



Professions, power and paradox in occupational safety and health in the 21st century

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ABSTRACT

Analysis of the development of professions and professional institutions in occupational safety and health is somewhat neglected. While there are some accounts of the development of professional practice in occupational medicine and a discourse on its ethics in the literature, that addressing the development and role of the general OSH practitioner is more limited. This paper seeks to contribute to this literature and to the development of such a discourse, with an account of some key antecedents of current practice. It identifies structural factors within the economy and its regulatory framework for OSH, that have influenced the rise to prominence of the generalist professional/practitioner. It examines the consequences of this for these OSH professionals and the associations that represent their professional interests.

It frames this examination with reference to the sociological literature on professions more generally. Drawing on parallels in this literature, it argues that substantial shifts in the loci of power in work relations during recent decades, occurring against a back-drop of neo-liberal political and economic policies, have helped shape the current corporate demand for OSH generalists. This has led to their increased presence in the OSH infrastructures of advanced market economies and beyond. At the same time, and with reference to parallels in the sociological literature on salaried professionals, the paper suggests that meeting such a demand, in these structural contexts, may have consequences for professional practice. But with a few notable exceptions, it finds theoretically informed discussion of these consequences and their determinants to be underdeveloped in recent specialist literature on professional practice in OSH. The paper concludes that further research and informed discussion of the issues raised by viewing professional development in OSH from a more sociological perspective is important and should be encouraged.

1. Introduction

The development of professional interest in supporting good practice on work health and safety in affluent economies, has paralleled the growth of industry and employment, with many of its features reflecting the influence of changes and challenges in the nature, organisation and structure of work, and sometimes also in that of its regulation and the interests of its dominant economic and political actors. Thus, from the Industrial Revolution onwards, while they each have unique national features, similar broad patterns of professional development around work safety and health are found in most advanced economies (see Walters et al., 2022). They have led to the emergence of identifiable professional groupings in occupational medicine and nursing, occupational hygiene, occupational health psychology, ergonomics, safety engineering and so on, along with associations supporting their interests and autonomy. These groups all have broadly comparable approaches to exclusive knowledge, market control, and occupational closure, in ways described in sociological studies of the development of professions more

generally (Dingwall and Lewis eds., 2014). More recent changes in the structure and organisation of work and its regulation have facilitated the emergence of the 'general health and safety professional'. It is on this development that this paper is particularly focussed.

The efforts of emergent professions and their associations to secure structural linkages between education and occupation and between exclusive qualifying knowledge, accreditation and power, in the form of market monopoly are analysed extensively in a long-standing sociological literature (see for review, Larson, 1977). Few such studies relate specifically to OSH professionals and their professional institutions. Those of the larger and more established professions to which they are related, such as in medicine, engineering and law are however, plentiful (Macdonald, 1995). They describe the significance of an ideology of professionalism, that '...justifies inequality of status and closure of access in the occupational order' (Witz, 1992:55) and explain how such practitioners and their associations achieve this autonomy and consequent power.

Alongside these accounts, more recent sociological studies of

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professional development have focused on trends of professionalisation among salaried employees with shared skills that allow them to organize in similar ways to gain professional identities and achieving occupational closures thus helping to secure their position in modern work organisations. Accounts of these developments discuss consequent tensions between professional autonomy and managerial influence (Johnston, 1972; Derber, 1983). A further theme in current writing on professions concerns the influence of the wider political economy. It explains how historic and national variations in state policy influence forms of practice and the strength of professionalism and professional organization, including how professional elites become embedded in strategic positions and roles in organisations, and in relation to the state, in Anglo-American economies under neo-liberal governance regimes (Freidson, 2001; Davis, 2017).

The paper argues that these sociologically informed understandings may also offer a useful perspective on the professionalisation of OSH in recent decades. It outlines how, from early 20th century origins, the growth of OSH professions, has occurred in response to structural changes in the organisation of work, its technologies, their consequent risks and governance; and to change in requirements that public regulation placed on those responsible for controlling such risks and their workers' exposure to them. Particular specialist interest groups have collectively sought to create or capitalise on opportunities, presented by these changes, to establish themselves in key structural positions, consolidating their influence through the use of strategies well-known in sociological literature on professional development. Thus, achieving autonomy and power, largely by effecting closures within the market systems in which they are situated.

Most recently, the emergence of general safety and health professionals and the growth and influence of their professional associations, has occurred at a time of great structural and organisational change in work, its regulation and the political contexts in which this occurs in advanced economies (EU-OSHA, 2023). This re-orientation of the profile of a significant part of professional support for OSH begs some important questions concerning the extent to which these OSH generalists share features of distinct knowledge control and related market closure, such as associated with professions and which, if acquired, would enable expression of professional autonomy in the accepted meaning of the term (see Freidson, 1988, below).

The paper seeks to identify and explore these developments by viewing them from a socio-economic perspective. Like other articles in the recent literature on professional practice on OSH, it observes this practice to be at a critical point in its development and suggests that some reflection on its nature, support and constraints is warranted and timely. It acknowledges the important contribution made by the recent literature on generalist OSH practitioners (see for example Hale, 2019; Hudson and Ramsey, 2019; Pryor, 2019, as well as others referred to later in this paper). However, a key argument it makes is that the professional development of generalist OSH professionals and their operation cannot be understood without some acknowledgement of influences at work in the organisational, regulatory, economic and political contexts in which work has taken place over the past 50 years or so. This requires more attention to sociological insights on OSH professionalism, alongside the accounts of professional education, knowledge, competencies, qualifications, accreditation, historical development, national variation, and so on, that characterise current literature.

The paper begins by explaining why it may be useful to frame a

discussion of the development of OSH professionalism in this way. It then outlines some key elements in the historical development of the generalist OSH professional and discusses, structural, regulatory and economic policy influences on changes in the dominant identity of OSH professionals during the in the late 20th century in advanced market economies,¹ before concluding with some reflections on the implications these changes and their determinants have for the role and autonomy of the generalist OSH profession.

2. Situating a discussion

The sociological literature on professions is useful in framing a discussion of professional development in work health and safety. It helps situate the emergence of current OSH professionals in relation to wider socio-economic, regulatory and political determinants. While these determinants feature prominently in sociological discourse on other professions, they are virtually absent from the specialist OSH literature on the generalist OSH profession.² Reference to sociological literature further enables account to be taken of issues, such as the role and locus of power, and the position of OSH professionals in relation to workers and those who are responsible for the conditions under which they work, both in the process of professionalisation and in the context of work relations. This, in turn, has significant implications for the determination and ownership of professional knowledge and practice, as well as for whose interests are primarily served by this knowledge. These perspectives, are also largely ignored in the literature concerning the emergent generalist professional practice on OSH.

Interestingly, their absence stands in some contrast to literature addressing professional roles in occupational medicine and hygiene.³ The professional mandate of occupational medicine has been further explored in the context of the 'salarial subordination' of French professionals (Marichalar, 2014). Their capacity to meet Freidson's (1988) definition of professional 'autonomy' as 'the exclusive right to decide who is authorized to realize the work and how it should be realized' has been shown to be strongly mediated by the nature of their salaried employment. The present paper will argue that such 'salarial subordination' is likely to be even more the case in relation to generalist OSH professionals.

Framing institutional professional development in OSH in relation to sociological understandings, is helpful in support of this consideration. It is also helpful in exploring its possible links to political and economic policies during the last 50 years. As Larson (1977) has noted more generally, taking account of this perspective helps examination of strategic shifts towards professionalisation among occupational groups situated in changing economic and political contexts. Additionally, an argument prominent in the more recent literature on professions suggests that the neo-liberalism of the last 40–50 years, has been a major influence on the ways in which some professions have sought to gain control and legitimacy for their jurisdictional domains (Reed, 2018). The present paper therefore seeks to situate the professionalisation of

¹ The paper uses the term 'advanced market economies' to distinguish its discussion of the development of professionalism in OSH in high income countries, from that in the low-and middle-income countries in which the contexts of professional development may be very different. However, its review is limited to the literature in English and it therefore acknowledges that literature in other languages, may describe different developments and practices in some non-English speaking countries.

² There are a few recent exceptions discussed later in this paper — see for example Dekker, 2014; Provan et al., 2017.

³ See for example, early studies of occupational physicians (eg. Walters, 1982; Lurie, 1994); also, Draper, 2003, and subsequent debate (Castleman and Ziem, 1994; Draper, 2008; Guidotto, 2008; Bohme and Eglilman, 2008; Ladou, 2005; Ladou et al., 2007; Levenstein, 2008; Henry, 2021)) as well as papers on the professional development of occupational health nurses (Draper et al., 2011; McPhaul et al., 2012).

OSH generalists in relation to these influences too.

To explore the relevance of these issues, some key features of the historical development of professional interest in support for OSH practice are outlined in the following section. This helps to focus attention on the antecedents of current practice and identifies structural factors within the economy and its regulatory framework for OSH, that influenced the rise to prominence of the generalist professional/practitioner. The paper goes on to examine the consequences of this for the OSH professionals and institutions involved. It further argues that substantial shifts in the loci of power in work relations during recent years have helped shape a corporate demand for the presence of OSH generalists, which in turn, may have acted as a controlling influence on the way this presence has developed.

Such demand has been recognised and exploited by associations representing the interests of generalists and contributed to their increased presence in the OSH infrastructures of advanced market economies and beyond. At the same time, the paper argues, its consequences for professional practice and how it is controlled may be better understood with reference to the sociological literature, where the tensions between roles employing organisations require of their salaried employees and those of traditional professional autonomy have been identified and explored (see for example, [Meiksins and Watson, 1989](#); [Numerato et al., 2012](#) as well as others referred to later in this account). The paper therefore concludes with a tentative discussion of the challenges these present. In doing so it reflects on the role played by power and its wider determinants on the current position occupied by OSH generalists.

3. The historical development of professional support for occupational safety and health

Historical accounts indicate use of various forms of professional support for occupational safety and health, mainly by larger organisations, dating from industrialisation in advanced economies (see for example [Abrams, 2001](#); [Weindling, 1985](#)). Largely voluntary, but sometimes assisted by regulatory requirements associated with so-called dangerous trades or the eradication of child labour, such provision was further augmented by the employment of medical and other specialists to support regulatory inspection (see [EU-OSHA, 2021](#)).

In most major industrialised countries, during the first half of the 20th century branches of medical associations representing the interests of doctors in industry emerged to promote their interests and autonomy by effecting occupational closure through controlling entry qualifications and their accreditation. In the US for example, to assist this, the American College of Occupational and Environmental Medicine was established in 1916, ([Hartenbaum et al., 2012](#)). In the UK, the Society of Occupational Medicine was founded in 1935, as the Association of Industrial Medical Officers and the Faculty of Occupational Medicine of the Royal College of Physicians (granted its Royal Charter in the 16th Century to control entry into the profession of medicine), has been the professional and educational body for occupational medicine since it was established.

3.1. The emergence of integrated occupational health services

In Europe, reform strategies introduced during the rebuilding of national economies and societies following the Second World War, often included some provision for occupational health services. In some cases, state funding was extended to these services as in Finland, or by work environment taxes on production, such as in Sweden, or as part of regional public health services, as in Italy ([EU-OSHA, 2023](#)). In countries like Germany, services were extended with the support of social insurance organisations ([Froneberg, 2007](#)). There was also support from regulatory obligations placed on employers in countries such as Germany and France, to use medical and safety engineering personnel. Qualifications required for them were also defined by regulation, as well

as being supported by professional organisations in some countries. But approaches varied considerably between countries and even between sectors within countries. They appear to have been driven in part by already established practice, and in part by a mixture of political expediency, economic structure, the demands of organised labour and those of employers, and the institutional interests and influence of key professional bodies, leading to the establishment of several different models of prevention service in Western Europe and different approaches again in the controlled economies of Eastern Bloc countries (see [EU-OSHA, 2021](#); [Walters et al., 2022](#); [Westerholm and Walters \(eds.\), 2007](#); [Walters, 2007](#), for more detailed accounts).

Traditional models of prevention services included medical and nursing staff and occupational hygienists. The peak professional position occupied by medicine allowed it a dominant role in many countries, a dominance retained until recently in countries like France (see for example, [Gregoire, 2014](#)). Other smaller OSH professions like occupational hygienists, especially in the UK and US, pursued the creation of an elite separate professional identity through the strategic use of techniques to promote exclusive ownership of knowledge to support autonomy, and promote closure of occupational access, especially during the middle decades of the 20th century ([Vincent, 2005](#); [Ayelsbury and Bailey, 2014](#)). Other groups like occupational psychologists and ergonomists, attempted similar strategies with varying success (see for example [Waterson and Sell, 2006](#), on the ergonomics profession).

Sometimes these functions occurred separately in different parts of the same work organisation and sometimes they were part of a single unit. Safety engineers were occasionally regarded as part of these services, but often, as discussed below, pursued a professional trajectory separately from them. Largely under the influence of Scandinavian experience, the received wisdom during the decades following the end of the 2nd World War, came to generally support the idea of an 'integrated' service with the capacity to address a wide range of risk profiles concerning both 'health' and 'safety' (see [Rantanen, 2005](#)). Indeed, this is the model that informs the requirements of ILO Occupational Health Services Convention, 1985 (No. 161), in which multidisciplinary occupational health services (with professional independence from employers and workers), are required to have preventive functions and contribute to establishing and maintaining safe and healthy working environments.⁴ In practice, analysis shows that the form and extent of the integration possible was often determined by the constraints of resourcing and the institutional power of professional interests, as well as by path dependencies inherent in established practice (see [Westerholm and Walters eds., 2007](#); [Walters, 2007](#)).

By the second half of the 20th century, professional OSH services and the regulatory infrastructures that helped define them included a variety of private arrangements, that benefited from degrees of state support in many countries. Nevertheless, they were mostly restricted to serving the needs of large private or nationalised industrial and manufacturing organisations, in which work was acknowledged to be 'hazardous', along with those of business sectors such as transport, health and food, where a responsibility for health and safety was also owed to the public. There were some exceptions, such as regional or sector-based services for smaller businesses, but such approaches were seldom sustained.⁵

Meanwhile, this focus on an integrated service did not prevent each

⁴ 'Basic occupational health services (BOHS)', advocated in the literature as appropriate forms of preventive service for low-and middle-income countries (LMICs) are also regarded as sharing a utility version of this structure (see for example, [Buijs and Van Dijk, 2014](#)). However, only 35 Member States have ratified this Convention.

⁵ See for example: [Macdonald and Sanati, 2010](#); [Hasle and Limborg, 2006](#); [Walters 2001: 238-255](#); [Westerholm and Walters eds., 2007](#); [Walters, 2007](#).

of its integral specialisms continuing to secure their own separate professional identities.⁶ In mixed economies, similar patterns of development are evident. For example, the growth of occupational medicine and nursing professions in the US, as well as in those professions allied to them, such as occupational hygiene, toxicology and so on, developed a parallel trajectory over the same period, albeit perhaps with a greater role played by support from large and privately-owned industry, rather than from the state with its resources and mandatory regulatory requirements, as seen in some European countries (Guidotti, 2008; Abrams, 2001 Vincent, 2005; Ferguson and Ramsay, 2010). Everywhere, there was prominent involvement of professional bodies in subsets of fields like medicine and engineering, in determining standards of practice for professionals. By the later decades of the 20th century, in advanced economies, emergent professional understandings of best practice reflected broadly the same fundamental features of an integrated and holistic approach to the delivery of professional support for OSH (Walters et al., 2022).

3.2. A parallel emergence of 'safety engineers/professionals'?

At the same time, despite advocating integration, the separation of professional disciplines continued. The divide was especially marked between the professions allied to medicine and those allied to engineering and business administration. In English speaking countries, business organisations in sectors in which large-scale hazardous installations and processes featured significantly, such as mining, various branches of manufacturing, petrochemicals and so on, not only used the specialisms in the prevention services so far described, but also employed specialists in engineering and process safety.⁷ In the US, the American Society of Safety Engineers (ASSE), founded in 1911, represented the interests of 'safety engineers', although less than 20 per cent of its members were qualified engineers (Hudson and Ramsey, 2019). During the first half of the 20th century many firms subscribed to approaches to safety organisation, advocated by non-professional, 'safety-first movements'. Originating in the US, by the 1920 s these 'movements' were widespread. They tended to emphasise employee behaviour change and largely centred on employer driven rules and procedures. As a consequence, at lower levels in organisational hierarchies, personnel with 'safety and security' functions were often charged with supervising everyday safety organisation.

Further elements of the discourse around the development of safety organisation focused on financial losses arising from accidents, and how such loss could be prevented, as ways of appealing to employers' interest. Again, originating in the US, by the mid-20th century, the idea of 'loss prevention' had become a prominent feature (see Lees, 1996). Internationally influential American safety literature, also focused extensively on financial loss as a consequence of safety failure, in the development of principles of safety organisation embraced by Total Loss Control (see Bird and Germain, 1966; Fletcher and Douglas, 1971).

All these developments contributed to shaping the ways in which knowledge about risk, its assessment and control was owned and used in mid 20th century approaches to work safety organisation, including those that influenced the role of prevention services. Determined by a mix of private ownership and state control, it provided a career path for a variety of individuals and occupational groups, and helped establish

⁶ Although, as Madsen et al (2019) note, this was not the case everywhere. In Denmark for instance, little such separate development appears to have taken place.

⁷ Linguistic limitations make it uncertain how much these features of US/UK practice were also in evidence in the industrialised economies of non-English speaking countries. Indications in the literature available in English, suggest that broadly speaking they were, although as already noted in the text, their details are likely to vary according to national context and particular features of different national socio-economic and regulatory cultures.

conditions for the emergence of professional associations.

Thus, in the 1960 s in the US the ASSE set up a project to evaluate the prospects of registering safety engineers. In the UK, as described by Hale and Booth (2019), by the 1960 s, the Industrial Safety Officer's section of the Royal Society for the Prevention of Accidents (RoSPA), established in 1945, had renamed itself the Institution of Industrial Safety Officers and by 1960 had established its first examinations for membership. Similar changes were taking place in other English-speaking countries. In Australia, the Safety Institute of Australia (SIA) grew out of an Accident Prevention Group formed in 1949, which later renamed itself the Safety Engineering Society of Australia, before becoming the SIA. Alongside it there were parallel associations of other OSH professionals, notably doctors hygienists and ergonomists (Provan and Pryor, 2019). The Canadian Society of Safety Engineering was founded in 1949, and the certification body, the Association for Canadian Registered Safety Professionals (ACRSP), emerged in the mid 1970 s (Wright et al., 2019). While in New Zealand, small associations of OSH practitioners contending for recognition is described by Peace et al., 2019, A pattern found in other small economies too, as Bohalceanu (2019), shows in her study of OSH professional development in post-communist Romania.

Elsewhere in continental Europe, development of the safety professionals' body the NVVK, in the Netherlands is well documented, (see Swuste et al., 2019), including its competition and co-operation with professional organisations representing hygiene and medicine. It shows many parallels with developments in English speaking countries, as well as continental European influences such as the role of standards of public regulation in defining qualification standards (as was also evident in other countries such as France and Germany).

4. Regulatory and economic policy influences on changes in the dominant identity of OSH professionals in the late 20th century

The various elements currently involved in the emergence of institutional recognition for generalist OSH professionals were in place by the time the period of profound change in regulation and in the economies of advanced countries was underway in the closing decades of the 20th Century. Acquisition of the features of professional identity, autonomy and occupational closure was further facilitated by these changes, and from the 1970 s onwards reflected wider shifts in political and economic policies that also date from this period. In combination, three elements would seem to have been particularly important, as the following subsections explain.

4.1. Regulatory change

The substantial re-orientation of OSH regulatory frameworks that occurred in most advanced economies and globally during the final decades of the 20th century was a fundamental influence on the direction of development of the OSH profession. Originating with changes in Scandinavian countries in the late 1960 s, but much influenced by the recommendations of the UK Committee on Safety and Health at Work (the Robens Committee), regulatory reform of OSH requirements, their coverage and enforcement was widespread in advanced economies from the 1970 s onwards. The approach taken by Robens was typical of inquiries during this period, which found much remiss in the piecemeal development of prescriptive OSH measures over the previous century. Regulatory remedies were characterised by a move from prescriptive to principle and process-based regulation which facilitated wider coverage and in which emphasis was placed on the *participative management* of potential sources of workplace harm to create greater engagement in preventing harm by 'those who create the risks and those who work with them' (Robens 151: 1972).

The development of this approach in the remaining decades of the 20th century was further influenced by an increased focus on 'risk' in the policies of national governance. At EU level during the 1980 s for example, Directives increasingly embraced risk assessment and

management principles, such as those seen in the Seveso Directive 82/501/EC in relation to controlling major hazards. Thus, in 1989, the EU Framework Directive 89/391/EC on the introduction of measures to encourage improvements in the safety and health of workers at work, (as well as the series of daughter directives made under it), reflected these developments and their focus on participative approaches to workplace risk management in OSH standard setting, in which employers were further charged (under Article 7) to ensure they used competent advice to help them deliver their responsibilities.

A salient point to note here however, is that not only were measures requiring employers to use specialist support to ensure their competence given EU wide coverage by the Directive, but that the representation of workers' OSH interests were also *part* of the new process and principle based regulatory approach thus espoused. And this included regulatory support for their interest in the appointment and use of OSH specialists by employers.⁸

4.2. Changes in the structure, organisation and control of work

Well-documented changes in the structure, organisation and control of work and employment, and in the capacity of organised labour to represent the interests of workers, occurred during the last quarter of the 20th century. They include the substantial shift away from mixed patterns of private and public ownership in the structure of the economy, reduction of employment in large organisations and industrial concerns, the growth of service-based economies and a changed profile of work and employment practices. They led, among other things, to new OSH risk profiles and to challenges for traditional models of prevention service delivery, especially as public funding was withdrawn from the latter and increased policy emphasis was placed on the marketisation of both public and private prevention services (Walters et al., 2022). Alongside this, in many countries, the state withdrew substantially from resourcing support for securing compliance, including reducing specialist professional support for regulatory inspection.⁹

As far as the effects of these prompts towards marketisation are concerned, a review of the literature on the role of prevention services in securing substantive compliance (EU-OSHA, 2021) found little evidence to support the idea that services had responded successfully to the challenges of new economic organisational and political scenarios. Withdrawal of public funding for preventing harm arising from work, along with the consequent marketisation of OSH services, is largely seen in this literature as having served to restrict the spread of integrated prevention service provision in European countries. This is especially reported in countries where services once served as models of integration. Among the Nordic countries and in the Netherlands, for example, evidence of the decline in the cover of prevention services is attributed to negative effects of their marketisation (Plomp, 2008; Kabel et al., 2007). While bias of services towards larger organisations, and minimal provision for small firms, are also reported as a product of marketisation in European countries (ETUI, 2014). Observers further point to evidence that marketisation obliges services to tailor their provision according to their business survival needs rather than those of good prevention practice (Froneberg, 2007). And studies in some countries indicate that the effects of these influences mean that services are increasingly used

⁸ Indeed, even today, the EU continues to identify the role of tripartism and social dialogue, as among the cornerstones of the success of its approach to the regulation and governance of OSH, see for example, the most recent EU Strategic Framework for OSH (EC, 2021). Globally, a similar endorsement remains the basis of the ILO approach, not only in ILO Convention 155, but also in the Occupational Health Services Convention, 1985 (No. 161) and the Occupational Health Services Recommendation, 1985 (No. 171) as well in as more generally in Convention 187, requiring a promotional framework for OSH.

⁹ In the UK for example, the Employment Medical Advisory Service was progressively reduced and its remnants were effectively privatised by 2005.

for absence management or as opportunities to use the workplace as a location for promoting healthy behaviours, rather than in support of preventive work health and safety (ETUI, 2014; Weel and Plomp, 2007).

Decline in trade union organisation and influence and the rise of business models in which outsourcing of OSH risks through contracting, sub-contracting, and supply chain management, all became increasingly evident. Collectively, these developments contributed to the creation of an altered environment for the deployment of professional expertise. Regulatory reforms had created the basis for a participative approach to OSH management in which employers' and workers' organisations would jointly determine how OSH risks could be effectively managed and professional expertise used to support this. But, in reality the operation of such an approach was significantly undermined by the imbalance in power evident in the new environment for labour relations. Research in Europe and elsewhere, shows the result was the resurgence of unitary approaches to determining OSH policies and practices used by business organisations, their corporate leadership and their management, including in the ways in which they sought and used specialist expertise to support competency on OSH (Walters and Wadsworth, 2019; Walters et al., 2022).

4.3. The role and significance of managerialism

Combining with regulatory changes and those in the structure, organisation and control of work, a further influence on the orientation of professionalism in OSH, has been the remarkable growth of managerialism over the same period. Such managerialist understandings of what constitutes effectiveness in the administration of OSH were arguably already a powerful influence on the emergence of principle and process-based regulation. Beyond this, they have had pervasive and far-reaching influence on almost every aspect of business organisation and administration in both the private and public sector as well as globally in recent decades (Eagleton-Pierce and Knafo, 2020). Managerialism is also symptomatic of much broader trends in economic policies, business strategies and public administration evident in recent decades and widely acknowledged to have been associated with the global, political and economic project of neo-liberalism (see for example Chauviere and Mick, 2011; Locke and Spender, 2011; Klikauer, 2013). As is its pervasive ideological influence, ranging from its embedding in the curricula of university business schools, to its role in shaping current social norms in high-income countries (Klikauer, 2015; Rees and Rodley, 1995).

During the period described in the previous subsection, the institutional power of labour waned. Corporatist structures in which it had engaged in the second half of the 20th century withered along with it in many countries (and in others their representativeness and the relative power of labour within them declined significantly). Increasingly dominant unitarist, corporate strategies for managing organisations helped promote managerialist approaches. This account posits that collectively, these changes helped create a new organisational milieu for professional engagement with OSH. It suggests that it would be surprising if these determinants had no influence of the nature and identity of emerging OSH professionalism during this time. And especially, given its 'salarial subordination' in both internal and external OSH services (Marichalar, 2014). It further suggests these features are evident in several prominent trends of OSH organisation during this period. For example, while systematic management of OSH risks has been both a regulatory and cultural mantra for several decades, under the combined influence of unitarist business organisational strategies and managerialist thinking, understandings of what OSH regulatory standards require of duty-holders have shifted away from their participative origins in earlier regulatory strategies conceived in the 1970 s, and which remain requirements of ILO Conventions, Recommendations and Guidance,¹⁰

¹⁰ See for example, ILO Convention 155; and its guidance on safety management systems (ILO, 2007).

towards more unitarist and managerialist interpretations.

This can be seen in the extensive use made by large and medium sized organisations, of formulaic approaches to the operation of corporate 'safety leadership' 'safety culture' and 'safety management systems' in which adherence to corporate organisational values is prominent and a strong emphasis placed on corporate control through 'rule-based uncertainty reduction' and 'documentation-based liability management' (Dekker, 2020) in which behavioural safety concepts are prominent.¹¹ They have led to an understanding of worker participation that has shifted away from the representative forms of participation defined by process regulation, to that in which individual forms of 'employee engagement', allow employers control. An orientation that is also evident in discourse on 'safety management' in professional (and academic) journals and in standard setting during this period.¹² It is further apparent in the incorporation of OSH advisers into roles in the operation and oversight of such systems — often with delegated organisational responsibilities to ensure their delivery and the blurring of the distinction between responsibility for OSH advice and contractual requirements for OSH management in such roles. This too is reflected in the competency frameworks developed to support the processes of professionalisation of OSH generalists that has occurred concurrently. As Dekker (2020) notes, the link between these approaches to managing safety and the influence of neo-liberalism on economic governance over the same period, is clearly apparent.

The increased presence of generalist OSH professionals, therefore not only reflects market demand for such skills but also the creation of this demand and how the delivery and operation of regulatory requirements in practice, have been shaped by prevailing corporate, managerialist perspectives in concert with neo-liberal political policies. These have further helped to define the role of OSH generalists within managerial structures. Thus, such perspectives determine both the structures and processes involved in delivering the OSH responsibilities of persons in charge of business undertakings in ways that are in keeping with business understanding of how this should be done. This in turn has fuelled demand from employing organisations for particular forms of support from OSH specialists in line with the implementation, operation and monitoring of corporate OSH management systems.

The same managerialist perspectives are also evident in wider organisational management created to deliver corporate business objectives. And as 'salarial professionals', the orientation and boundaries of the OSH generalists filling these roles are further determined in relation to the priorities of managerialism at the wider organisational level. While at the same time, the requirement for the knowledge and skills necessary to ensure the capacity to provide such support has been a strong driver of curriculum development in OSH education and training (Wybo and van Wassenhove, 2016). Not only is this seen in such curricula, but also in the literature discussing what is required in qualifications frameworks for professional competence among OSH generalists — which again reflects these demands (see for example, Hale, 2019; Pryor, 2019; Pryor et al., 2019; Pryor and Sawyer, 2010; and most recently, ILO, 2023).¹³

Collectively, these features of organisational management suggest a

¹¹ See for example, further discussion of the consequences of this by Frick and Wren (2000); Hopkins, 2005; also Frick (2011) and Hall (20210, among many others.

¹² See also the significant differences in this respect between voluntary ISO Standards like ISO 45000 and ILO Conventions and Guidance. And see ILO (2023), for a clarification of the ILO position on these differences.

¹³ A recent paper in Safety Science for example, discusses the need for a better match between university post-graduate curricula for OSH qualifications and demands of employers identified from the particulars included in their job advertisements and suggests that occupational closure as a measure of professional autonomy, would be better achieved by improving this match (Wilbanks et al., (2023).

situation that would seem to be a far cry from the independence of knowledge control associated with professional autonomy and the logic of professionalism, such as presented by Freidson (2001) 'that can enjoy the same privileged intellectual status as the logics of the market and the firm' (Freidson, 2001:4). Such as is often claimed in the case of occupational physicians.

A key difference between the emergent generalist OSH profession and that of the occupational physician is that while the latter may also be in a relationship of salaried subordination with their employer, they remain professionals entitled (often by law) to a professional autonomy and the acknowledgement of their independent intellectual authority. While in the case of the OSH generalist, there is little in the literature to suggest their professional development has led to either the law or professional institutions supporting the achievement of the same level of autonomy and independent authority. Given that the wider sociological literature points to significant tensions between managerialism and professional autonomy (see for example Frostenson, 2015; Funck, 2012; Noordegraaf, 2011, among many others), whether and how OSH generalists achieve such autonomy in their occupational roles warrants some reflection.

Yet this is rarely undertaken in the specialist OSH literature that focuses on these practitioners. The following section calls attention to this seeming gap in the current literature and outlines some reasons why it is important it receives greater attention.

5. Disconnects in the literature on the generalist OSH profession

As outlined in the previous section, contextual changes in the ways in which OSH is regulated, work is organized and controlled and work organisations are led and managed, influenced and supported the emergence of generalist health and safety practitioners as an institutionalized professional group in many advanced market economies. This occurred in parallel with a substantial weakening of organised labour, undermining the participatory and pluralist intent of principle and process-based regulation and allowing managerialist interpretations and unitarist framing of regulatory requirements, greater freedoms and increasing influence.

Meanwhile, in substantial and increasing numbers, generalist health and safety practitioners have been employed in large organisations, consultancy firms, and as independent consultants in both public and private sectors. In all cases, by the nature of their contractual position, they service needs perceived by the organisation that employs them. In line with the rise of managerialism in health and safety discussed previously, many are employed as 'safety managers' with contractual responsibility for organising whatever their employers deem to be adequate arrangements for workers' OSH. Those that are working on behalf of the health and safety departments of large private organisations are therefore often involved with administering and monitoring safety management systems favoured by corporate management, and which subscribe to the ethos of the organisational culture of which they are a part. While those employed in public sector organisations do the same. And are often additionally tasked with administering or contributing to complex bureaucratic systems designed to protect their employers from perceived risks of litigation arising from failure to deliver legal responsibilities.

Such scenarios are familiar in the sociological literature focused on tensions in the relationship between organisational and managerial control and professional autonomy among other emergent groups of salaried professionals over the same period. Analysis in this literature shows how, during this time, such organisational constraints have been increasingly imposed on the professional autonomy of such groups (Funck, 2012; Frostenson, 2015). It explores how these professionals and their organisations have negotiated their positions in relation to these constraints, as well as in relation to changed perceptions of professionalism in wider society. It further explores, in the case of salaried professionals such as engineers for example, whether professional

autonomy is central to job satisfaction, or whether this arises from other elements of their role in modern work organisations (Meiksins and Watson, 1989). It unpacks notions of autonomy further, by distinguishing between general professional autonomy, and individual autonomy, and it points to the need to explore professional work at the organisational level, in particular with regard to organisational change, societal expectations and managerial ideologies (Frostenson, 2015; Salvatore et al., 2018). All of these themes are clearly relevant in the case of the generalist OSH professional, yet there is little in the literature that discusses how such professionals have responded to them.

Questions therefore remain in all these contexts. As noted at the end of the previous section, the entitlements of OSH professionals such as occupational physicians, historically associated with prevention services, allowed them to exist in a relationship of salaried subordination with their employer, while still retaining some degree of professional autonomy afforded by both their acknowledged command of a distinct knowledge and expertise and societal perceptions of their status and the ethical obligations of their role. If the current form of professionalism that occupies a numerically dominant position in OSH, has no such long-standing autonomy conferred on it by virtue of its links to established professions or clear legal definition, nor any strong societal perception of the ethical obligations that come with this, it begs important questions concerning whose interests it serves, what influences this and what determines its actions in the contexts of increased managerial direction of its role in organisations.

Further questions arise concerning how generalists might achieve and maintain such autonomy. One way that is discussed in recent specialist OSH literature is through control of the nature of the 'distinct knowledge' in question, along with qualifications frameworks and the like used in its accreditation (see for example, Hale et al., 2015; Pryor, 2016; Wybo and Van Wassenhove, 2016). Yet there is scant empirical research exploring the effects of this control in practice. For example, while recent literature has described the development of generalist practitioners in a number of different countries, it remains relatively silent about the details of how they act.¹⁴

A few studies however, suggest the beginnings of a more focused analysis. Dekker (2014), discusses the contextual factors that shape the identities of OSH generalists and their roles in influencing OSH in the organisations that employ them. He too identifies issues of power, authority and communication, bureaucratisation, financial influence and business priorities as significant in the contexts in which these professionals are obliged to operate. Provan et al (2017) provide a review of the literature, identifying factors the authors regard as shaping the role of safety professionals. They acknowledge the 'dearth of empirical research into the practice and role of safety professionals' (2017: 98). While, in a later empirical study undertaken by some of these authors, they suggest:

... findings demonstrate strength of alignment between the safety professional role and line management, the increasing institutionalization of safety professional work, an absence of safety professional work directed at reducing safety risks to workers, and the lack of a clear connection between safety professional practice and safety science research. (Provan et al., 2019: 276)

Such findings would seem to confirm the need to question the extent of professional autonomy expressed by general OSH practitioners. In a further paper from the same group of researchers, a review is recommended to explore how 'roles of safety professionals are socially constructed', reflection on which, it suggests, may be useful in order to 'enhance the processes of future 'professional socialization' (van Wassenhove et al., 2022:1). The perspectives discussed in the present paper,

¹⁴ See, in addition to those already cited also for example: Colombo et al (2019) on Italy; Sánchez-Herrera and Donate (2019) on Spain; Wang et al (2019) on China.

suggest that such review may also be important in determining the extent to which such generalists are able in practice to act in ways that deliver Freidson's (2001) 'third logic' of professionalism, or how much they, in fact, merely serve as tools of organisational management.

Also relevant here, are the small number of further studies examining the tactics that safety professionals use to influence the decisions of senior managers (see for example Madigan et al., 2020, 2021). In a study of the ways in which OSH managers in the construction industry in France built legitimacy as 'staff professionals', Daudigeos (2013) tracked how they developed their ability to influence work safety in the subsidiaries of a large construction company. But beyond discussing tactics to achieve personal influence, existing research throws little light on how OSH generalists might overcome their salaried subordination by using acknowledged, distinct professional knowledge to assert their professional autonomy. Nor does there seem to be much study of how their organisations demonstrate professional autonomy when engaged in policy discourse at sector or national levels. There is therefore, little analysis of how the generalist OSH profession situates itself in a distinct professional position or how it addresses the ethical elements of its practice.

A capacity to achieve professional autonomy both at organisational level and within policy discourse, would seem to be especially important in situations where governance remains dominated by neo-liberal economic principles and where corporate OSH strategies are based on notions of rule-based uncertainty reduction, documentation-based liability management, and adherence to behavioural safety norms. The narrow focus and managerialist orientations of the systems in place to deliver these strategies, which are themselves all largely implemented, operated and monitored by generalist OSH practitioners, in both private and public sector settings, are criticised in the literature for frequently failing to address many of the known effects of work on health or the concerns that workers have about them (see Walters et al., 2022 for a recent review of such criticism). This is not entirely surprising if it is acknowledged that such risks and workers' concerns about them arise from the ways in which work, production, and the labour process are structured, organized and controlled to maximise productivity. Analysis in the wider industrial relations literature has long held that corporate business and organisational strategies seldom brook interference with their prerogatives to determine these matters and safety management systems put in place as part of such strategies rarely address these effects of work on health (James and Walters, 2022).

6. Conclusions

The recognition, evaluation and control of OSH risks have always represented contested territory for capital, labour and the state. As Dorothy Nelkin (1985) put it nearly 40 years ago: 'Conflict prevails over:

- the significance of risks
- the adequacy of evidence
- the methodologies for evaluating and measuring risk
- the severity of health effects
- the appropriate standards to regulate industrial practices and even
- the communication of risk information'

It might be added that conflict further prevails over the nature of the systems in place to manage the protection of workers from exposure to such risks. Following Freidson's (2001) theorising of the logic of professionalism, ideally, the professional autonomy of OSH generalists and their organisations should allow them to occupy a position, recognised as independent and authoritative in these systems, in the discourse and operation of the means of preventing harm arising from work. Such a role confers power, which, in Lukes' (1974) terms, is exercised directly

through decision-making, indirectly through setting and controlling the agenda of discourses leading to decisions, or through ideological influences on both.¹⁵ However the argument of this paper questions whether, or how, a cadre of salaried professionals, whose rise to a position of professional influence was largely facilitated by many of the same determinants that brought about the decline of organised labour, is able to deliver such independent and recognised authority.

In Sections 3 and 4, the paper outlined the historical development of OSH professionals, leading to the emergence of a body of qualified generalist professionals, representing a more accessible source of competencies and potentially more appropriate support for OSH in the context of the modern economy, than the doctors, hygienists and engineers who served an industrialised economy. It also provided a model of service delivery filling the gap left by the reduced presence of integrated prevention services in many countries. Regulatory duties requiring OSH competency from employers in sectors previously beyond the reach of regulation further created a market demand for such generalists. Thus, collectively suggesting the possibility of a fund of expertise, both relevant and adaptable in the face of change in the experience of work-related risks and the contexts in which they occur (Pryor, 2019; Hale and Ytrehus, 2004).

Section 4 shows how, in advanced market economies, the institutions representing the interests of such generalists — which in most cases have developed from associations of non-professional industrial safety and security officers and the like — sought to gain professional autonomy for their members. They did so by responding to opportunities provided by the structure and organisation of work, regulatory reform; and the effects of neo-liberalism in economic policies. In the same Section, insights from the sociological literature on other emergent salaried professions, are discussed and point to a more complex set of influences prevailing on the development and actions of the actors involved. In particular, this literature highlights tensions between management and professional autonomy evident among these other emergent professions or sub-professions and it posits that although they are seldom mentioned in the specialist OSH literature, similar tensions are likely to play significant part in determining the actions and orientations of generalist OSH professionals too.

The final substantive section of paper argues greater attention to these tensions is needed in current specialist research and writing about OSH generalists. It notes the beginnings of such a focus in recent Australian contributions to this literature. In the light of what is available from these sources, in combination with relevant elements of the sociological literature on other salaried professionals, the section points to some important knowledge gaps that might be usefully filled with more theoretically informed analysis of the contextual determinants of the professional practice of OSH generalists and their associations.

Overall, the paper questions whether the market determination of the professional development of the OSH generalist over the past 50 years has been entirely beneficial. It suggests that it may have contributed to limiting its coverage, narrowing its focus and to pressuring salaried OSH professionals to prioritise employer and managerial perspectives over those of workers, in a business environment dominated by neo-liberal precepts. It suggests that rather than ideally standing independently between workers and their employers in a discourse on the control of work-related risk, OSH generalists and their professional organisations may have been captured on one side of this discourse. And, as a consequence, they may lack the necessary degree of acknowledged independent ownership of knowledge to claim true professional autonomy.

At the same time, the rhetoric of the wider corporate environment in which they are situated discounts the relevance of pluralist analysis and instead insists on a mock consensus between the controllers of business

organisations and their workers, which in reality is little more than an expression of corporate power. In such scenarios, Sidney Dekker (2020) has argued that overcoming the influence of neo-liberalism on safety management hinges on ‘changing the belief that complex risks can be managed by rule-based uncertainty reduction, documentation-based liability management, or [by] shrinking the bandwidth of allowable human performance’ which he suggests are characteristic of corporate OSH management systems under neoliberal governance. Similarly, the Canadian sociologist, Alan Hall (2021) suggests that remedying the distorted operation of principle and process-based regulation, following the period of intense change and restructuring of work under the influence of the neoliberal precepts, requires ways of ‘in effect, flipping the neoliberal rules of the risk management game to worker advantage’ (Hall, 2021).

As these observers imply, professional bodies representing the interests of OSH generalists may be well placed to contribute significant influence to this process. But it first needs to be acknowledged that the same generalists and much of the professional discourse concerning them, is embedded in the implementation and operation of the very same systems that Dekker and Hall argue need to change. Failure to address the consequences of this for the nature of the professionalism involved, or simply ‘leaving it to the market’ to determine, risks leaving workers, increasingly disempowered by the parallel diminishing presence of organized labour, without meaningful support for their OSH needs. The argument of this paper has been that a better realisation of the ways in which this might be prevented would benefit from more informed sociological analysis of the determinants of the role of professional practice in OSH. Current signs of interest in this approach in the specialist literature are therefore encouraging, but they suggest considerably more research in this vein may be required.

CRediT authorship contribution statement

David Walters: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Abrams, H.K., 2001. A short history of occupational health. *J. Public Health Policy* 22 (1), 34–80.
- Ayelsbury, R., Bailey, S., 2014. Addressing the needs for international training, qualifications, and career development in occupational hygiene. *Ann. Occup. Hyg.* 58 (2), 140–151. <https://doi.org/10.1093/annhyg/met068>.
- Bird, F., Germain, G., 1966. *Damage Control, A New Horizon in Accident Prevention and Cost Improvement*. American Management Association. The Comet Press, New York.
- Bohalteanu, C., 2019. A short history of the role and status of the safety professional in Romania. *Saf. Sci.* 116, 254–258.
- Bohme, S.R., Egilman, D., 2008. Beyond reputation: debate on the role of corporate influence in occupational and environmental medicine. *New Solut.: J. Environ. Occup. Health Policy* 18 (3), 317–324.
- Buijs P., Van Dijk F. 2014. Essential interventions on workers' health by primary health care. A scoping review of the literature: a technical report. Report for WHO. Leiden: TNO Work, Health and Care; 2014. 65 p. Available from: <https://repository.tno.nl/islandora/object/uuid:66de1083-c262-4ac6-aaab-50ec6a64817a>.
- Castleman, B.I., Ziem, G.E., 1994. American conference of governmental industrial hygienists: Low threshold of credibility. *Am. J. Ind. Med.* 26 (1), 133–143.
- Chauviere, M., Mick, S.S., 2011. The French sociological critique of managerialism: themes and frameworks. *Crit. Socio.* 39 (1), 135–143.
- Colombo, S., Golzio, L.E., Giancarlo Bianchi, G., 2019. The evolution of health-, safety- and environment-related competencies in Italy: From HSE technicians to HSE professionals and eventually, to HSE managers. *Saf. Sci.* 118, 724–739.
- Daudigeos, T., 2013. In their profession's service: How staff professionals exert influence in their organization. *J. Manag. Stud.* 50 (5), 722–749.
- Davis, A., 2017. The new professional econocracy and the maintenance of elite power. *Political Stud.* 65 (3), 594–610.

¹⁵ See Steven Lukes' classic account of the nature of power in relations between individuals or groups with different standpoints (1974).

- Dekker, S.W.A., 2014. The bureaucratization of safety. *Saf. Sci.* 70, 348–357.
- Dekker, S.W.A., 2020. Safety after neoliberalism. *Saf. Sci.* 125, 104630 <https://doi.org/10.1016/j.ssci.2020.104630>. ISSN 0925-7535.
- Derber, C., 1983. Managing professionals. *Theory Soc.* 12, 309–341. <https://doi.org/10.1007/BF00171555>.
- Dingwall, R and Lewis, P eds. (2014 (1983) *The Sociology of the Professions: Lawyers, Doctors and Others* Quid Pro Books, New Orleans.
- Draper, E., 2003. *The Company Doctor. Risk, Responsibility and Corporate Professionalism*. Russel Sage Foundation, New York.
- Draper, E., 2008. Difficult reputations and the social reality of occupational medicine. *New Solut.* 18 (3), 299–316.
- Draper, E., Ladou, J., Tennenhouse, D.J., 2011. Occupational health nursing and the quest for professional authority. *New Solut.* 21 (1), 57–88.
- Eagleton-Pierce, M., Samuel Knafo, S., 2020. Introduction: the political economy of managerialism. *Rev. Int. Polit. Econ.* 27 (4), 763–779. <https://doi.org/10.1080/09692290.2020.1735478>.
- EC (European Commission) 2021. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and The Committee of the Regions: EU strategic framework on health and safety at work 2021-2027 Occupational safety and health in a changing world of work Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021DC0323&qid=1626089672913#PP1Contents>.
- ETUI (European Trade Union Institute). 2014. Occupational Health Services in the EU — Special Report, *HESA Magazine*, 10.
- EU-OSHA (2021) Improving compliance with occupational safety and health regulations: an overarching review European, Literature review, Luxembourg, Publications Office of the European Union.
- EU-OSHA 2023. Discussion Paper on OSH Preventive Services/Experts in Europe: (EU-OSHA 2021/NE/LV/0137115), Luxembourg. Publications Office of the European Union.
- Ferguson, L., Ramsay, J., 2010. Development of a profession. The role of education and certification in occupational safety becoming a profession. *Profess. Saf.* 20 (10), 24–30.
- Fletcher, J.H., Douglas, H.M., 1971. *Total Loss Control within the Industrial Environment*. Associated Business Programmes Ltd, London.
- Freidson, E., 1988. *Profession of medicine: A study in the sociology of applied knowledge*. University of Chicago Press, Chicago.
- Freidson, E., 2001. *Professionalism: The Third Logic*. Polity Press, Cambridge.
- Frick, K., 2011. Worker influence on voluntary OHS management systems – A review of the ends and means. *Saf. Sci.* 49 (7), 974–987.
- Frick, K. and Wren, J. (2000). Reviewing occupational health and safety management — Multiple roots, diverse perspectives and ambiguous outcomes. In: Frick, K., Jensen, P. L., Quinlan, M. and Wilthagen, T. (eds). *Systematic Occupational Health and Safety Management: Perspectives on an International Development*. Elsevier, Oxford: 17-42.
- Froneberg, B., 2007. Occupational health services in Germany. In: Westerholm, P., Walters, D. (Eds.), *Supporting Health at Work: International Perspectives on Occupational Health Services*. Institution of Occupational Safety and Health, Leicester, United Kingdom.
- Frostenson, M., 2015. Three forms of professional autonomy: de-professionalisation of teachers in a new light. *Nordic J. Stud. Educ. Policy* 2. <https://doi.org/10.3402/nstep.v1.28464>.
- Funck, E. 2012. Professional Archetype Change: The Effects of Restricted Professional Autonomy. *Professions and Professionalism*, 2(2). <https://doi.org/10.7577/pp.334>.
- Gregoire, D 2014. Occupational health doctors in France – an endangered species, *HesaMag #10 Special report 7/28*.
- Guidotti, T.L., 2008. Occupational medicine and the construction of “Difficult Reputations”. *New Solut.* 18 (3), 285–298.
- Hale, A., 2019. From national to European frameworks for understanding the role of occupational health and safety (OHS) specialists. *Saf. Sci.* 115, 435–445.
- Hale A. R and Ytreus 2004. Changing requirements for the safety profession. Roles and tasks. *Journal of Occupational Health and Safety — Australia and New Zealand*, 20 (1): 23-35.
- Hale, A.R., Booth, R., 2019. The safety professional in the UK: Development of a key player in occupational health and safety. *Saf. Sci.* 118, 76–87.
- Hale, A., Pryor, P., Hudson, D., 2015. *The OHS Professional: A Framework for Practice – Role, Knowledge and Skills*. INSHPO (International Network of Health and Safety Practitioner Organizations), Chicago.
- Hall, A., 2021. *The subjectivities and politics of occupational risk: mines, farms and auto factories*. Routledge, Oxford.
- Hartenbaum, N. P. Baker, B. A., Levin, J. L., Saito, K., Sayeed, Y., Green-McKenzie, J., Work Group on OEM Competencies. 2012. ACOEM OEM Core Competencies: 2021. *J. Occupational and Environmental Medicine*: Vol. 63 - Issue 7 - p 445-461 doi: 10.1097/JOM.0000000000002211.
- Hasle, P., Limborg, H.J., 2006. A review of the literature on preventive occupational health and safety activities in small enterprises. *Ind. Health* 44 (1), 6–12.
- Henry, E., 2021. Governing occupational exposure using thresholds: A policy biased toward industry. *Sci. Technol. Hum. Values* 46 (5), 953–974.
- Hopkins, A., 2005. What are we to make of safe behaviour programs? *Saf. Sci.* 44, 583–597.
- Hudson, D., Ramsey, J.D., 2019. A roadmap to professionalism: Advancing occupational safety and health practice as a profession in the United States. *Saf. Sci.* 118, 168–180.
- ILO (International Labour Office) 2023. *Short note: Differences between ILO standards and ISO standards*, available from LABADMI/OSH International Labour Office, Geneva.
- ILO 2009. Guidelines on occupational safety and health management systems, ILO-OSH 2001 2nd ed., https://www.ilo.org/global/topics/safety-and-health-at-work/normative-instruments/WCMS_107727/lang-en/index.htm.
- James, P., Walters, D., 2022. *Work and Health: 50 Years of Regulatory Failure*. IER, Liverpool.
- Johnson, T.J. 1972. *Professions and Power*, Routledge (republished 2016).
- Kabel, A., Hasle, P. and Limborg, H. 2007. Occupational health services in Denmark — The rise and fall of a multidisciplinary and preventive approach in Westerholm, P. and Walters, D. (eds) *Supporting Health at Work: International Perspectives on Occupational Health Services*. IOSH Services Ltd, Wigston, United Kingdom.
- Klikauer, T., 2013. *Managerialism: Critique of an Ideology*. Palgrave, Basingstoke.
- Klikauer, T., 2015. What is managerialism? *Crit. Socio.* 41 (708), 1103–1119.
- LaDou, J., 2005. Occupational medicine: The case for reform. *Am. J. Prev. Med.* 28 (4), 396–402.
- LaDou, J., Teitelbaum, D.T., Egilman, D.S., Frank, A.L., Kramer, S.N., James Huff, J., 2007. American College of Occupational and Environmental Medicine (ACOEM): A professional association in service to industry. *Int. J. Occup. Environ. Health* 13: 4, 404–426.
- Larson, M.S., 1977. *The Rise of Professionalism: A Sociological Analysis*. Berkley University of California Press.
- Lees, F. P. (1996). *Loss Prevention in the Process Industries*. 2nd edition, volumes 1-3. Butterworth Heinemann, Oxford.
- Levenstein, C., 2008. Some notes on the politics of occupational medicine. *New Solut.: J. Environ. Occup. Health Policy* 18 (3), 283–284.
- Locke, R.R., Spender, J.C., 2011. *Confronting Managerialism: How the Business Elite and their Schools Threw our Lives out of Balance*. Zed Books, London.
- Lukes, S., 1974. *Power: A Radical View*. Macmillan, London.
- Lurie, S.G., 1994. Ethical dilemmas and professional roles in occupational medicine. *Soc. Sci. Med.* 38 (10), 1367–1374.
- Macdonald, E.B., Sanati, K.A., 2010. Occupational health services now and in the future: the need for a paradigm shift. *J. Occup. Environ. Med. / Am. Coll. Occup. Environ. Med.* 52 (12), 1273–1277. <https://doi.org/10.1097/JOM.0b013e3181f7cbf0>.
- MacDonald, K.M. 1999 (1995) *The Sociology of Professions*, Sage, London.
- Madigan, C., Way, K., Capra, M., Johnstone, K., 2020. Influencing organizational decision-makers – What influence tactics are OHS professionals using? *Saf. Sci.* 121, 496–506. <https://doi.org/10.1016/j.ssci.2019.09.028>.
- Madigan, C., Johnstone, K., Way, K., Capra, M., 2021. How do safety professionals influence managers within organizations? – A critical incident approach. *Saf. Sci.* 144.
- Madsen, C.U., Hasle, P., Limborg, H.J., 2019. Professionals without a profession: Occupational safety and health professionals in Denmark. *Saf. Sci.* 113, 356–361.
- Marichal P. (2014) *Médecin du travail, médecin du patron? L'indépendance médicale en question*, Presses de la Fondation Nationale des Sciences Politiques, 184 p.
- McPhaul K, Agnew J, Lipscomb J. A Response to Draper et al., “Occupational Health Nursing and the Quest for Professional Authority.” *New Solutions: A Journal of Environmental and Occupational Health Policy*. 2012;21(4):537-539.
- Meikins, P.F., Watson, J.M., 1989. Professional autonomy and organizational constraint: The case of engineers. *Socio. Quarter.* 30 (4), 561–585. <https://doi.org/10.1111/j.1533-8525.1989.tb01535.x>.
- Nelkin, D., 1985. *The Language of Risk: Conflicting Perspectives on Occupational Health*. Sage, London.
- Noordegraaf, M., 2011. Risky business: How professionals and professional fields (Must) deal with organizational issues. *Organ. Stud.* 32 (10), 1349–1371. <https://doi.org/10.1177/0170840611416748>.
- Numerato, D., Salvatore, D., Fattore, G., 2012. The impact of management on medical professionalism: A review. *Soc. Health Illn.* 34 (4), 626–644.
- Peace, C., Lamm, F., Dearsly, G., Parkes, H., 2019. The evolution of the OHS profession in New Zealand. *Saf. Sci.* 120, 254–262.
- Plomp, H.N., 2008. The impact of the introduction of market incentives on occupational health services and occupational health professionals: Experiences from The Netherlands. *Health Policy (Amsterdam, Netherlands)* 88 (1), 25–37.
- Provan, D.J., Dekker, S.W.A., Rae, A.J., 2017. Bureaucracy, influence and beliefs: A literature review of the factors shaping the role of a safety professional. *Saf. Sci.* 98, 98–112.
- Provan, D., Pryor, P., 2019. The emergence of the occupational health and safety profession in Australia. *Saf. Sci.* 117, 428–436.
- Provan, D.J., Rae, A.J., Dekker, S.W.A., 2019. An ethnography of the safety professional's dilemma: Safety work or the safety of work? *Saf. Sci.* 117, 276–289.
- Pryor, P., 2016. Accredited OHS professional education: A step change for OHS capability. *Saf. Sci.* 81, 5–12.
- Pryor, P., 2019. Developing the core body of knowledge for the generalist OHS professional. *Saf. Sci.* 115, 19–27.
- Pryor, P., Hale, A. and Hudson (2019). Development of a global framework for OHS professional practise. *Safety Science*, 117: 404-416.
- Pryor, P., Sawyer, N., 2010. OHS professionals: Technicians or strategic advisers? *J. Health Saf. Environ.* 26 (1), 21–23.
- Rantanen, J., 2005. Basic occupational health services-their structure, content and objectives. *SJWEH Suppl.* 1, 5–15.
- Reed, M.I., 2018. Elites, professions, and the neoliberal state: critical points of intersection and contention. *J. Pro. Organ.* 5 (3), 297–312. <https://doi.org/10.1093/jpo/joy010>.
- Rees, S. and Rodley, G. (eds) 1995. *The High Cost of Managerialism*. Pluto Press, Sydney.
- Robens, Lord A. 1972. *Safety and Health at Work: Report of the Committee of Inquiry 1970-1972*. Cmnd. 5034. Her Majesty's Stationery Office, London.

- Salvatore, D., Numerato, D., Fattore, G., 2018. Physicians' professional autonomy and their organizational identification with their hospital. *BMC Health Serv. Res.* 18, 775. <https://doi.org/10.1186/s12913-018-3582-z>.
- Sánchez-Herrera, I.S., Donate, M.J., 2019. Occupational safety and health (OSH) and business strategy: The role of the OSH professional in Spain. *Saf. Sci.* 120, 206–225.
- Swuste, P., Zwaard, W., Groeneweg, J., Guldenmund, F., 2019. Safety professionals in the Netherlands. *Saf. Sci.* 114 (2019), 79–88.
- van Wassenhove, W., Foussard, C., Dekker S.W.A., and Provan D.J. 2022. A qualitative survey of factors shaping the role of a safety professional, *Safety Science* 154.
- Vincent, J. 2005. Graduate Education in Occupational Hygiene: A Rational Framework, *Ann. Occup. Hyg.*, Vol. 49, No. 8, pp. 649–659, 2005.
- Walters, D., 2001. *Health and Safety in Small Enterprises: European Strategies for managing Improvement*. PIE Peter Lang, Brussels, pp. 238–255.
- Walters, D. 2007. Introduction: Occupational health services in a changing world. In Westerholm, P. and Walters D. (eds) *Supporting Health at Work: International perspectives on occupational health services*. IOSH Services Ltd, Wigston, United Kingdom.
- Walters, D., Wadsworth, E., 2019. Participation in safety and health in European workplaces: Framing the capture of representation. *Eur. J. Ind. Relat.* 26 (1), 75–90. <https://doi.org/10.1177/0959680119835670>.
- Walters, D., Johnstone, R., Bluff, E., Limborg, H.J., Gensby, U., 2022. Prevention services for occupational safety and health in the European Union: Anachronisms or supports for better practice? *Saf. Sci.* 152, 105793.
- Walters, V. 1982. Company Doctors' Perceptions of and Responses to Conflicting Pressures from Labor and Management. *Social Problems* 30 (1): 1–12.
- Wang, B., Wu, C., Li, J., Zhang, L., Huang, L., Kang, L., 2019. Certified Safety Engineer (CSE) as a new official profession in China: A brief review. *Saf. Sci.* 116, 108–115.
- Waterson, P., Sell, R., 2006. Recurrent themes and developments in the history of the Ergonomics Society. *Ergonomics* 49 (8), 743–799. <https://doi.org/10.1080/00140130600676056>.
- Weel, A.N.H. and Plomp, H.N. 2007. Developments in occupational health services in the Netherlands: From a professional to a market regime in Westerholm, P. and Walters, D. (eds) *Supporting Health at Work: International Perspectives on Occupational Health Services*. IOSH Services Ltd, Wigston, United Kingdom.
- Weindling, P. ed. 1985. *The Social History of Occupational Health*, Croom Helm, London).
- Westerholm, P. and Walters D. (eds) 2007. *Supporting Health at Work: International Perspectives on Occupational Health Services*. Institution of Occupational Safety and Health, Leicester, United Kingdom.
- Wilbanks, D.W., Abulhassan, Y., Wachter, J.K., 2023. Reconciling occupational safety and health (OSH) Master's of Science curricula with employer demands. *Saf. Sci.* 161.
- Witz, A., 1992. *Professions and Patriarchy*. Routledge, London.
- Wright, N., Hollohan, J., Pozniak E. and Ruehle, P 2019. The development of the occupational health and safety profession in Canada, *Safety Science*, 133-137.
- Wybo, J.-L., Van Wassenhove, W., 2016. Preparing graduate students to be HSE professionals. *Saf. Sci.* 81, 25–34.