanced by 'Organisational Behaviour' (although that may be useful in certain exceptionally supportive organisational contexts) but more in that of collective, independent worker representation as theorised by industrial relations scholars (Quinlan, 1996, pp. 412-413). This opens the possibility of transcending 'access to authority' models of voice used in 'Organisational Behaviour' theories; weak access to authority is widely held to hinder progress towards equal pay for example (Bishu & Alkadry, 2017). Crucially, IROHS' IR element does not equate collective voice with unions. Worker collectives may manifest collective voice and effective collective organisation may operate independently of unions; Quinlan (2017) showed the

importance and extent of pre-union organisation and mobilisation around OHS matters. Nevertheless, a stream of publications shows how unions can provide institutional support and protection for workers exercising individual voice and sizeable positive union effects on worker health have regularly been demonstrated (Zoorob, 2018). IROHS has been concerned with groups traditionally marginal to union organisation. Quinlan shows how women's physical experience of work and its relationship to voice and exit has been occluded by inappropriate assumptions such as that women work in 'relatively safe' jobs (Quinlan, 1996, pp. 410-414). However, although Quinlan devoted specific attention to their experience, and Lippel and Messing (2014) have recently summarised women's overall position in general terms, IROHS theory more widely has only inconsistently placed them at the centre of discussion and analysis.

We therefore use gendered organisation theory as an outer frame for IROHS within our conceptual framework, since women's experiences of organisations are central to it. Gendered organisation theory aims to explain why organisations have long-standing structures and cultures disadvantaging women in numerous ways which ensure that attempts to change them commonly fail or, at best, have only marginal ameliorative effects. The founding work in this school of thought is Acker's (1990) influential and widely-used theorisation of the 'gendered organisation' which shows how organisations are never gender-neutral. Rather, deeply-embedded gendered constructs structure every aspect of organisational relations, including divisions of labour and physical space which might be perceived as 'gender neutral'. Organisational hierarchies propagate visions of the 'assumed worker' as male. The skills and competences most highly valued are those associated with masculinity and are paid accordingly (Bailyn, 2006). Images and rhetoric are created by male organisational hierarchies, becoming powerful tools in embedding gendered assumptions,

thereby reproducing women's workplace subordination. Solheimsviken and shipbuilding more widely fits into this analytic frame: managers at all levels were exclusively male.

These theories inform our approach to our research question: *How far may the experience of introducing women into Solheimsviken be seen as a 'success'*?

Method

We used company documents and union material in the Bergen Public Archive (BPA) including 105 uncatalogued boxes of documents generated by management and 37 from the union office (categories K762-798). Some were not allocated numbers. Significant lacunae were created in the management records by two rounds of disposals conducted in the 1970s and 1980s. Newspaper sources were therefore searched comprehensively via their paper files for 1965-1980. We used the company's internal newspapers *Linken* and *Båt og Bedding*, also lodged in the BPA (Box 778). We trawled the main local newspaper, the mass circulation daily *Bergens Tidende*, because it had strong sources within the company. It supported the social democratic party *Venstre* ('Left'). *Bergens Tidende* provided considerable detail on company public announcements and accounts. We also used the conservative national daily *Aftenposten* since it was concerned with national policies on shipbuilding, furnishing national level reactions to the introduction of women into workplaces. These sources collectively document our analysis' main pillars, while later testimony mainly plays a supplementary or secondary role. We used oral accounts to stimulate discussion with interview respondents and to pursue detail where the documents were silent or had been destroyed. We occasionally use interviews to make key points. We do so only when the evidence appeared

in more than one transcript, and when it appeared reliable and consistent with documentary evidence. We sought interviewees through an advertisement in *Bergens Tidende* which we then followed up by 'snowballing' from those who responded. We conducted 18 interviews involving 30 ex-workers and managers from among those who worked in the heyday of women's employment in the 1960s and 1970s. Most were paired interviews, conducted between late 2017 and early 2018. Our sample was selected to contain a balance between senior and junior managers, and women and men workers. Interviews lasted between one and two hours and were transcribed, coded thematically and translated into English. We asked a set of questions about how the women recruits experienced and were received and regarded across the period. In addition, we invited respondents to range freely across anything they felt relevant to our research question. All respondents except one gave permission to use their real names but we use pseudonyms throughout.

We anticipated that our case's high public profile in Norway might affect memory as other works have documented (see for example strong evidence of 'rose-tinting' effects in Harrisson, 1976). The experience of a previously prominent shipyard could be expected to generate contested, possibly idealised memories coloured by intervening public debates. We also expected differences between actors' 'public transcripts', that is statements for public consumption, often 'designed to conceal or euphemize dirty linen' (Scott, 1990, p. 18) and 'hidden transcripts'. The latter depict private views which might be perceived as negative, an implication which the individual involved wishes for some reason to avoid. We therefore distinguish between different types of account both across and within documentary and interview data.

Solheimsviken Shipyard.

Solheimsviken and its marine engineering works were founded in 1855 (Myran & Fasting 1955, p. 28), and comprised part of the sizeable South Norwegian shipbuilding industry (Andersen 1989, pp. 70-71). The yard's productive facilities were considerably expanded in the 1950s (Andersen, 1989, pp. 216-217). At its immediate post-1945 peak BMV, the company which then owned Solheimsviken and its sister yard Laksevaag, employed almost three thousand workers, and was Norway's biggest private employer.

By 1965 the yard covered 40 thousand square metres. Aker Group, a large Norwegian firm, owned the yard from 1965 to 1983. Solheimsviken was deeply embedded in the local community; the overwhelming majority of employees lived in Bergen (*Linken*, 1984, May). Housing was built by the company for workers in the Nineteenth Century, comprising houses situated some 300 metres from the yard gates. The juxtaposition of the architecturally massive and industrially distinctive shipyard with the small dwellings emphasised the scale of the transition from domestic to working life when workers entered the yard. Ship launches were celebratory events involving large sections of the local population, and reflected pride in their products and ships' utility to a seafaring nation. Solheimsviken's importance to Bergen was underlined when local government bought equity in the cooperative created to rescue it in 1985 (Økland & Croucher, 2017).

After 1945, Norwegian shipbuilding productivity was recognised as significantly lower than that in other Nordic countries (Andersen 1989, p. 211). Two national committees were charged by the government with improving their competitiveness (Andersen 1989, pp. 211-212). Their chair, Professor Vedeler, argued along Fordist lines for centrally-planned standardized ships, built in sections and assembled using electric welding. His ideas were implemented at the largest Norwegian shipyards, including Solheimsviken, in the 1940s and

1950s (Andersen 1989, pp. 216-217). Building ships in sections, Vedeler's key proposal, was modeled on Swedish practice and proved successful (Andersen 1989, p. 223). Until at least the mid-1960s, large Norwegian shipyards nevertheless also predominantly followed their earlier 'British' strategy of 'craft-oriented teamwork based on separate trades and a low degree of planning' (Andersen, 1997, p. 486). In this system, planning and production were devolved to foremen and senior journeymen, fostering skilled workers' job control, now increasingly threatened by centralised production planning.

Managers were sympathetic to these workforce concerns; Solheimsviken almost exclusively promoted its own craftsmen to managerial positions (Sørli, 1976). However, by 1980, international competition began seriously to threaten the industry's continued existence. In serious difficulties from that point, Solheimsviken became a workers' cooperative in 1985 and remained one until its closure in 1990 (Gilje, 2010). The industry persists in diminished form: Bergen yards currently continue to produce oil industry vessels and rigs (OECD, 2017, pp. 1-20).

Women workers' recruitment.

Hiring additional workers was discussed internally as Solheimsviken's need for skilled workers became urgent in 1965, and management anticipated further strengthening of demand. Management introduced women slowly, after 'strictly evaluating' applicants (Bergens Tidende, 1966, November 24). In 1965, the first three women were recruited to jobs as skilled production workers. Managers were nervous, because they were uncertain how this would play out in practice, and were initially reluctant to inform the press (Bergens Tidende, 1966, September 8). They admitted that the workers' negotiating committee had initially 'strongly discouraged' women's recruitment. Precisely why they did so is unclear from the sources available, but the union soon conceded that failing such recruitment the yard

would be unable to meet their contractual obligations to shipping companies and dropped their opposition (Bergens Tidende, 1966, September 8).

Top management and the union discussed staffing in their well-established joint cooperation committee (Sørli, 1976, p. 104). The committee debated the relative desirability of recruiting handicapped individuals, British workers or Norwegian women (Sørli, 1976, pp. 104-106). Revealingly, worker representatives excluded the first two possibilities (Sørli, 1976, p.104). A further recruitment round conducted in 1970 was extensively debated in the cooperation committee, surfacing insiders' reactions. The minutes for 5 February1970, item no. 2, recorded: "We can….count on the female workforce as a large reserve". The 'reserve' formulation was later used by management in connection with women's role inside Solheimsviken where they were often referred to as 'helpers'; the 'reserve' was to prove smaller in reality than hoped. Committee members' reservations emerged: "There can be differing opinions about whether our environment is suitable for women", the chair remarked (Sørli 1976, p. 105). Male workers' attitudes surfaced more clearly on 3 November 1970. After consultation with departmental sub-committees, management sought to allay male workers' concerns: "It is not the intention that the female workforce will block possibilities for our current male workforce...". Women would be recruited 'as equals within our old "boy's club…the company environment will surely adjust as we go.' (Cooperation committee, 1970, November 3. Box 771, BPA). The union and management agreed that women should be recruited and treated initially as trainees and not apprentices to avoid delay in deploying them. Significantly, the joint decision meant that the traditional comprehensive socialisation undergone by all skilled men which instilled cultures, norms, expectations and enforcement mechanisms associated with the welding occupation and craft were by-passed. Against this background, it is hardly surprising if women later failed to achieve equality of status in practice.

On 15 July 1965 the new recruits were publicly announced and celebrated as a national 'first' through a press release used by the leading national newspaper (Aftenposten, 1965). From 1965 to 1989 Solheimsviken recruited 100 women most of whom lived locally (Figures compiled from BMV Solheimsviken AS. *Records of recruited and terminated workers*: 1965-1989. Bergen Public Archive. Unnumbered separate files). 79 were between 16 and 25 years old; the rest were in their 30s and 40s. The overwhelming majority were employed as trainee welders, and were allocated positions on the lower points of a graded occupational scale for welders after a few weeks training. Some recruits suggested that they started at the yard 'by chance' or as an 'adventure' (Bergens Tidende, 1970, August 22) but both this newspaper report and our interview respondents articulated varied individual motives. Community and family encouragement--qualified by concern about the working environment--was a major theme; many reported having friends or relatives already working in the yard who functioned as initial guides and mentors. The recruits' strong ties to the tight local community meant that their experience resonated when further recruitment was attempted. Many respondents recalled that they were told that they might not stay long: their adventure might be brief. A second theme was the enticing prospect of high and equal pay as specified in the company's advertisements, when equal pay *within* the different welder grades was referred to (Bergens Tidende, 1970, December 12). The head personnel officer reported that most recruits took 'feminist' positions with respect to their rights to work in 'male' jobs (Bergens Tidende, 1972, July 14). Our interviews showed that some held feminist ideas in a more developed and comprehensive sense.

In late 1966, management informed the press that recruitment of women had been satisfactory. The head of personnel suggested that women were 'slipping smoothly' into the 'male environment' (Ibid. p.20). He explained that their absorption was important for changing the yard's workplace culture; it was not simply a matter of meeting demand for

labour (ibid.). Yet, for reasons we explore below, recruitment remained inadequate to management's needs. The yard's local reputation as a 'tough' environment was confirmed by the women recruits, deterring more women from applying. The Personnel Manager later repeated that Solheimsviken would have liked to have recruited more women and to have introduced them into skilled jobs other than welding (Bergens Tidende, (1970, December 12; 1970, December 19). Later interviews confirmed that a shortage of applicants persisted throughout the 1970s. By 1980, Bergen yards reported 'major dropout' of women workers on their own initiative as product demand reduced (Bergens Tidende, 1980, April 12).

Women welders' work, health, task allocation and pay.

Women recruits underwent some weeks of initial training followed by on the job development. They worked in different ways; the great majority worked in enclosed booths in the welding hall, as a group of women, but some also worked '2 and 2' with a skilled man, as half of a team of four on other welding jobs. Skilled men combined supervisory and workmate roles in relation to them. Welding was conceived of as work at different skill levels, and pay reflected that through the grading system which constituted the basis for piece work payments. From 1967, welders' pay rates were formally equal between women and men. Welders were paid at one of seven different levels according to their seniority and the perceived degree of skill required. Thus, pay was related to their workplace seniority, training and journeymen/managers' perceptions of their skill (which could be influenced by negotiation). Contemporary management documentation showed that women's earnings clustered in the lower half of welders' pay distribution (Untitled, uncatalogued document 1975, December 8). Consistent and complete time series earnings data are unavailable, but from the fragmentary sources we estimate the median intra-occupational gender pay gap to have been approximately 24% in 1970; one ex-manager argued that this gap may have narrowed by 1980.

Cultural expectations of job tenure – seniority was strongly linked to status -- were set by male journeymen who expected to work at Solheimsviken for around 50 years (Müller, 2000: 43). Moreover, two years' experience was required to attempt the daunting national Veritas certification test to improve their credentials as welders and move up the grades. Yet almost no recruits stayed long enough to qualify to acquire certification. 35 women left Solheimsviken within one year, in 21 cases since they felt they were in the 'wrong working environment', while just over half of the 21 who offered further detail specified illness as their reason for leaving (internal documentation, 1965-1989. Book in BPA). Women's stated reasons for leaving must be approached cautiously partly because women's positive accounts of their experience contrast sharply with company data on their short job tenures. Women giving the 'illness' response may have thought it constituted an 'acceptable' reason. Yet women sometimes gave 'acceptable' answers that *masked* illness. Anne (see below) was induced by potentially serious work-related health problems to accept a job outside Solheimsviken. She experienced neck strain caused by wearing welders' heavy protective equipment, which medical advisers informed her could mean her having to leave her job. Asked why she was leaving, she replied 'got another job' (internal documentation, 1965-1989. Book in BPA). The illness reason is also a plausible cause for women's short job tenure, as the testimony given by women in the interviews we conducted in 2017/18 demonstrated. Heavy protective equipment, dirt, potential for burns from sparks ('my arms, hands and body parts were once totally in flames', Birgit recalled), fumes and electric shocks when welding rods were exposed to rain were among the issues highlighted by interviewees. Welding certain metals such as zinc had been recognised by management as a problem since late 1964, before women's recruitment began (*Båt og Bedding,* 1965, December 1 and 2 Box 567 BPA).

Health problems among welders were first reported to occupational health journals in the 1930s. An extensive occupational health literature developed post-1945, reporting on research in Nordic shipyards. It documented high rates of chronic health issues among welders. 'Welder's whistle' (caused by particles lodged in lungs) could develop into 'welders' lung', a fibrositis-type of condition. Its higher incidence when welding in confined spaces as the women in Solheimsviken did became well-established (Bonde 1993; Hemminki et al, 1983, p. 369). Its main symptom was coughing which could develop into more serious lung problems within a year of initial exposure (Bonde, 1993). Other shipyard work such as painting, handling and cutting asbestos was also hazardous, but welding stood out by its wide incidence and rapid impact (Bonde, 1993). The yard's management and union recognised many hazards in the 1970s (Bergens Tidende*,* 1975, March 22). Anne, the shop steward mentioned above, who was generally positive about BMV management, rejected any suggestion that managers took the issue seriously, adding bluntly: 'when we welded the fumes went into our lungs'. In short, women recruits were allocated jobs recognised as carrying significant health hazards, but management and union alike were not regarded by Anne--nor by other respondents-- as proactive in solving them.

Women's 'public' accounts, both contemporaneous and decades later, often stressed that male workers and foremen generally received them in positive, respectful and 'protective' ways. The 'protective' approach was double-edged: it limited women's opportunities while simultaneously helping ensure that they were not exposed to excessive risk. Conceptions of appropriate work for women and of 'protecting' them were central to management's actions in restricting women to relatively unskilled tasks within the broad welder category. Women were portrayed by managers as requiring 'easy' jobs. Helmut, a foreman, commented when interviewed in 2017: 'One reason why they were welders and why they worked inside the hall is that those were the easiest jobs, the lightest jobs…..They started with plates that lay

flat on the floor. They could sit nicely on a box and weld.' Helmut's argument reflected a gendered view of women's physical capacities. Other more senior managers shared that view. Outside, it was often intensely cold working on ships' skins, and Solheimsviken workers lacked the warm padded overalls provided in some other local yards. The work was crucial to ships' integrity, only highly skilled welders were allocated it and it carried higher-graded pay. A handful of women asked successfully to carry the work out, but a senior production manager (chair of the management-union cooperation committee) later argued that 'They soon discovered it was not that smart, it was darn cold……there is a difference between men and women after all……..' (Fred, head of production). Fred clearly conceptualised the situation more in gender terms than as a lack of custom-made warm clothing available to all. Thus, male managerial attitudes ensured that women welders remained in the lower-paid types of welding work.

The management success narrative, OHS and externally-driven change.

Management generally advanced a public narrative of success and satisfaction in the women's recruitment, an argument that supported their recruitment efforts. Notes prepared by an unknown but clearly senior personnel manager at Solheimsviken for a speech (apparently to industry colleagues and therefore possibly influenced by a feeling that Solheimsviken should be portrayed positively) in December 1975 presented an upbeat account, while acknowledging serious issues ('Lecture - women in heavy industry' 1975. Bergen Public Archive (BPA) Box 74). The speaker painted an overall picture of unalloyed success in deploying women as 'supplementary' labour. He concluded his speech with a significant rhetorical flourish: 'Quit working at the yard? No way!' In common with other contemporary managerial accounts, he stressed women's 'equal' treatment and the smoothness of their integration. However, he simultaneously argued that many current arrangements and attitudes needed to change, and admitted that recruitment had to improve. This senior

manager recognised publicly that very few women ‘graduated’ to better-paid welding work. He also—revealingly--spent much time discussing OHS matters and stressing their importance. He focused exclusively on employee recruitment and worker responsibilities. His message was that OHS issues in the ‘tough’ conditions had to be managed by only recruiting healthy workers and that protective equipment had to be worn by them at all times. Yet he mentioned no measure taken by management to reduce internal environmental problems at source via for example effective (if potentially costly) local exhaust ventilation rather than by personal protection of questionable effectiveness. He conveyed no sense of management’s primary responsibility for OHS. His speech thus conformed to IROHS theory. His account is consistent with that given by Fred that in the 1970s the yard was an inhospitable working environment. Fred suggested that by 1980—by which point very few women remained-- the yard environment had greatly improved, because of the Norwegian government’s Work Act. *Inter alia*, improved lighting and better personal protective equipment including fresh air masks for welding were introduced as a result of that legislation. As the BMV Annual Report (BMV, 1977), hitherto almost entirely unconcerned with workers’ health and safety, reported, the company’s occupational health service was also expanded and ‘modernised’.

In the next section we explain why few challenges arose to problematic managerial attitudes and practices.

Women and voice

The union and voice

Institutionalised collective voice through the union had deep roots in Solheimsviken. Management and unions cooperated increasingly extensively post-1945, stimulated initially by a sense of national reconstruction (Myran & Fasting, 1955, p. 241) and then by

intensifying Asian competition. The cooperation was publicly articulated in a joint interview with Solheimsviken's CEO Arne Osland and union club leader Kåre Fiskeseth in a national film broadcast in 1971 (NRK, 1971). Osland and Fiskeseth outlined and defended a jointly agreed strategic approach that included but also transcended specific personnel and labour questions to encompass the yard's wider strategy. In principle, no area was out of bounds; the union was at least at the rhetorical/ideological levels a full co-management partner. By 1962, Iron and Steel had been functioning in the yard for some sixty years, and was well-ensconced, with a full-time convenor of shop stewards with his own office, paid for by the company. From 1970, three full-time positions for union leaders were allowed for on the payroll. Management (unlike in some rival yards) was regularly invited to address mass meetings on major issues. In 1962, the union club had recorded in its annual report 'We thank management for always being positive and for their willingness to collaborate.'(BMV union club, 1962, p. 27). This relationship grew in importance across subsequent years as international competition intensified (Sørli, 1976).

Until 1965, skilled work was men's exclusive preserve. For the previous two decades, women worked in the canteen and cleaning. Women cleaners in Solheimsviken and its sister yard Laksevaag reported in the early 1980s that they were 'respected' by the men, although the women felt that some male workers 'would never let their wife take such a job'. The women referred to strong associative links between them as sustaining their morale, but felt that they were not treated as an integral part of the workplace community. They agreed that they would like to be considered 'part of the total function and treated accordingly…' (Linken, 1983, June). Women's subordinate position had deep historic roots. The yard's union, through its Women's Association (WA) had since 1931 institutionalised women's participation in union affairs in subordinate, domestic-related roles. Its meetings were revived post-war and the WA worked to build the union's vacation house and to cook and serve

meals at the union's annual excursions to it (Nygårdsvik, Wiik, & Larsen (1945). The WA's committee complained of low participation, asking whether it was due to male union members stopping women going out in the evenings (Nygårdsvik et al. 1945). The women welders recruited from 1965 onwards and interviewed in 2017-18 defined their expectations against the cleaners' and WA committee's experiences. Thus, the mid-1960s marked an apparently radical departure in women's workplace participation which implicitly challenged previous gendered assumptions and symbolized wider generational changes that potentially threatened craftsmen's position as labour aristocrats.

The union 'club's' (see below) democratic culture was institutionally rooted in the booths in which the journeymen gathered in their different trades before work and during breaks. The booths were sites for time-served journeymen, which the women were not. They were archetypical male spaces which constituted the foundations of union democracy, conducting wide-ranging informal discussion of workplace matters between peers (Økland & Croucher, 2017). Iron and Steel was the main union, with overwhelming membership (a small number of electricians were members of their own union). Inside the yard, the unions liaised through a joint 'club'. Iron and Steel had permitted women's membership for decades (Olstad & Halvorsen, 1990). The union ethos was that skilled work was journeymen's preserve, and this was central to the workplace culture and the way it subordinated women. Skilled men exhibited intense pride in their workplace identity and status through their body language, demeanour, verbal expression, clothing and attitudes (Alveng & Müller, 1990). That this was accepted by others was underlined and ritualistically demonstrated when foremen brought experienced craftsmen to show advanced techniques such as vertical welding to women and apprentices. In a classic illustration of the gendered organisation in action, one young woman responded by showing her own skills, earning the remark from a

young male onlooker"What a little asshole she was! Couldn't she just have watched, and seen how fantastic it was when he welded!" (Alveng and Müller, 1990, pp. 42-43).

Union democracy was strong, precisely because it was restricted: it was founded on an exclusive philosophy that democratic rights went hand in hand with skill. Office-holding had in practice been reserved exclusively for journeymen; status and influence within the union continued to reflect skill. Women's low status both in the key foundational institutions of the workplace community--the booths—and the union were intimately linked with their not having served apprenticeships. Birgit recounted how the skilled union leader she worked with ('kind of a rough type of guy') made it clear that he did not want to work with her at all because she was not a union member, had not served an apprenticeship and because he would have to do more heavy lifting. She described the lifting argument as 'bullshit' because cranes were used to move heavy plates and 'not one single man had to do any more lifting'. Else reported what she regarded as failures in union democracy. She said that her male steward refused to conduct a vote on an overtime issue, because her shift's votes were too few to outweigh those of the other shift. She complained, as she regarded that refusal as both a failure to grasp their need to express their views and as showing a broader and characteristic insensitivity to minority rights. Such practices, she perceived, carried negative implications for women's union voice.

Union representation was seen by women interviewees as important to earnings. Stewards could negotiate appropriate rates, task allocation and training. Anne-Brit, a member of Iron and Steel, recalled 'You did not achieve top wages if you were not unionized.' The union was also well-placed to affect OHS issues, since (unlike in some workplaces) its shop stewards were also responsible for health and safety matters, raising issues through the well-established union-management cooperation committee. But the women recruits' levels of union membership and participation were both lower than among

men. The union did not function as a vehicle for collective voice for the women as a specific group (Braathen, 1987). No woman sat on the club's committee in 1965-80. Anne therefore berated the union club for only representing a part of its membership. She viewed the possibilities for women to improve conditions through this important formal channel as minimal.

Women recruits and the workplace community

Formal channels were not the only ones available to women. Informal associative links with the male workforce, and contact with management could also potentially offer possibilities for women to address issues. Yet, as gendered organisational theory proposes, the yard's social climate militated against maximising these possibilities. Male imagery was prominent in the workshops and underlined women's secondary ('reserve') role within them. In one, a picture of nude women from 'Playboy' was posted on a workshop wall, which some women vociferously objected to. A senior production manager, Fred, commented (in what may be a 'public' account): 'We managed to remove it, it never became a big issue. We did not want it there. We had to make sure it was removed. But …..some of those old-timers had pictures on the inside of their lockers. So when they opened the door you could see a half-naked person there.….. the ladies were angry about it.' Such pictures were tolerated inside men's lockers, but not outside them. This manager felt he had trodden a careful line between men and women's differing wishes. The women could not however relax in their 'own' spaces in the yard, which were very limited. Elinor gave a 'private' perspective:

Elinor: God, how primitive, we had our own toilets, because that was employment law, but peeking holes used to appear between the toilets between the toilets, so if you did not check when you came into the toilet, to make sure the stuffing in the hole had not been removed, you could risk someone watching you.

Interviewer: So then your male workmates could watch you. But that hole, who made it?

Else: We can't say, it was not the ladies at least (laughs).

In these lights, it is unsurprising that the women recruits reported a semi-detached relationship to the male workplace community. They suggested that they often sat with the men at breaks, though they reported almost no contact with senior managers. The women also developed their own community by sitting together in their half hour lunch breaks in the cafeteria. Women's relationship to the male workplace community was thus ambivalent, minimizing the scope for informal voice and collective action.

'Fitting in'

The women recruits' norms gave little support to notions of collectively voicing women's concerns. Women gave public accounts of their experience which were both consistent with and supportive of the management 'success' narrative. One early interview given to the shipyard newspaper *Båt og Bedding* may stand for many others from the mid-1960s in the way that the issues women faced surfaced even when the central message and tone was positive. The reporter wrote about Nina Halvorsen, a welder, 'popular……young and always smiling'. She wished to thank the male workers and management for her reception in the yard. She rejected the suggestion that she was 'thought of as just a woman' and it helped in this respect that she dressed like other welders and did not 'flit about in a skirt'. Despite early problems, improvements had been made in welfare provision such as the introduction of women's showers. (*Båt og Bedding,* 1965, July-December Box 781, BPA). Women's public accounts to the local newspaper recognised positive aspects of working in the yard: they reported enjoying working while free from 'local, bossy managers' most commonly in retail environments, and not having to smile at work all day (*Bergens Tidende*, 1980, April 14). Public expression of satisfaction was part of their broader stress on 'fitting in.' In one of a

number of similar testimonies, Elinor recalled women's efforts to be 'one of the gang' in the yard. She then added: 'I don't think I would have fitted in there in the long run…. But I also want to add that it is quite possible that the foremen and others had a different perception of us coming there than we did ourselves.'

In short, while in their 'public transcripts' most women expressed an accommodative stance towards what they perceived as normal shipyard practice, their accounts indicated the issues that led to short job tenure. In more clearly private accounts, they alluded to the gap between their perceptions and those of 'foremen and others'. Hence, women were accommodating the predominant workplace culture rather than simply accepting it. Helmut, a foreman, himself argued that efforts to 'fit in' on the women's part were necessary. Asked if any women did not 'fit in', he responded:

'Those women that he (John, his co-interviewee: authors) mentioned, who tried to dominate in a manly domain, who kind of set themselves on the outside.

Interviewer: So, like the feminist that you mentioned?

Helmut: Yes, and she did not stay very long.'

The 'fitting in' norm also manifested itself in their woman union steward's willingness or otherwise to raise matters central to women's interests. Faced with women asking for issues of task allocation to be taken up with management, Anne saw this as an inappropriate demand. Thus, women, who occupied a strategically important position at the start of the production process which might have been exploited to bring the yard to a halt did not mobilize collectively on the issue. In short, little pressure was exerted by women on management to change its attitudes and practices.

Conclusion

We set out to investigate *how far may the experience of introducing women into Solheimsviken be seen as a 'success'*? Women's introduction partially met an immediate need for labour but was far from an unmitigated success for several reasons.

The first set of reasons relates to concrete OHS issues, leading to women's illness and short job tenure. The women recruits' rootedness in the local community meant that their experience limited the number of new recruits. Their experiences were linked to managerial policies and decisions which interpreted women's reactions to working conditions within strongly gendered frames. IROHS theory assisted understanding of how and why material work realities were interpreted by managers to justify their OHS actions, omissions and the decisions they took on task allocation. Three management arguments and behaviours were central. First, women were given ostensibly 'easy' work which in reality entailed serious health hazards. Welders' working environments changed primarily as a result of government legislation after most women had left. Before then, few women stayed employed long enough to gain either sufficient experience or certification to undertake better-paid tasks. Second, the problems of 'outside' work were not addressed by protective measures used elsewhere but were passed over by reference to women's supposed specific difficulty in dealing with cold. Third, the 'public' management discourse of 'success' limited the scope for alternative views and legitimated gendered management decisions. Limitations on women's collective voice meant that these attitudes and behaviours encountered little challenge.

A second set of reasons was the tension between women's gender egalitarian attitudes on the one hand and management's creation and preservation of an intra-occupational pay gap

on the other. Intra-occupational pay gaps are frequently related to in-job gender segregation (Bishu & Alkadry, 2017). In this case it was also linked to women's status in management and union's eyes as a labour 'reserve' and as 'helpers' who should not 'block' male workers' opportunities. Women were and remained on the shipyard's margins, consistent with long-term conceptions of women's roles in the yard. Women employed in non-production jobs prior to 1965 had been regarded as adjunct members of the workplace community by management and male workers alike. The women in the WA were encouraged to extend their domestic roles by serving male union members in similar ways. From 1965, a new generation of women welders appeared who rejected these attitudes. They were clearly not 'the assumed worker' of gendered organisation theory. In our case, the yard's culture was particularly strongly gendered. The generally tacit and submerged nature of male managers' attitudes to women workers envisaged by gendered organisation theory were articulated in explicit formulations, and were even regarded as sufficiently acceptable as to be printed in the workplace newspaper. Thus, the intra-occupational gender pay gap both reflected and epitomised a set of attitudes which many women recruits found unpalatable. Further work connecting our case with criticisms of the notion that women occupy jobs in the secondary segment of a 'dual' labour market due to supply factors and low interest in their careers appears likely to yield further theoretic results.

IROHS theory provided distinctive assistance through its insistence on the significance of inclusion in and exclusion from collective voice and representation. As we stressed above, voice in general is not coterminous with union voice, but in this context collective voice assumed great importance through the union's close relationship with management. In Solheimsviken, women exercised voice, but only in individual and muted form, for several reasons. First, they had almost no everyday access to senior managers. Second, the union

club-threatened by journeymen's reduced role in production planning and engaged in close cooperation with management-took only a secondary interest in women's issues. Third, in reaction, the woman shop steward during the period of maximum women's employment refused participation in union committees, further reducing women's influence on the 'old boy's club'. Arguably, OHS improvements potentially beneficial to all workers and quite possibly to productive efficiency thereby became less likely. It must be conceded that women's voice on numerous issues, including OHS, was not solely determined by these circumscriptions, nor did their norm of 'fitting in' entirely prevent it. Women explicitly identifying themselves as feminist were more likely to exercise voice than those holding feminist views in more dilute senses. Nevertheless, it remains the case that restricted voice was associated with high turnover, consistent with IROHS theory. As we noted above, IROHS' theory's core asset has not been a consistent focus on women's issues. In this context, we contribute to it by showing the links between women's experience of work, a lack of collective voice (including in a non-union sense) , exit and an intra-occupational pay gap. As far as we are aware, these links have not previously been demonstrated as a totality. Future research might usefully pursue them.

Our case also allows historiographic comment. Business history, seeking to explain European shipbuilding companies' reactions to fierce Asian competition principally attends to several important issues: the terms of trade, international and national regulation, the extent to which it was possible to pursue national-level strategies, company level strategies, the (un)availability of adequate finance, and finally to how company strategy was rooted in existing socio-technical bases. We contribute by providing significant detail in the social area. Our case is in some senses consistent with Barnett's (1996) conflict-dominated picture of British shipbuilding outlined above since workers' different trades retained powerful

independent identities. However, it also shows the limitations imposed by an industrial relations strategy which institutionalised management-union *cooperation* rather than conflict. The Solheimsviken management strategy was designed to integrate the skilled male work force into broad management perspectives but simultaneously limited the effectiveness of initiatives designed to increase employee functional flexibility such as women's extended use, or craftsmen's multi-skilling, which potentially involved disruption to the existing social fabric (Økland and Croucher, 2017). These possibilities were referred to by the yard's personnel manager when he expressed the hope that women's successful introduction would change its culture. This culture reflected and supported rigidly defined and enforced craft skills which effectively excluded the high levels of employee functional flexibility and related rapid rates of technological change manifested among Asian producers (Kong, 2006; OECD, 2017).

Historically, the experience was typical, contemporary sources suggested, of the many Norwegian shipyards which introduced women in the 1960s and 1970s and these in turn were similar to much West European shipyard practice at that time. Our case must be firmly located within its industrial and historical contexts, but we argue that it is nevertheless of considerable current interest. Heavy industry, compared to some other environments, undoubtedly magnified the salience of OHS, but current working environments –which have migrated to the developing world rather than disappeared--nevertheless are also hardly hazard-free. Similarly, the international legacy of craft unionism which helped frame management mentalities and restricted women's voice opportunities is almost certainly weaker currently than in the 1960s/70s. Nevertheless, vestiges of its history remain present in some environments (Clarke, Winch, & Brockmann, 2013).

Overall, our research indicates that the dynamic inter-relationships between women's physical and psycho-social work experiences, OHS, management rhetoric and tactics,

collective employee voice and turnover offer hitherto under-appreciated yet fruitful perspectives in heavy industry.

References

Abe, E., & Fitzgerald, R. (1995). Japanese Economic Success: Timing, Culture, and Organisational Capability. *Business History, 37*(2), 1-31.

Acker, J. (1990). Hierarchies, jobs, bodies: a theory of gendered organisations. *Gender and Society, 4*(2), 139-158.

Aftenposten, (1965, July 15). Kvinnelige sveisere til Bergens Mekaniske, [Female welders enter Bergen Mechanical], p. 5.

Alveng, D., & Müller, H. (1990). *Verftet i Solheimsviken*, [Solheimsviken Yard]. Bergen, Norway: Alma Mater.

Andersen, H. W. (1989). *Fra det britiske til det amerikanske produksjonsideal: Forandringen av teknologi og arbeid ved Aker Mek. Verksted og i Norsk skipsbyggingsindustri 1935-1970*. [From the British to the US Production Ideal: Change in Technology and Work at Aker Mechanical Workshop and the Norwegian Shipbuilding Industry 1935-1970]. Trondheim: Tapir.

Andersen, H. W. (1997). Producing producers: Shippers, shipyards and the cooperative infrastructure of the Norwegian maritime complex since 1850. In: C. F. Sabel, & J. Zeitlin, (Eds.), *World of Possibilities. Flexibility and mass production in western industrialization* (pp. 461-500). Cambridge: Cambridge University Press.

Bailyn, L. (2006). *Breaking the Mold*. New York: Cornell University Press.

Barnett, C. (1996). *The Audit of War: The Illusion and Reality of Britain as a Great Nation*. London: Pan Books.

Bergens Tidende (1966, September 8). Vellykket Bergens-eksperiment med kvinner i tundgindustrien, [Successful Bergen experiment with women in heavy industry], pp. 1, 14.

Bergens Tidende (1966, November 24). BMV har 12 kvinnelige sveisere, [BMV has 12 female welders], p. 1.

Bergens Tidende (1970, August 22). Kvinner gjør god jobb i «ukvinnelige yrker», [Women do a good job in 'unfeminine professions'], p. 5.

Bergens Tidende, (1970, December 12). Stillingsannonse – BMV ansetter kvinnelige sveisere, [Job advertisement – BMV recruits female welders], p. 49.

Bergens Tidende, (1970, December 19). Stillingsannonse – BMV ansetter kvinnelige sveisere, [Job advertisement – BMV recruits female welders], p. 33.

Bergens Tidende, (1972, July 14). Pene jenter «temmer stål», [Pretty ladies 'tame' steel], pp. 1, 18.

Bergens Tidende, (1975, March 22). Sveising – et tøft yrke som krever stor aktsomhet, [Welding – a tough job demanding vigilance], p. 17.

Bergens Tidende, (1980, April 14). Undersøkelse om kvinnelige arbeidere i produksjonsindustri – foretrekker menns jobber der de ikke behøver å smile, [Investigation of female workers in production industry – prefer men's jobs where they don't have to smile], p. 8.

Bishu, S. G., & Alkadry, M. G. (2017). A systematic review of the gender pay gap and the reasons for it. *Administration and Society, 49*(1), 65-104.

BMV (1977). Årsrapport, [Annual report]. Solheimsviken, box K776, BPA.

BMV union club (1962). Årsmelding, [Annual Report], Solheimsviken, box K765, BPA.

Bonde, J. P. (1993). The risk of male subfecundity attributable to welding of metal studies of semen quality, infertility, fertility, adverse pregnancy outcome and childhood malignancy. *International Journal of Andrology, 16*(1), 1-29.

Braathen, E. (1987). *Heller småbruker på Vestlandet enn husmann under Fred Olsen. Ingeniører og arbeidere ved BMV Solheimsviken gjennom modernisering, konserndannelse, omstilling,* [Rather smallholder in Western Norway than crofter under Fred Olsen. Engineers and workers at BMV Solheimsviken through modernization, firm group formation and change]. Unpublished thesis. Bergen, Norway: University of Bergen.

Brautaset, C. & Tenold, S. (2008). Globalisation and Norwegian Shipping Policy, 1850-2000. *Business History, 50*(5), 565-582.

Båt og Bedding, (1965a). Referat fra produksjonsutvalget, [Production committee minutes], December 1 and 2, no. 10, pp. 30-32. Box K567, BPA.

Båt og Bedding, (1965b). July-December, no. 7-8, pp. 175-176. Box K781, BPA.

Clarke, L., Winch, C., & Brockmann, M. (2013). Trade-based skills versus occupational capacity: the example of bricklaying in Europe. *Work, Employment and Society, 27*(6): 932-951.

Cooperation committee (1970, November 3). Referat fra møte i Avdelingsutvalget, nr. 10, sak nr. 4, [Cooperation committee, minutes no. 10, agenda item no. 4]. Box K771, BPA.

Danielsen, H., Larsen, E., & Owesen, I. (2013). *Norsk likestillingshistorie 1814-2013*, [History of Equality in Norway, 1814 – 2013]. Bergen, Norway: Fagbokforlaget.

Gilje, H. (2010). *Skip fra vik og våg – Historien om Bergens Mekaniske Verksteder,* [Ships from Bays and Harbours - The History of Bergen Mechanical Workshop]. Haugesund, Norway: Vormedal Forlag.

Grønning, T., Moen, S. E., & Olsen, D. S. (2008). Low Innovation Intensity, High Growth and Specialized Trajectories: Norway. In C. Edquist & L. Hommen (Eds.), *Small-Country Innovation Systems: Globalisation, Change and Policy in Asia and Europe* (pp. 281-318). Cheltenham, UK: Edward Elgar.

Harrisson, T. (1976). *Living Through the Blitz*. New York: Schocken Books.

Hatlehol, G. D. (2018). Tvangsstyringen av arbeidslivet under Hakekorset 1940-1945, [Forced labour as policy in occupied Norway]. *Arbeiderhistorie, 22*(1), 49-71.

Hemminki, K., Niemi, M. L., Kyronnen, P., Koskinen, K., & Vainnio, H. (1983). Spontaneous abortion as risk factor in metal exposure. In T. W. Clarkson, G. F. Nordberg, &

P. R. Sager (Eds.), *Reproductive and Developmental Toxicity of Metals* (pp. 369-380). New York: Plenum Press.

Holter, H. 1970. *Sex Roles and Social Structure*. Oslo: Universitetsforlaget.

James, P., & Walters, D. (2002). Worker representation in health and safety: options for regulatory reform. *Industrial Relations Journal, 33*(2), pp. 141-156.

Jensen, A. M. (1981). Jobb, barn og likestilling. Om kvinners tilpasning til arbeid og familie. [Work, children and equality. On the adaptation of women to work and family]. *Statistics Norway*, no. 129. Oslo: Statistisk Sentralbyrå.

Kong, T.Y. (2006), Globalization and labour market reform. Patterns of response in North East Asia. *British Journal of Political Science*

- https://doi.org/10.1017/S0007123406000196

Lippel, K., Messing, K. (2014), A gender perspective on work, regulation and their effects on women's health and safety and well-being, in Nichols, T., Walters, D. (eds.) *Safety or Profit?* Basingstoke: Routledge. Chapter 2.

Moksnes, A. (1984). *Likestilling eller særstilling? Norsk Kvinnesaksforening 1884-1913*, [Equality or Special Position? The Norwegian Women's Association 1884-1913]. Oslo: Gyldendal Norsk Forlag.

Müller, H. (2000). *Indre erfaring som antropologisk blikk og stemme*, [Inner Experience as Anthropological Visual and Auditive Perception], (Doctoral dissertation). Bergen, Norway: University of Bergen.

Murphy, H., & Tenold, S. (2008). Strategies, Market Concentration and Hegemony in Chemical Parcel Tanker Shipping, 1960-1985. *Business History,* 50(3), pp. 291-309.

Myran, H., & Fasting, K. (1955). *Herfra går skibe. Aksjeselskapet Bergens Mekaniske Verksteder 1855–1955*, [From Here Ships are Launched. Bergen Mechanical Workshop Ltd 1855-1955]. Bergen: BMV.

Nichols, T., & Armstrong, P. (1973). *Safety or Profit: Industrial Accidents and the Conventional Wisdom.* Bristol: Falling Wall Press.

Nichols, T. (1994), Industrial accidents as a means of withdrawal from the workplace according to the Tavistock Institute for Human Relations: a re-examination of a classic study. *British Journal of Sociology* 45 (3): 387-406.

NRK [Norwegian Broadcasting Corporation] (1971). Tillitsmannen - Hvem er han? [The shop steward – who is he?], [Motion picture]. Retrieved 12 December, 2018 from https://tv.nrk.no/serie/bedriften-som-samfunn/1971/FOLA70002170/avspiller s a .

Nygårdsvik, A. O., Wiik, I., & Larsen, B. (1945). *Jernskipsarbeidernes fagforening, 50 års rapport*, [Iron Shipbuilders Union, 50-year Report]. pp. 53-56. The Union, Bergen, Norway.

OECD (2017). *Peer review of the Norwegian Shipbuilding Industry*. Paris: Organisation for Economic Cooperation and Development.

Økland, G. M., & Croucher, R. (2017). The culture of skilled work in a Norwegian shipyard, 1945- 90. *Labor History, 58*(3), pp. 271-281.

Olstad, F., & Halvorsen, T. (1990). *Jern og Metall 100 år. Bind 1 1891-1940*. [Iron and Steel 100 Years. Volume 1 1891-1940]. Oslo: Tiden Norsk Forlag, pp. 143, 244.

Poulsen, R. T., & Sornn-Friese, H. (2011). Downfall Delayed: Danish Shipbuilding and Industrial Dislocation. *Business History,* 53(4), pp. 557-582.

Quinlan, M. G. (1996). Women and occupational health and safety: The challenges still waiting to be met. *Journal of Occupational Health and Safety, Australia and New Zealand,* 12(4), pp. 409-422.

Quinlan, M. G. (2017). *The Origins of Worker Mobilisation. Australia 1788-1850*. New York: Routledge.

Scott, J. C. (1990). *Hidden Transcripts: Domination and the Arts of Resistance*. New Haven: Yale University Press.

Skjeie, H., & Siim, B. (2000). Scandinavian feminist debates on citizenship. *International Political Science Review,* 21(4), pp. 345-360.

Sørli, E. (1976). *I samme båt. Verkstedklubben i skipsbyggeriet ved BMV fra part til* partner, [In the Same Boat. The Shop Union in BMV Shipbuilding. From Part to Partner], (Unpublished Master's thesis in history). Bergen, Norway: University of Bergen; Box K783, BPA.

Statistics Norway (2018). Historisk statistikk, tabell 10.3, [Historical statistics, table 10.3]. Retrieved 10 December 2018 from https://www.ssb.no/a/kortnavn/hist_tab/10-3.html .

Walters, D., Quinlan, M., Johnstone, R., & Wadsworth, E. (2016). Cooperation or resistance? Representing workers' health and safety in a hazardous industry. *Industrial Relations Journal,* 47(4), pp. 370-395.

Zoorob, M. (2018). Does ‘right to work‘ imperil the right to health? The effect of labor unions on workplace fatalities. *Journal of Occupational and Environmental Medicine.* DOI: 10.1136-2017-104747.