The Industrial Fatality in Post-Robens Britain, 1974 – 2014

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Candidate Declaration

I hereby declare that:

1. I have not been enrolled for another award of the University, or other academic or professional organisation, whilst undertaking my research degree.
2. None of the material contained in the thesis has been used in any other submission for an academic award.
3. I am aware of and understand the University's policy on plagiarism and certify that this thesis is my own work. The use of all published and other sources of material consulted have been properly and fully acknowledged.
4. The work undertaken towards this thesis has been conducted in accordance with the SHU Principles of Integrity in Research and the SHU Research Ethics Policy.
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Abstract

This thesis examines workplace fatalities in the period 1974 to 2014 with the subject matter arranged as five case studies presented in chronological order. Developments are examined from the advent of the Health and Safety at Work etc. Act 1974 over a forty-year period to just after the introduction of the Corporate Manslaughter and Corporate Homicide Act 2007. There are common themes running through each chapter. Oral history interviews are used alongside the examination of public inquiry reports, official documents, press reports and archival sources, exploring themes including industry regulation, organisational culture, corporate crime, and social movements.

This thesis presents the case that modern industrial fatalities should be separated from the broader historical literature on occupational health and safety. Whilst the subject belongs within, or close to, labour history it is its own sub-topic, in the same way that asbestosis, or work-related disabilities have their own bodies of literature. The modern industrial fatality, as defined by this thesis:

- Occurs in a developed and fully industrialised economy, within a modern regulatory framework.
- Occurs after the emergence and adoption of modern safety theory, from the early 1980s onwards.
- Takes place in industrial settings where equipment, machinery, and processes have inherently hazardous properties but crucially, hazardous properties that can be managed and controlled.
- Is foreseeable and preventable.

The modern industrial fatality remains an ongoing moral, legal and social conundrum that cuts across the humanities and social sciences with immediate contemporary relevance. This thesis is strongly aligned with Sheffield Hallam University's applied university goals because it creates knowledge that will help to provide practical solutions to this real-world challenge.

The originality of this research is twofold. Firstly, by combining industrial safety theory and historical inquiry, it occupies a space loosely covered by labour history and the social sciences, but hitherto not explicitly examined. Secondly, by framing the modern industrial fatality as a distinct phenomenon it introduces a new paradigm that invites further academic scrutiny. There is significant scope for future research both from a labour history point of view and in terms of implications for organisational learning and policy development.

Contents

List of Abbreviations

BLEVE - Boiling Liquid Expanding Vapour Explosion

BSSRS - British Society for Social Responsibility in Science

CCA - Centre for Corporate Accountability

CIMAH - Control of Industrial Major Accident Hazards Regulations 1984

CPS - Crown Prosecution Service

ESG - Environment, Social and Governance

FACK - Families Against Corporate Killers

FFI - Fee for Intervention

HRO - High Reliability Organisations

HRT - High Reliability Theory

HSC - Health and Safety Commission

HSE - Health and Safety Executive

HSWA - Health and Safety at Work etc. Act 1974

IAEA - International Atomic Energy Agency

IISO - Institution of Industrial Safety Officers

IOSH - The Institution of Occupational Safety and Health

JAPAC - Joint Accident Prevention Committee

LOTO - Lockout Tagout

LPG - Liquefied Petroleum Gas

MHSWR - Management of Health and Safety at Work Regulations 1999

MMD - Man-Made Disasters

NAT - Normal Accident Theory

NCB - National Coal Board

NEBOSH - National Examining Board for Occupational Safety and Health

NIHHS - Notification of Installations Handling Hazardous Substances Regulations 1982

NIOSH - The National Institute for Occupational Safety and Health (of America)

OILC - Oil Industry Liaison Committee

OSH/OHS - Occupational Safety and Health

OSHA - Occupational Safety and Health Administration (of America)

OSHCR - Occupational Safety & Health Consultants Register

PFI - Private Finance Initiative

PTW -Permit to Work

ROSPA - Royal Society for the Prevention of Accidents

SDG - (UN) Sustainable Development Goals

SSOW - Safe Systems of Work

TQM - Total Quality Management

TUC - Trades Union Congress

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Acknowledgements

My thesis is dedicated to the victims. Through my research, I have highlighted the particularly cruel injustice of the modern industrial fatality, so it is vital that the victims are recognised and remembered. I also owe a special debt of gratitude to my oral history participants who shared their experiences and time so generously with me for this project.

I wish to thank my wonderful academic supervisors whose encouragement and guidance enabled me to challenge myself, expand my knowledge, and ultimately to produce a thesis that I am proud of. Dr Nicole Robertson, Professor John Singleton and Professor Tony Taylor's expertise and patience has been essential in the successful completion of my research, and I am incredibly grateful to them for their support. More recently, having driven not one, but two academic supervisors into retirement, I gained a fourth supervisor, Professor Nicola Verdon, to whom I also owe my thanks for her feedback and advice.

My husband, Matthew, already has an academic thesis dedicated to him so he doesn't need another. However, his belief in me and his unwavering kindness and support have lovingly carried me through the five years of this project. His advice, technical support and proof-reading services have often gone well beyond the call of duty. He's officially an amazing husband/genius.

Finally, as my three children approach adulthood, I want them to know that they are my inspiration in everything I do. I took an unconventional and circuitous route through life and work to get to where I am now, so I feel that my completion of this thesis serves as proof that there is no single best way to navigate the challenges of life. I can only hope that the future provides them with the safe, fair and just world that they deserve.

Chapter One – Introduction

'We thought we were good but you can't be good when five people are dead, if you know what I mean'. Interview with Les Shaw, Transport & General Workers' Union branch secretary and Hickson and Welch employee for 30 years; conducted by Victoria Hill, 30 September 2021.

These words, taken from an oral history interview with the survivor of an industrial accident that killed five of his close friends and colleagues in 1992, encapsulate the purpose of this thesis. Industrial fatalities, once a relatively common occurrence, an unintended byproduct of the industrial revolution, have always represented a tragedy for the victims. But in the twentieth century there was a significant shift and downward trend in fatal work accidents in Britain, and by the 2000s workers were ten times less likely to die at work than they were in the 1950s.[1] This shift was driven by multiple factors, but the downward trend itself is not the subject of inquiry. The opening quote alludes to the disbelief, the self-reflection, and the organisational and societal impact of industrial fatalities. This thesis explores these themes in detail and frames the modern industrial fatality as a distinct phenomenon to further advance historical understanding and to shape future safety policy.

Heavy industry, the focus of this thesis, includes manufacturing, mining, construction, shipbuilding, and transport. The originality of approach employed in this research derives from the application of interdisciplinary theories from the humanities and social sciences, coupled with occupational health and safety theory. The purpose of this approach is to bring a new understanding of the modern industrial fatality as a phenomenon that is shocking, unacceptable in civil society, and incompatible with progressive organisational values.

When a person is killed at work it does not happen in a vacuum. It happens within an organisation or a company with its own culture and purpose that drives and shapes the actions of individuals. Organisations themselves operate within shifting regulatory landscapes, within a society of political and economic complexities and nuances. In 2016, Christopher Sirrs published his Doctoral thesis on health and safety in the British regulatory state. He noted that, 'with

[1] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 178.

multiple overlapping and intersecting themes, the history of British health and safety regulation eludes both a straightforward chronological narrative and thematic approach'.[2] Sirrs argued that this was largely due to the system being shaped over time, by political, cultural, economic and social pressures. This observation is pertinent and goes some way to explaining why the subject matter must be carefully curated to avoid unnecessary rabbit holes or digressions. Health and safety regulation is one of the dominant themes of this thesis but not the subject itself. However, Sirrs' research (a historical study of post-Robens health and safety regulation in Britain), represents an academic line of inquiry more closely related to this thesis than any other, yet it is still significantly different.

The aims of my research were threefold:

1) to provide a new perspective on the modern industrial fatality by situating the phenomenon at the heart of an historical inquiry;

2) to understand and define the organisational characteristics of workplaces where industrial fatalities occurred; and

3) to link the historical findings to the practice of occupational safety throughout the period and beyond.

The qualitative nature of this study provides an exploration, or 'a complex, detailed understanding', and 'follow up explanation of mechanisms' about quantitative data on industrial fatalities.[3]

My research questions were as follows:

- Why are people still being killed at work in modern Britain?
- What does it mean for society and communities when family members, neighbours, or friends are killed at work?
- Can all workplace deaths be prevented?
- How did the management of safety develop and change the corporate landscape during the period?

[2] C. Sirrs, *Health and Safety in the British Regulatory State,1961-2001: The HSC, HSE and the Management of Occupational Risk* (PhD, London School of Tropical Medicine and Hygiene, 2016), p. 66.
[3] J. Creswell and C. Poth, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (London, 2017), p. 46.

- Did legislative changes and fluctuating regulatory approaches significantly influence workplace safety?
- How do these questions interact with conceptual frameworks concerned with imbalances of power?

The subject matter of this thesis is arranged as five case studies which are presented in chronological order. Developments are tracked as the period progressed from the introduction of the Health and Safety at Work etc. Act 1974 (HSWA) over a forty-year period which included the debate and campaign for, the introduction of the Corporate Manslaughter and Corporate Homicide Act 2007. The end-date of 2014 allows for the early impacts of the new Corporate Manslaughter legislation to be included. There are common themes running through each chapter. Firstly, business, the economy, and political landscape: this is characterised over the period by the decline of heavy industry in Britain, the diminishing power of the trade unions, and more widely the impacts of globalisation and the growth of multinational corporations. Secondly, the regulatory system: this thesis purposefully takes the introduction of the Robens philosophy as the starting point because it represented a shift away from prescriptive regulation toward goal-setting and self-regulation that has characterised the last fifty years in Britain. Over the forty-year period from 1974 there were several developments in the nature of the regulation of health and safety at work. These developments influenced and affected operational decisions in businesses and impacted on workers' experiences. Thirdly, society and public perceptions were not static over the period: public perceptions towards workplace safety fluctuated according to events including the Piper Alpha Disaster and the Herald of Free Enterprise tragedy. Expectations of safety increased, and standards improved during the 40 years. Social activism advocating for workers' safety and health also emerged and developed. Fourth and finally, the emergence of the formal Health and Safety profession (as opposed to Government inspectors): this developed beyond recognition over the period, with the growth of industry bodies and qualifications for health and safety professionals. These themes provide a loose framework in which to situate the detailed analysis in the case study chapters.

In 2014, on the fortieth anniversary of the introduction of the HSWA, Mike Esbester wrote that 'history shows that reliance on the goodwill of employers to

improve workplace health and safety is insufficient: a strong state role and the HSE *are* needed'.[4] This thesis supports Esbester's assertion and argues that the modern industrial fatality is a symptom of specific organisational and regulatory failings. Further, that by understanding these factors in a historical context we create an opportunity to shape the future of industry and advance the understanding of how to prevent further fatalities.

The history of the modern industrial fatality does not have its own body of literature within which to comfortably position this study, so this research occupies a space at the intersection where histories of work, sociological and legal studies, and occupational safety theory meet. Sirrs wrote in his 2016 thesis that 'while the nineteenth and early twentieth-century history of health and safety in Britain has been widely studied, developments after 1960, particularly since the HSWA, have escaped historical attention' and cited the decline in heavy industry as the main reason for this.[5] This thesis will go some way to remedying this deficiency by linking many related strands and weaving them into a history of the modern industrial fatality. Further, it addresses a specific gap and a hitherto unexplored dimension, inspired by my career as a health and safety practitioner in the industrial sector. That is, the examination of modern fatalities in British heavy industry in the context of organisational factors, regulation, and safety management. Whilst this subject matter is strongly linked to my professional interests, the subject matter has been approached dispassionately and objectively. In fact, aspects of my professional training further support a rational and evidence-based approach.

International Context

This thesis is limited to events in Britain, so references to events or context further afield are minimal. That said, it is worth briefly setting out some international context. Daniel Walkowitz provided a succinct twentieth century international context in his introduction to *A Cultural History of Work in the Modern Age.*[6] In the interwar period, 'the Russian Revolution in 1917 and the subsequent rise of

[4] M. Esbester, 'The Health and Safety at Work Act, 40 years on', *History and Policy,* https://www.historyandpolicy.org/opinion-articles/articles/the-health-and-safety-at-work-act-40-years-on, accessed 14 November 2022.
[5] C. Sirrs, *Health and Safety in the British Regulatory State* (PhD, London School of Hygiene and Tropical Medicine, 2016), p. 41.
[6] D. Walkowitz, ed, 'Introduction', In *A Cultural History of Work in the Modern Age*, The Cultural Histories Series (London, 2020). pp. 1–16.

a communist "workers' state" inspired many workers, whom socialist and communist labor leaders further mobilized, to fight for improved living and working conditions'.[7] In reaction to this mobilization, 'fearful corporate leaders and their allies in government' advanced nationalism (in Germany, in Britain, in the USA), and carried out anti-communist purges against trade unions.[8] Economic depression in the 1920s and 1930s brought hardship in both rural and urban areas, thus broadening the activities of the trade union movement, including an expansion into previously unorganized workforces such as clerical and professional sectors. The period after the Second World War was largely characterized by the decline of heavy industry in Britain and comparable economies, but for much of the rest of the world including Eastern Europe (and the Far East in particular), the heaviest and most hazardous industries continued or grew. As Walkowitz states:

> Mining was one of the most dangerous industrial occupations: in the poignant words of one miner, when the men went down the shaft, they "said goodbye to life". As late as 1989, the life expectancy of Ukrainian miners was only about forty-eight years. Life expectancy gradually improved in other industrial nations over the course of the century but remained considerably below average. And disproportionate numbers of those who did not die on the job experienced serious injuries.[9]

When the Robens Committee was established in 1970 its members visited other countries to understand how their systems worked and took some inspiration from both the USA and Sweden. Sirrs noted that, 'in the USA, President Nixon had recently signed the Occupational Safety and Health Act (OSHA) 1970, designed "to assure so far as possible every working man and woman in the nation safe and healthful working conditions"'.[10] The USA and UK had both seen increases in the number of industrial accidents during the 1960s, and in the UK there was a strong correlation between industrial accidents and poor productivity.[11] Therefore it made sense to examine the approach being taken in the USA, where productivity in 1965 was 'a remarkable 84 per cent higher' than in the UK.[12] In Sweden, the Workers' Protection Act had been in force since 1949, which

[7] Ibid, p. 4.
[8] Ibid, p. 4.
[9] Ibid, p. 11.
[10] C. Sirrs, 'Accidents and Apathy: The Construction of the "Robens Philosophy" of Occupational Safety and Health Regulation in Britain, 1961–1974', in *Social History of Medicine*, 29:1 (February 2016), p. 81.
[11] Ibid, p. 81.
[12] Ibid, p. 81.

'established comprehensive statutory protection against occupational accidents and disease'.[13] What was different about these systems (to the existing system in the UK) was that they offered statutory protections, and employer obligations, regardless of industry or sector. Robens himself had already expressed an interest in ensuring coverage for all industries, including schools and public sector organisations, which were not yet captured by any of the UK's piecemeal health and safety legislation. Prior to the HSWA around 8 million British workers (a third of the working population) had 'no statutory protection from accidents and illnesses resulting from work'.[14]

When the UK joined the European Union in 1973 the Robens philosophy was already on the way in, and EU Directives relating to occupational health and safety had a limited impact in Britain until the late 1980s. This was when the Health and Safety Framework Directive (89/391/EEC) and five 'daughter' directives were enacted, establishing 'broad-based obligations on member states to ensure that employers evaluate, avoid and reduce workplace risks in consultation with their workforce'.[15] The EU Directive 'mirrored' much of the Health and Safety at Work etc. Act 1974 and the Regulations already made under it in the UK, so the existing provisions were largely adequate to achieve compliance with the Directive.[16] However, some of the more prescriptive elements of the EU Directive were handled by way of what became known as the 'six pack' Regulations that came into force in the UK in 1993.[17] Therefore it is fair to say that European health and safety legislation had limited influence in the UK until the 1990s onwards, when further, more substantial protections and provisions for workers were added. By the end of the forty-year period, and faced with the potential withdrawal from the EU, the Trades Union Congress (TUC) campaigned in favour of Remain on the basis that '41 out of the 65 new British

[13] Ibid, p. 82.
[14] Ibid, p. 70.
[15] 'EU membership and health and safety the benefits for UK workers – a TUC report', *TUC*, https://www.tuc.org.uk/sites/default/files/EU_Health_Safety_Report_0.pdf p. 2. accessed 4 March 2023.
[16] Ibid. p. 2, accessed 4 March 2023.
[17] Management of Health and Safety at Work Regulations, Manual Handling Operations Regulations, Display Screen Equipment (DSE) Regulations, Workplace (Health, Safety and Welfare) Regulations, Provision and Use of Work Equipment Regulations, Personal Protective Equipment (PPE) Regulations.

health and safety regulations introduced between 1997 and 2009 originated in the EU'.[18]

In 2015 the United Nations Sustainable Development Group published its 17 Sustainable Development Goals (SDGs), which include Goal 8, 'Decent Work and Economic Growth'.[19] The provision of safe and healthy work is also recognized by the United Nations as a universal human right.[20] These explicit expectations are aligned with modern environmental, social and governance governance (ESG) standards that Western societies are now familiar with, including the concept of the 'triple bottom line' of profit, people and planet.[21] However, there have always been huge disparities in the levels of safety at work in different countries. According to the UN Global Compact;

> About two-thirds (65 per cent) of global work-related mortality is estimated to occur in Asia, followed by Africa (11.8 per cent), Europe (11.7 per cent), Americas (10.9 per cent) and Oceania (0.6 per cent). The rates of fatal occupational accidents per 100,000 workers also show stark regional differences, with rates in Africa and Asia 4 to 5 times higher than those in Europe.[22]

Therefore, historical comparisons with other countries are more suited to large, industrialised economies; typically members of the G7 and other EU countries. On the fiftieth anniversary of the publication of the Robens Report, a project was conducted to assess the impact of the Robens philosophy and the 'counter-factual' position, i.e. 'what might have happened to outcomes in the absence of such a system'.[23] The report found that the UK 'consistently has one of the lowest rates of [occupational] fatality in Europe', and that Great Britain's percentage reduction in fatal workplace injuries since 1974 is comparable or slightly

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[18] 'EU membership and health and safety the benefits for UK workers – a TUC report', *TUC*, https://www.tuc.org.uk/sites/default/files/EU_Health_Safety_Report_0.pdf, p. 2. accessed 4 March 2023.

[19] 'UN Sustainable Development Goal 8', *SDGS*, https://sdgs.un.org/goals/goal8, accessed 4 March 2023.

[20] 'The Human Right to Safe and Healthy Working Conditions', *OHCHR*, https://www.ohchr.org/en/stories/2019/10/human-right-safe-and-healthy-working-conditions, 2019, accessed 4 March 2023.

[21] B. Willard, *The New Sustainability Advantage: Seven Business Case Benefits of a Triple Bottom Line* (British Columbia, 2012).

[22] 'A safe and healthy working environment', *UN Global Compact*, https://unglobalcompact.org/take-action/safety-andhealth, accessed 4 March 2023.

[23] A. Spence, 'What Difference did Robens Make? Analysing Health and Safety Data Across the Decades', *History of Occupational Safety and Health*, What difference did Robens make? Analysing health and safety data across the decades - Reflections on Robens - History of Occupational Safety and Health (historyofosh.org.uk), 2022, accessed 30 September 2023.

favourable against a range of comparators (including Canada, Germany, and Poland).[24]

Britain therefore has a strong record both in terms of international comparisons and absolute improvement over the course of recent history. Statistically, it is one of the best performing countries in the world with fatalities falling 88% over the period 1974 to 2019/20 and a fatal injury rate (as of 2020 and standardized for industrial structure) around half the EU average.[25] That said, the annual number of fatalities has now stagnated and remained 'broadly flat' (around 140 per year) since 2010.[26] The USA, in comparison, has seen a recent rise in occupational fatalities with 2021 seeing over 5000 deaths; a fatal injury rate of 3.6, compared to a 1.17 average in the EU28 and 0.61 in Britain.[27] This brief international context illustrates Britain's relatively good record on occupational safety when compared with similar economies.

Business, Economy, and the Political Landscape

As noted above, the nature of work has changed in Britain since 1974. Broadly speaking, by the 1970s people were entering the labour market later because of the increased school leaving age and access to further education. Over the period, more women entered the paid labour market, and working hours decreased (from an average of 44 hours a week in 1950 to 38 in 1992 and 36 in 2011).[28] The period saw a sharp decline in primary and secondary industries such as agriculture and extraction, and manufacturing, with a rise in service industries being driven by new technologies and emerging sectors.[29] The magnitude of change can be illustrated with a multitude of statistics but to take a select few: over a million jobs in the engineering and metal manufacturing sector were lost between 1951 and 1991 and there was a similar fall in employment in textiles and clothing manufacture in the same period.[30] Underground coal mining employed around 700,000 people in 1950 but by 2000 this was down to just 10,000 people

[24] Ibid, table 3.3.3.
[25] Ibid, 2.3.2, Ibid, 5.2.
[26] Ibid. 2.3.2.
[27] A. Spence, 'What Difference did Robens Make? Analysing Health and Safety Data Across the Decades', *History of Occupational Safety and Health*, https://www.historyofosh.org.uk/robens/what-difference-did-robens-make.html, 2022, accessed 30 September 2023.
[28] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 10.
[29] Ibid, p. 10.
[30] Ibid, p. 10.

in a small number of surviving mines.[31] By the end of our period, in the early 2010s, 'the tertiary (or services) sector employ[ed] around 80% of the total workforce'.[32] Why is this significant? These statistics demonstrate the changing nature of work in Britain with a large reduction in high-hazard or heavy industry work and an increase in the service sector. The number of workers being killed every year in Britain declined over the period, from 651 in 1974 to 123 in 2014 – with this reduction making headline news.[33] The UK, in comparison to many other European countries, had an earlier, larger peak (1955) in industrial activity, followed by one of the sharpest falls.[34] Jim Tomlinson provided a useful meta-analysis of these trends, making use of an argument that the period should be viewed as one of de-industrialisation, not decline.[35]

It is not possible to fully unpick the extent to which regulation and occupational safety contributed to the reduction in fatal injuries because of the concurrent decline in hazardous work, but the incidence rate gives a strong indication that changes to the types of work and reduction in dangerous occupations were not the only reason for the pattern of reduction. The table and graph below from the HSE statistics on fatal injuries show that the rate of fatal injuries to workers in all sectors fell from 2.1 per 100,000 in 1981 to 0.46 in 2014, with sharp declines in manufacturing, construction and the service industries. The spike circled in red on the graph represents 1988; the year of the Piper Alpha Disaster, which is the subject of Chapter Four.

Sector	**1981**	**2014**
All	2.1	0.46
Agriculture	9.5	8.84
Manufacturing	2.0	0.62
Construction	7.9	1.63
Service Industries	0.8	0.2

[31] Ibid, p. 13.
[32] Ibid, p. 14.
[33] 'Workplace Deaths at Record Low', *BBC News*, http://news.bbc.co.uk/1/hi/uk/8117278.stm, 2009, accessed 14 November 2022.
[34] Tomlinson's analysis of the effects on the labour market, as opposed to traditional narratives of growth and decline, provides a nuanced overview of the process of de-industrialisation.
[35] J. Tomlinson, 'De-industrialization Not Decline: A New Meta-narrative for Post-war British History', *Twentieth Century British History*, 27:1 (March 2016), pp. 76-99.

Figure 1.1 – Rate of fatal injuries per 100,000 workers, by sector in 1981 compared to 2014. 'Historical picture: trends in work-related ill health and workplace injury in Great Britain', *HSE*,

https://www.hse.gov.uk/statistics/history/index.htm, accessed 14 November 2022.

Figure 1.2 - HSE Statistics: Historical picture statistics in Great Britain – trends in work-related ill health and workplace injury. 'Historical picture: trends in work-related ill health and workplace injury in Great Britain', *HSE*,

https://www.hse.gov.uk/statistics/history/index.htm, accessed 14 November 2022.

Therefore, it is fair to say that over the forty-year period work became safer, and that this was a result of changes to the type of work being done, namely the reduction of manufacturing, mining, and agriculture, and the rise in service industries. But whilst the types of industries where people were more likely to be fatally injured were in decline, this alone does not fully account for the reduction in workplace deaths because the figures are normalised to account for the size of the workforces in the relevant sectors.

There were other changes to work as well, driven by globalization and transnational political movements. Prior to the 1970s there had been a system of government regulation in the US, which derived from President Roosevelt's 1934

New Deal, ensuring that in 'the postwar era, and the 1960s and 1970s, the growing power of corporations was offset, at least in part, by continued expansion of government regulation, trade unions, and social programs'.[37] This changed in the 1970s when the Organization of the Petroleum Exporting Countries (OPEC) and the oil crisis caused unemployment, recession, and high inflation. Western governments responded to this and other economic challenges of the period by adopting neoliberalism which 'celebrated economic freedom for individuals and corporations and prescribed a limited role for government in the economy'.[38] Margaret Thatcher's government, which came to power in 1979 pursued laissez-faire free market policies of deregulation and privatization, thus encouraging the growth and arguably, reduced accountability, of corporations.

Political developments and the governments of the day have had a bearing on the bigger picture. During the 1970s Harold Wilson's Labour government pursued a policy called the *Social Contract* which was an agreement between the government and the TUC that promised new legislation on workers' rights (amongst other things), in return for wage restraint from union members.[39] The HSWA was 'toughened up by the TUC' and 'the Employment Relations Act 1975 was largely drafted by the TUC'.[40] 1974 was a tumultuous year, politically, with two general elections. Thatcher's Conservative government came to power in 1979 and in addition to the neoliberal economic agenda previously mentioned, one of her government's main mandates was to 'curb the growth of trade union power'.[41] Thatcher described the unions as the 'enemy within', whilst using laissez-faire/free market/classical liberalism to present union restrictions on the labour market as the root cause of the country's economic problems'.[42] Thatcher's premiership (1979-1990) maintained a highly adversarial relationship with the trade unions, and her government introduced legislation to limit their powers.[43] The Thatcher period was also characterized by the pursuit of a range of policies 'explicitly designed' to reverse the post-war trend towards greater

[37] J. Bakan, *The Corporation: The Pathological Pursuit of Profit and Power* (New York, 2004), p. 20.
[38] Ibid, p. 21.
[39] A. J, Reid, *United We Stand: A History of Britain's Trade Unions* (London, 2004), p. 387.
[40] Ibid, p. 386
[41] Ibid, p. 396.
[42] Ibid, p. 397.
[43] Ten years after the end of the miners' strike, there were just 17 deep mines left in the UK, manned by 11,000 workers; Ibid, p. 406.

equality whilst publicly endorsing employers who 'stood firm' against strikes.[44] The significance of this, coupled with deregulation and privatization, was a reduction in the power of individual workers against the whims of increasingly powerful employers. Jackson and Saunders argue that,'between 1979 and 1990, the state withdrew almost entirely from the direct control of industry'.[45] That said, Tombs and Whyte identified a paradox whereby the privatization and deregulation over the period was necessarily 'accompanied by the creation and re-creation of immensely complex regulatory regimes', because the outsourcing of (previously) state functions 'furthered state-corporate interdependence through regulation'.[46]

Whilst this narrative omits much detail it serves to provide a backdrop for the case studies in this thesis. The Piper Alpha disaster took place during Thatcher's government, the Hickson and Welch incident happened under John Major's Conservative premiership (1990-1997), whilst the death of Simon Jones happened in 1998, just after Tony Blair's New Labour had come to power. The ICL Stockline incident, the last of the case studies, happened in 2004, also during Tony Blair's government (1997-2007).

More recently, towards the end of the period, there was a Conservative and Liberal Democrat coalition government under David Cameron, which came to power in 2010. David Cameron was vocally critical of health and safety, and his party called for the abolition of the Health and Safety Executive and radical deregulation. David Cameron was quoted in London's *Evening Standard* saying:

> One of the coalition's new year resolutions is this: kill off the health and safety culture for good. I want 2012 to go down in history not just as Olympics year or diamond jubilee year, but the year we banished a lot of this pointless time-wasting from the economy and British life once and for all.[47]

[44] P. Dorey, *British Conservatism: The Politics and Philosophy of Inequality* (London, 2011), p. 147.
[45] B. Jackson, and R. Saunders, eds., *Making Thatcher's Britain* (Cambridge, 2012), p. 15.
[46] S. Tombs and D. Whyte, *The Corporate Criminal: Why Corporations Must be Abolished* (Abingdon, 2015), p. 23.
[47] D. Cameron, 'Health and Safety Laws are Holding Back Business', *London Evening Standard*, https://www.standard.co.uk/hp/front/david-cameron-health-and-safety-laws-are-holding-back-business-7304688.html, 13 April 2012, accessed 15 November 2022.

This theme was picked up and repeated in the British press for several years. Hilda Palmer, a campaigner from Hazards and Families Against Corporate Killers (FACK), described Cameron's rhetoric during her oral history interview:

> Health and safety regulations is all meaningless red tape; pointless and silly and must be cut. It's a burden on business, an albatross, a millstone, these are all things that Cameron and other people, Thatcher, have said – that there must be a bonfire of red tape.[48]

The forty-year period saw mainly Conservative governments; Thatcher followed by John Major, with the New Labour period from 1997 to 2010 and the Conservative-Liberal coalition after 2010. Whilst the New Labour period provided some focus on workers' rights and cooperation with the unions, the overall trend over the period was one of increasingly neoliberal politics (for example, private finance initiatives under Blair) and a continuing appetite for deregulation.

Legislation and Regulation

The earliest safety legislation in the UK was the Act for the Preservation of the Health and Morals of Apprentices and others employed in Cotton and other Mills, and Cotton and other Factories (often referred to as the Factory Act 1802). The bill was introduced by Robert Peel after poor conditions in one of his own mills had led to an outbreak of disease amongst the workforce, which consisted mainly of child labour. The timeline below shows a chronological overview of relevant legislative developments thereafter, with Acts of Parliament and Regulations shown in green, and case law and selected notable disasters in orange. The first factory inspectors were appointed in 1833 with safety regulation gradually extending 'from the mid-nineteenth century onwards to wider aspects of safety, health and welfare, mainly covering factories, mines and railways'.[49]

[48] Interview with Hilda Palmer, Hazards campaign activist, conducted by Victoria Hill, 5 May 2021.
[49] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), p. 146.

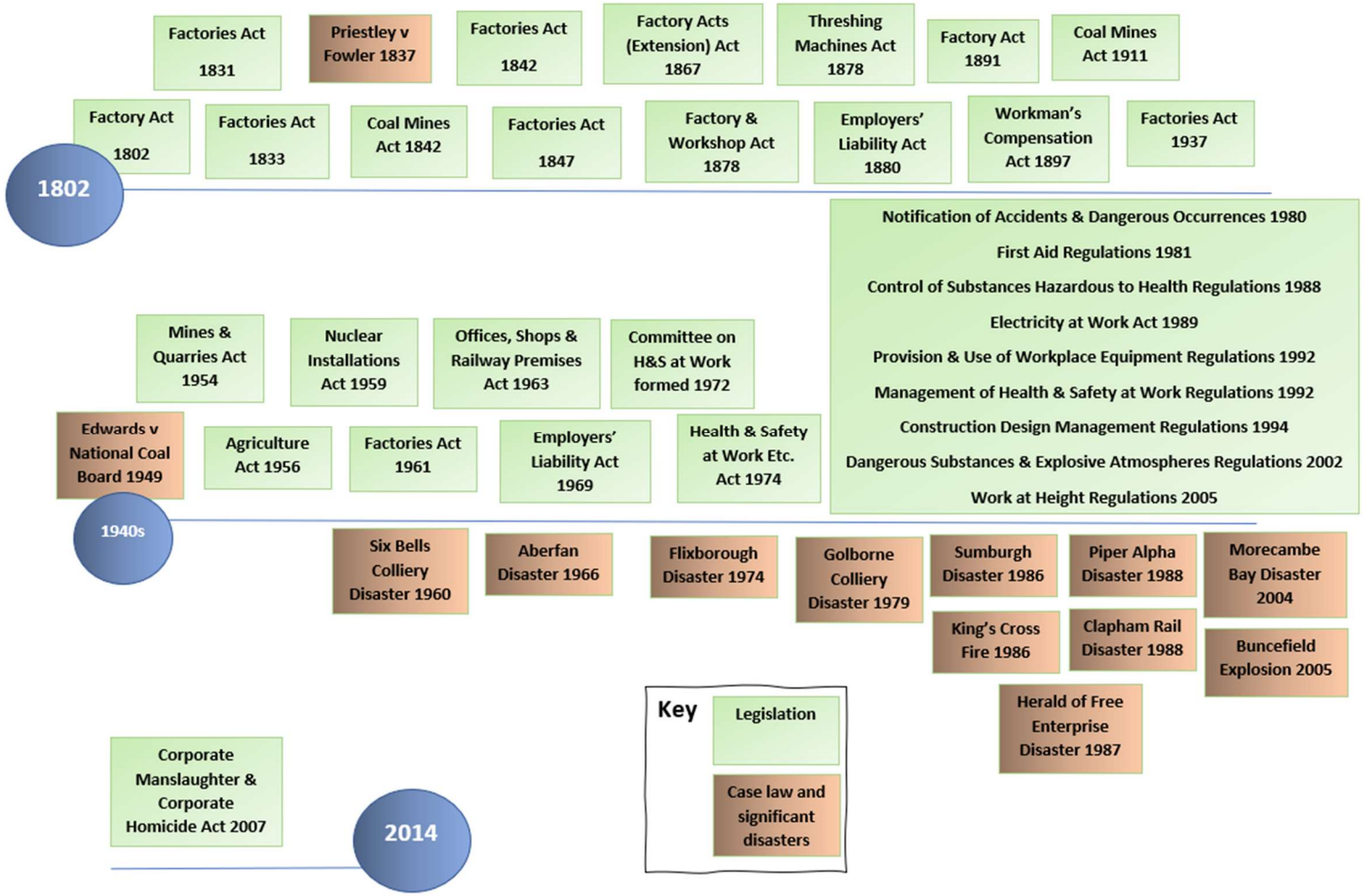

Figure 1.3 - Timeline of significant health and safety legislation, case law, and events. Author's own timeline.

As the timeline above illustrates, piecemeal, industry specific legislation was developed and added over the decades as governments and regulation reactively attempted to keep pace with changes to the nature of industry. After the 1966 Aberfan disaster, in which 116 children and 28 adults were killed by the collapse of a huge coal spoil tip, the tribunal report concluded that '[T]he Aberfan disaster is a terrifying tale of bungling ineptitude by many men charged with tasks for which they were totally unfitted, of failure to heed clear warnings, and of total lack of direction from above'.[50] There followed a change to the existing Mines and Quarries Act to include the management of spoil tips, that had hitherto been omitted from the legislation, and then, in 1970, the commissioning of a report on safety and health at work. The terms of reference for the appointed committee included a wide-ranging review of the current provisions, and 'to consider whether any further steps are required to safeguard members of the public from hazards', 'arising in connection with activities in industrial and commercial premises and construction sites'.[51] This, and the appointment of Lord Alfred Robens as Chairman, linked the committee and its recommendations directly back to the Aberfan Disaster. Lord Robens was Chairman of the National Coal Board at the time of the Aberfan Disaster and was heavily criticized in the tribunal report, which 'devoted a section of its report to "the attitude" of the NCB and of Robens and forthrightly condemned both'.[52] However, no one was prosecuted or dismissed for the failings that caused the disaster.

Setting aside the multitude of failings surrounding the Aberfan Disaster and the poor treatment of the families involved, the legislative and regulatory overhaul that followed was revolutionary. As set out above, and shown on the illustrated timeline, the legislation that had built up since the industrial revolution had become cumbersome, detailed and prescriptive.[53] The purpose of the Robens committee and subsequent report was to review all current provisions and make recommendations for the future of health and safety at work in the UK. The report was published in 1972 and 'recommended that UK legislation should be radically

[50] M. Johnes and I. McLean, 'Echoes of Injustice', *History Today*, 50:12 (December 2000), p. 28.
[51] Lord A. Robens, et al., *Safety and Health at Work, Report of the Committee 1970-1972* Cmnd. 5034 (London, 1972), p. v.

[52] M. Johnes and I. McLean, 'Echoes of Injustice'. *History Today*, 50:12 (December 2000), p. 28.
[53] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), p. 146.

modernized, citing in particular that the volume of law needed to be reduced and simplified and that the balance between prescriptive regulation, setting out the requirements in detail, should be shifted towards a goal setting approach'.[54] This new approach, embodied by the Health and Safety at Work etc. Act 1974 was the Robens philosophy, which has remained largely unchanged for almost fifty years and remains the system in which we operate today. This new approach aimed to ensure that instead of inspectors regulating businesses against a set of prescriptive and detailed industry-specific regulations, that the responsibility for understanding and managing safety should lie 'with those who were responsible for creating the risks'.[55]

The Robens philosophy explicitly called for a 'broader and more flexible framework' with more worker participation and consultation.[56] It also set out a vision for policy and goal setting at board-level, and 'a more effectively self-regulating system'.[57]

The Robens Report and Robens Philosophy

On 29th May 1970, Barbara Castle, MP and then Labour's Secretary of State for Employment and Productivity, had appointed the committee to carry out an inquiry 'to review the provision made for the health and safety of persons in the course of their employment' and consider whether changes were needed.[58] The Robens Report was the first UK inquiry ever to review the subject as a whole. There had been previous inquiries into sector-specific workplace safety or health (examples include the 1876 Royal Commission on the Factory and Workshop Acts, the 1938 Royal Commission on Safety in Coal Mines, the 1951 Dale Committee of Enquiry on Industrial Health Services) but there had never been a comprehensive review of the subject.[59]

The introduction to the Robens Report noted that 'standards rise in response to steadily rising expectations in society generally'.[60] This observation of societal expectations, especially in the recent aftermath of Aberfan, was important. Fatal accident rates (annual rate per 100,000 people employed) had fallen from 17.5

[54] Ibid, p. 146.
[55] Ibid, p. 147.
[56] Robens, *Safety and Health at Work*, p.151.
[57] Ibid, p. 152.
[58] Ibid, p. v.
[59] Ibid, p. 2.
[60] Ibid. p. 3

at the start of the twentieth century to 4.5 in the decade 1961-1970.[61] But there was a recognition that more work was needed.

The report produced by the committee and delivered in May 1972 was indeed comprehensive and contained a critique of the existing system with reviews and recommendations of wide-ranging provisions including the management of safety and health in the workplace, legislation, regulation, enforcement, public safety, training, trade unions, and occupational health. The report highlighted the excessively 'fragmented' statutory provision, with 'nine separate groups of statutes' administered by five separate central government departments and 'seven separate central inspectorates'.[62] This, the report argued, meant that legislation and technical expertise were compartmentalised and dispersed, which had the effect of denying professional knowledge-sharing across different industries with often very similar hazards. The fragmentation was also an obstacle to the creation of a new, modern legal framework for dealing with health and safety at work. Robens recommended a new, unified statutory framework with highly qualified expertise 'more efficiently organised and deployed from a common pool'.[63] This unified statutory framework was soon realised in the Health and Safety at Work etc. Act 1974, the establishment of the new Health and Safety Commission, and the Health and Safety Executive.

The Health and Safety at Work etc. Act 1974 was intended to be the 'enabling Act', limited to 'matters not likely to require frequent amendment', with more detailed matters 'dealt with within an orderly structure of subordinate instruments that can be more easily amended when necessary'.[64] Robens argued successfully for an explicit statement of the overriding responsibilities of both employer and employee despite this being a statement of existing common law. The HSWA states: 'It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees'.[65] And for employees: 'to take reasonable care for the health and

[61] Ibid, p. 3.
[62] Ibid. p. 31.
[63] Robens, *Safety and Health at Work*. p. 31.
[64] Ibid, p. 40.
[65] Health and Safety at Work etc. Act 1974. Section 2 (general duties).

safety of himself and of other persons who may be affected by his acts or omissions at work'.[66]

HSWA was to be supported by detailed provisions in the form of statutory regulations and voluntary standards and codes. The Robens report and Robens philosophy repeatedly called for more self-regulation, and more statutory voluntary effort:

> Our recommendation that more use should be made of voluntary codes and standards and less of statutory regulations is quite central to the philosophy of this report. Some of those with whom we discussed the general proposition expressed uneasiness that it might be interpreted as a move towards a watering down or relaxation of control; that non-statutory standards and codes might be difficult to enforce in precisely those cases where strict enforcement measures might be needed; and that the results there could be some falling-off in the degree to which adequate standards are actually achieved at workplaces.[67]

The report went on to say that it was not advocating for a slacker approach but recommending a more flexible system in which industry would be encouraged to 'deal with more of its own problems' to allow strict official regulation to be concentrated where it was most needed.[68] This perhaps idealistic premise rested on the belief that 'there is a greater natural identity of interest between "the two sides" in relation to safety and health problems than in most other matters'.[69] Alan Dalton, a prominent campaigner and activist for better health and safety provision, scribbled in his personal copy of the Robens Report, that this belief was in fact, 'rubbish!'.[70]

It is worth briefly explaining Alan Dalton's role and significance to the subject matter. In the 1960s, Dalton, a trained chemist, co-founded 'a loose coalition of radical scientists' called the British Society for Social Responsibility in Science (BSSRS) and was one of the small group who started the *Hazards Bulletin*.[71] Dalton was personally bankrupted in the 1970s when he (and the *Hazards Bulletin*) was sued for libel over his campaigning and publications against the

[66] Health and Safety at Work etc. Act 1974, Section 7.
[67] Robens, *Safety and Health at Work*. p. 46.
[68] Ibid, p. 46.
[69] Ibid, p. 21.
[70] Alan Dalton's personal copy of the Robens Report, p. 21.
[71] Hazards Campaign typed correspondence containing the obituary of Alan Dalton, written by Rory O'Neill, 16 December 2003, Alan Dalton Correspondence and Papers 1981-2002, University of Strathclyde Archives and Special Collections, GB 249 OEDA/F/4/6 (1 of 3).

asbestos industry.[72] In a press release obituary written by Rory O'Neill (also of the *Hazards* movement), Dalton was also cited as being the health, safety and environmental coordinator for the Transport and General Workers' Union in the 1990s.[73] The bankrupted *Hazards Bulletin* was replaced by the *Hazards* magazine, which is still in print and is largely still written by Rory O'Neill. Dalton was connected to, and had correspondence with many of the academics, campaigners and authors cited in this thesis, and was instrumental in the establishment of what became the national Hazards movement.

Criticisms of the Robens philosophy emphasise the weaknesses of self-regulation. Hilda Palmer of the Greater Manchester Hazards Centre, and another lifelong campaigner for workers' health and safety made the following observation during her oral history interview:

> I think there were a lot of things wrong with the HSWA when it was set up, I mean it was based on a lot of sort of false premises, it was based on the idea that workers and employers had exactly the same common interests in health and safety at work which is just utter bollocks isn't it? It's workers' lives and health on the line and it's only employers' money.[74]

Another vocal critic, Pat Kinnersley (who was also later involved in the Hazards campaign) was scathing about the Robens Report and further claimed the TUC was also at fault for relying too heavily on legislative reform to improve workplace safety.[75] Kinnersley, and contemporaries in the movement, such as Alan Dalton, were incredulous that businesses could be trusted to make the right decisions to protect their employees. Kinnersley's criticism included describing this philosophy of trust as a:

> Particularly dangerous form of rot found between the covers of the Robens report on **Health and Safety at Work**. There is, according to Robens, 'a greater natural identity of interest between the two sides of industry in relation to safety and health problems than in most other matters.' This remarkable theory appears to have been accepted by many union leaders, for it reinforces their belief that the elimination of hazards can safely be left to processes of joint consultation [bold in the original quotation].[76]

This is the crux of the Robens philosophy: There was too much legislation that should be unified under a single enabling Act, and there was an over-reliance on

[72] Ibid.
[73] Ibid.
[74] Interview with Hilda Palmer, 2021.
[75] P. Kinnersley, 'Hazards: The Hidden Toll at Work', *International Socialism*, No. 63 (October 1973).
[76] Ibid, p. 9.

prescriptive law, with too little scope for self-regulation under the existing statutory provisions. Regulations and voluntary guidance and codes of practice would provide more flexibility for a new, single central government body to effectively advise and regulate consistently across all industries. The system of occupational health and safety that has operated in the UK since 1974 was designed around these fundamental principles.

The title of this thesis incorporates the words 'post-Robens' because the events and analysis all relate to the period after the introduction of the Robens philosophy. It is important to recognize that the Robens philosophy and HSWA itself were purposefully non-prescriptive and that much of the law relies on the interpretation of what is 'reasonably practicable', a term derived from the 1949 court case, Edwards v National Coal Board. [77] HSWA set out high level duties of employers with a general duty 'so far as reasonably practicable' to protect the health, safety and welfare at work of employees and others who might be affected.[78] The duties of employees were also set out, along with requirements for employers to provide 'safe plant and systems of work', 'necessary information, instruction, training and supervision', a 'safe and well-maintained workplace'.

The other major development that resulted from the Robens report was the establishment of the Health and Safety Commission (HSC) and the Health and Safety Executive (HSE). At the time, the HSC had responsibility for safety regulation with the HSE acting as the enforcement arm. The HSC was later dissolved and merged with the HSE in 2008. As previously noted, numerous Regulations were formed under HSWA, including the European 'six pack' Regulations in 1992. These Regulations are secondary legislation, known as statutory instruments and are largely applicable to any industry rather than being industry specific.[79] Other notable developments included the Control of Substances Hazardous to Health Regulations 1988 (COSHH) and the Control of

[77] The Health and Safety at Work etc. Act 1974, Section 2 (2).
[78] Edwards vs National Coal Board 1949: in summing up, the judge stated that 'Reasonably practicable is a narrower term than 'physically possible' and implies that a computation must be made... in which the quantum of risk is placed in one scale and the sacrifice involved in the measures necessary for averting the risk (whether in time, trouble or money) is placed in the other and that, if it be shown that there is a great disproportion between them – the risk being insignificant in relation to the sacrifice – the person upon whom the obligation is imposed discharges the onus which is upon him'. (Thus, creating the foundation of the risk assessment process as we now know it).
[79] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), p. 150.

Major Hazard Regulations 1999 (COMAH). The primary legislation has, however, remained the same and breaches of health and safety at work tend to be prosecuted under the Health and Safety at Work etc. Act rather than individual Regulations, although some cases do cite specific Regulations, or both the primary and the secondary statutory provisions.

HSWA also contains a clause that provides for the prosecution of both corporate bodies and individual bad actors. Section 37 of HSWA states that:

> Where an offence under any of the relevant statutory provisions committed by a body corporate is proved to have been committed with the consent or connivance of, or to have been attributable to any neglect on the part of, any director, manager, secretary or other similar officer of the body corporate or a person who was purporting to act in any such capacity, he as well as the body corporate shall be guilty of that offence and shall be liable to be proceeded against and punished accordingly.[80]

However, it took more than twenty years for the first custodial sentence to be handed down under this clause. In January 1996 builder Roy Hill was sentenced to three months' imprisonment for failings in relation to a building demolition in which his employees' lives were endangered.[81] Section 37 of HSWA remained a scarcely used legal device throughout the period 1974-2014.

One of the most significant legal developments after the introduction of the HSWA in 1974 was the debate that eventually gave rise to the Corporate Manslaughter and Corporate Homicide Act 2007. Returning to the significance of the Aberfan Disaster, and the lack of prosecution or accountability in the face of damning evidence of foresight and negligence at the time, Johnes and McLean noted that:

> Concepts of corporate responsibility, in and outside the coal industry, were underdeveloped. Thus, despite the evidence to the contrary, the Aberfan disaster did nothing to challenge the picture of disasters as tragic accidents rather than criminal negligence. In recent years, the law's continued view of disasters through this prism has intensified the pain of the victims of Paddington, Southall, Hillsborough, Marchioness, Herald of Free Enterprise and other disasters.[82]

This excerpt was written in 2000, around the time when a string of tragic incidents (including those mentioned in the quotation) had prompted extensive public debates about white-collar crime and corporate accountability. At the end of the

[80] HSWA Section 37: Offences by bodies corporate.
[81] T&G news release, 25 January 1996, *Hazards Bulletin* 1976-2003, University of Strathclyde Archives and Special Collections, GB 249 DAL/2/2 (1 of 3).
[82] M. Johnes, I. McLean, 'Echoes of Injustice', *History Today* (December 2000), p. 28.

period, when David Cameron was threatening to 'kill off' health and safety, he was also downplaying corporate crime by saying that 'we need to realise, collectively, that we cannot eliminate risk and that some accidents are inevitable'.[83] It is true that risk cannot be eliminated entirely, but there also has to be a point at which a company or individual can be held criminally responsible for gross failures that lead to harm. Prior to the 2007 Corporate Manslaughter Act, a successful corporate prosecution relied on the concept of corporate *mens rea*, which assumed that a corporation 'cannot be held liable unless an individual within the organization can be identified with sufficient knowledge of the offence and with a necessary responsibility within the organisation'.[84] This 'identification doctrine', it seems, was incredibly difficult to establish, and historically was applied in only a handful of cases (three cases in the 1940s, one in the 1960s).[85] Tombs and Whyte noted:

> A string of cases in the late 1990s and early 2000s where the identification doctrine was applied, and corporate culpability was openly recognized by the court, [but] there was a failure to apply the principle. Those cases included the sinking of the P&O ferry, [the Herald of Free Enterprise]. [86]

Tombs and Whyte argued that the identification doctrine was an extension of the 'corporate personality' because it established the corporation as a separate legal entity from the directors and managers.[87] This separate personality is a consequence of the veil of incorporation, a point noted by Jacobs:

> Thus, at the heart of UK company law lies a fiction – the concept of a separate legal entity hiding behind a veil of incorporation – the company. This fiction was created by statute to protect those who run companies [from personal liability] through the doctrine of limited liability.[88]

There was a distinct shift in societal expectations around the time of the Aberfan tragedy, which grew in strength throughout the period with each successive 'accident' or 'disaster' adding to the collective sense of outrage at the lack of corporate accountability. This shift, which took place from the late-1960s through

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[83] D. Cameron, 'Health and Safety Laws are Holding Back Business', *London Evening Standard*, https://www.standard.co.uk/hp/front/david-cameron-health-and-safety-laws-are-holding-back-business-7304688.html, 13 April 2012, accessed 15 November 2022.
[84] S. Tombs and D. Whyte, *The Corporate Criminal: Why Corporations must be Abolished* (Abingdon, 2015), p. 90.
[85] Ibid, p. 91.
[86] Ibid, p. 91.
[87] Ibid, p. 91.
[88] A. Jacobs, *Will the New Offence of Corporate Manslaughter Motivate Companies to Prioritise Safety over Profit?* (PhD, University of Birmingham, 2007).

to the late 1980s is one of the factors that makes the modern industrial fatality distinct from earlier workplace deaths.

HSWA was brought in to simplify the huge amount of existing, prescriptive legislation that had built up over 150 years in the UK. It was predicated on the Robens philosophy, which advocated for goal setting and responsibility for risk management at company-level, with worker participation and consultation. The Act and its approach have endured, and workplace deaths have decreased over time. The extent to which regulation was effective over the period depends on who you ask and is further explored throughout this thesis. The ICL Stockline case study in Chapter Seven examines the ways in which inadequate regulation can contribute to workplace fatalities and the Piper Alpha case study in Chapter Four explores the concept of regulatory capture.

The Robens report and HSWA were created in response to genuine problems. Accident rates had been rising and this rise negatively affected productivity in the UK. The existing system of regulation had become outdated and cumbersome with a large section of the workforce excluded from any statutory protections because the piecemeal legislation hadn't caught up with or responded to the rise of the service industry and the existence of non-industrial occupations such as teaching. Finally, the Aberfan tragedy focussed minds and precipitated the establishment of the Robens Committee on Health and Safety at Work.

In the report's section entitled 'what's wrong with the system?', the answer is 'apathy', because 'whatever the total picture the fact is that serious accidents at work are rare events in the experience of individuals'.[89] The committee's belief was that 'more effective safety awareness in industry and commerce can only be developed by an accumulation of influences and pressures operating at many levels – that of the boardroom, the senior manager, the supervisor, the trade unions, the worker on the shop floor'.[90] The premise of the Robens philosophy that there was a 'natural identity of interest' between employers and workers on the issue of worker safety has been heavily criticized (as illustrated in this section), and could be described as both idealistic and unrealistic.

[89] Robens, *Safety and Health at Work*, p. 1.
[90] Ibid, p. 2.

Section 37 of HSWA and legal provision for gross negligence manslaughter meant that mechanisms by which individual miscreants (employers, owners, directors) could be held accountable were in place before the Act and throughout the forty-year period. Yet the system consistently failed to identify and punish corporate criminals whose acts or omissions killed people, except in a handful of cases. This thesis contains the details of six separate events in which almost two-hundred workers lost their lives. There were no successful prosecutions of individuals in any of these cases despite clear evidence of negligence.

Society and Campaign Groups

Whether or not regulation was effective during the period largely depends on who you ask. A jailed director might consider the regulatory system to be incredibly effective, or indeed too punitive. But there is evidence to suggest that the public did not consider regulation to be sufficient or effective, and several campaign groups sought stronger legislation and tougher regulation throughout the period. This section introduces the subject of public attitudes to workplace fatalities and regulation, along with an overview of some of the campaigners who were active during the period.

In 2015, Mike Esbester and Paul Almond undertook a review of public attitudes to health and safety and concluded that 'the public profile of health and safety is [thus] perceived to be poorer now than it has perhaps ever been'.[91] One key area in which 'health and safety' has received the most negative attention has been the perception of 'overspill' where organisations (mainly public bodies, such as schools) have taken an overly risk-averse approach and contributed to perceptions of 'health and safety gone mad', and over-regulation.[92] This feeling of encroachment of overly-zealous health and safety management, outside of high risk industries, was particularly damaging in terms of public opinion in the last ten years of the period to 2014. However, expertise is valued, and safety professionals with higher levels of expertise tended to be more respected, although the profession on the whole is not popular and 'the only thing more disliked than a health and safety jobsworth is a health and safety jobsworth who is in it to make money'.[93] This particular quotation related to the commercialisation

[91] P. Almond, and M. Esbester, 'The Changing Legitimacy of Health and Safety, 1960–2015: Understanding the Past, Preparing for the Future', *Policy and Practice in Health and Safety,* 14 (October 2016), p. 81.
[92] Ibid, p. 90.
[93] Ibid, p. 92.

of the safety industry and the explosion of safety consultants making money from businesses from the 1980s onwards, and the HSE's implementation, in 2012, of the fee for intervention system (FFI), under which inspectors charge businesses an hourly rate for any required interventions. In 2012 the hourly rate was £129, which would be payable by any business where a material breach was found during an inspection, whether the inspector merely followed up with a letter of advice or issued enforcement action such as an improvement notice.

During the forty-year period a collection of closely related campaign groups were formed, working specifically on the need for better worker safety, and increased accountability and justice when workers were injured or killed at work. These campaigns spanned the whole period and developed for differing reasons but there was a significant amount of overlap in the work of the different groups. It was evident during archival research that the main actors were in regular communication and (mostly) united in their common cause. There are four main campaign groups examined in this thesis: The Hazards Campaign (also referred to as the Hazards movement or simply, *Hazards)*, the Simon Jones Memorial Campaign, the Centre for Corporate Accountability (CCA), and Families Against Corporate Killers (FACK).

These four organisations were by no means the only active groups during the period, but they were the most high-profile and certainly represented a significant proportion of the campaigning activity that was taking place. All four groups were closely inter-related and many of the members were involved in more than one group. Much of the work of the Hazards campaign and the records and correspondence of Alan Dalton, who was one of its most prominent members, is stored at the University of Strathclyde archives. The CCA and the Simon Jones Memorial Campaign, whilst no longer active, both retain their websites which contain significant amounts of archived material, press releases and relevant documents. David Bergman of the CCA and Hilda Palmer of Hazards and FACK both provided oral history interviews for this thesis, as did Ann Jones, the mother of Simon Jones who was involved in the Simon Jones Memorial Campaign and who also served on the board of the CCA. Figure 1.4 below shows an example of the front cover of *Hazards* from 1991 illustrating the frustration felt and the lack of corporate accountability for workplace deaths.

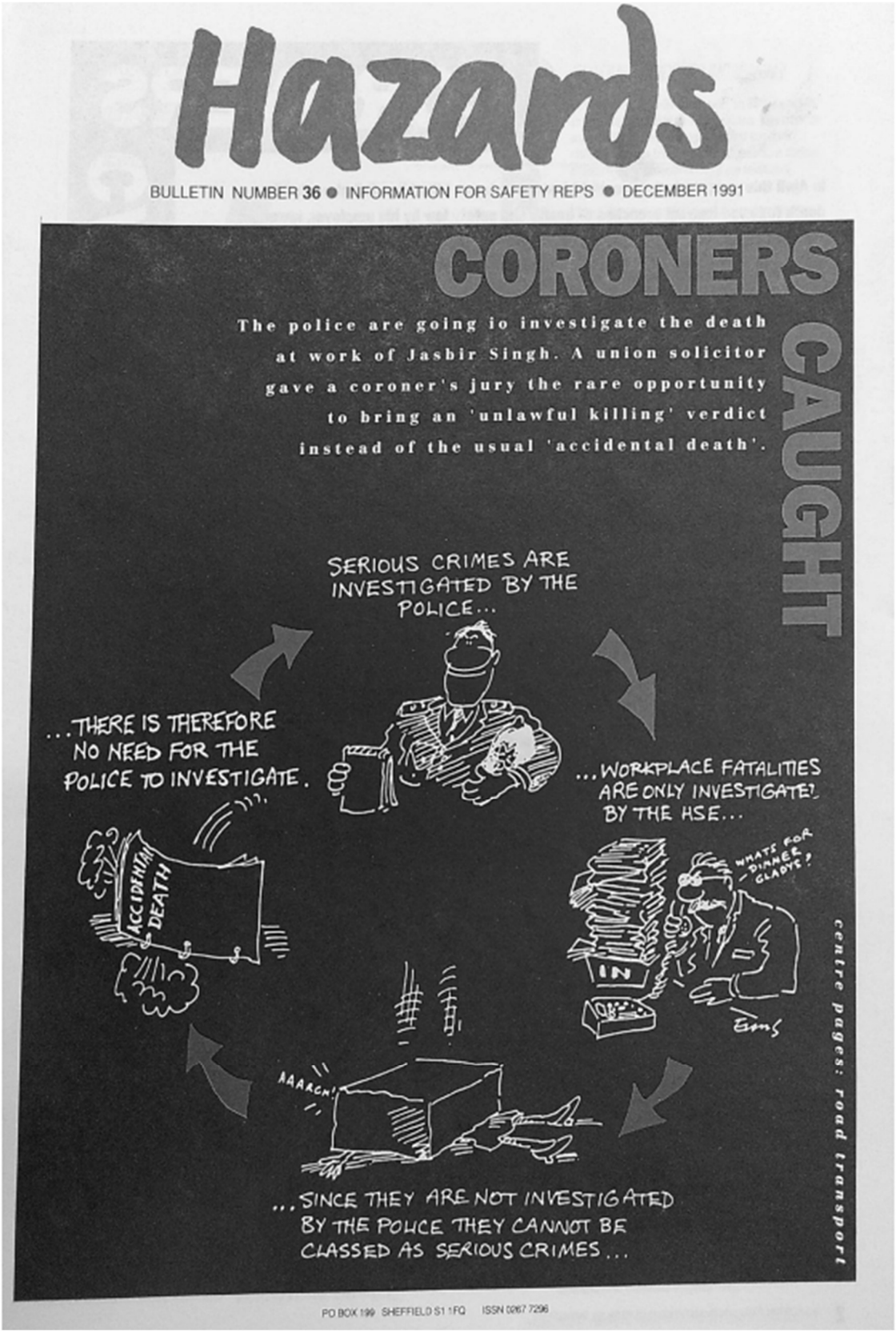

Figure 1.4 – Front cover of *Hazards* December 1991. Hazards Bulletin 1976-2003, University of Strathclyde Archives and Special Collections, GB 249 DAL/2/2 (1 of 3).

Social movement theory warrants a mention at this stage. Social movements are one of the main ways that groups of people in society can use collective action to raise concerns and demand action to affect change. There have been many different types of social movements in history, from the women's suffrage movement to the American civil rights movement, and there is no single agreed definition, but 'social movements and the activities with which they are associated have become an increasingly conspicuous feature of the social landscape'.[94] Alan Scott differentiated between the workers' movement and 'new social movements' by setting out their contrasting features such as the hierarchical nature of the workers' movement in contrast to the network and grassroots nature of social movements.[95] Scott also noted that new social movements are less likely to be focused on a single issue and more 'organised around a range of issues linked to a single broad theme'.[96] This is true of the social movements examined in this study. The Centre for Corporate Accountability and the Hazards Campaign were both broad churches, very much grass roots, with thematic 'constellations of interest'.[97] However, the Simon Jones Memorial Campaign and Families Against Corporate Killers were/are more narrowly focused on the single issue of workplace fatalities, whilst still exhibiting most of the features Scott used to describe new social movements. All the social movements in this study exhibited anti-authoritarianism and 'suspicion of institutionalized forms of political activity', but also 'a high degree of tolerance of political and ideological difference' rather than being partisan.[98]

Social movement theory also provides context for the analysis of the interrelatedness of social movements. Many social movements cause the formation of opposing and allied movements, or spin off movements, as was the case with FACK, which was a spinoff from the Hazards Campaign. This theory can be helpful for 'conceptualizing the interrelations among movements within the cycle, particularly between ''early risers'' – the first to emerge in a protest cycle – and later movements'.[99] It is certainly the case that 'the personnel or organizations of one movement may affect another movement through direct

[94] D. A. Snow, et al., eds., *The Blackwell Companion to Social Movements* (London, 2008), p. 4.
[95] A. Scott, *Ideology and the New Social Movements* (London, 1990), p. 19.
[96] Ibid, p. 26.
[97] Ibid, p. 26.
[98] Ibid, p. 32.
[99] D. A. Snow, et al., eds., *The Blackwell Companion to Social Movements* (London, 2008), p. 532.

contact, or the changes that one movement brings about in the larger social movement sector, culture, or political opportunities may indirectly affect other movements'.[100] Many of the figures in the four main campaign groups discussed in this thesis were or still are involved in at least two of the groups.

The work of these campaign groups features in the case studies, specifically the Simon Jones case study (Chapter Six) which gave rise to its own campaign group, and the ICL Stockline explosion (Chapter Seven) for which an independent inquiry report was written by a group of academics with close ties to the Hazards campaign. Alan Dalton, who campaigned with the Hazards movement, mainly on the dangers of asbestos, is also linked to this thesis in a special way because his personal copy of the Robens Report, with his scribbled notes and exclamation marks throughout, is now part of my own personal collection.

The Occupational Safety Industry and Profession

The final part of the contextual picture relates to the rise of the safety industry and the safety profession. Whilst there were safety professionals in the 1970s, the profession changed beyond recognition over the forty-year period. In 1999 the new Management of Health and Safety at Work Regulations (MHSWR) stipulated a requirement for all employers to appoint at least one 'competent person' to assist with compliance with statutory provisions but the history of the safety profession can be traced back to the industrial revolution, and the establishment of the first factory inspectorates.[101] There was an obvious requirement for the inspectors to have a certain level of technical knowledge to be capable of carrying out their duties.[102] The introduction of the HSWA in 1974 changed the profession because, as Hale and Booth explained:

> Whereas traditionally law had driven the OSH system, the new doctrine was that the law should *underpin* good practice and *promote* best practice. It gave company OSH staff a legal hook on which to hang their advisory role, namely the article requiring companies to have available expert support on setting up and running their SMS' [safety management system].[103]

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[100] Ibid, p. 532.
[101] The Management of Health and Safety at Work Regulations 1999. 7.— (1) Every employer shall, subject to paragraphs (6) and (7), appoint one or more competent persons to assist him in undertaking the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions.
[102] A. Hale and R. Booth, 'The Safety Professional in the UK: Development of a Key Player in Occupational Health and Safety', *Safety Science*, Volume 118 (October 2019), p. 77.
[103] Ibid, p. 81.

Additionally, since the 1970s there has been a significant increase in published research on OSH submitted to a range of peer-reviewed safety journals. Aston University set up the first University-led training for OSH professionals in 1971 and 'from 1972 to 2004 well over 2400 students obtained bachelor's and master's degrees, post graduate diplomas and certificates in OSH from Aston. Of these, some 1500 students were HSE staff. In addition, 43 PhDs were supervised successfully'.[105]

Occupational medicine, as a discipline, also developed significantly during the period. The Association of Industrial Medical Officers (AIMO) was founded in 1935 and academic research into the health effects of work, and the management of those health effects grew steadily in the second half of the twentieth century. This development was summarised by Tim Carter to mark the fiftieth anniversary of the journal now known as *Occupational Medicine*.[106] The history of the journal's contents reveals a body of professionals striving to define their discipline and gain recognition as a medical speciality. Whilst industrial diseases are not in the scope of this study, the same organisational failures to control workplace hazards often underpinned both sets of deaths. Employers that failed to carry out the required air quality exposure monitoring or ergonomic adjustments (leading to lung disease or musculoskeletal damage) were negligent, just as those employers who failed to control explosive atmospheres or flammable substances were negligent.

The Institution of Occupational Safety and Health (IOSH) was founded in 1945 (initially under a different name, the Institution of Industrial Safety Officers) and is the Chartered body for Health and Safety professionals. The growth of IOSH's sphere of influence can be traced from its origins as an association of safety officers (a division of the Royal Society for the Prevention of Accidents), in 1945, to gaining a Royal Charter in 2002 and helping to establish the UK Occupational Safety & Health Consultants Register (OSHCR) in 2011.[107] It is a truly global organisation with a presence in 130 countries. The advent of the OSHCR at the end of the period could be seen to have signified the final step in the formalization

[105] Ibid, p. 82.
[106] T. Carter, 'The Three Faces of Occupational Medicine: Printed Paper, Problems in Practice, and Professional Purpose', Occupational Medicine 50:7 (September 2000), pp. 460-470.
[107] 'Who We Are', *IOSH*, https://iosh.com/about-iosh/who-we-are/, accessed 16 November 2022.

of the safety profession in that it (along with the membership levels of IOSH) provided standardized measures of legitimacy and expertise within the industry. The purpose of the OSHCR, which has over a thousand UK consultants listed on the register, is to provide businesses with a place to find competent health and safety advice from qualified professionals. It is important to note that IOSH is just one of eleven approved professional bodies whose membership is a prerequisite for acceptance onto the OSHCR. These various associations and training providers include: British Occupational Hygiene Society (BOHS); Chartered Institute of Environmental Health (CIEH); Institute of Ergonomics and Human Factors (IEHF), reflecting a breadth of specialisms within the profession. However, IOSH, with the largest membership, has become the established body for OSH generalists, with most of the other organisations representing specialisms.

The register consists of mostly self-employed consultants, but similar standards and requirements are now commonly applied in the recruitment of employed health and safety roles. A Chartered Member of IOSH would usually have a relevant degree-level qualification, several years' experience in health and safety management, and must have completed a process of assessment and peer review interview to gain the status. A Technical Member would typically hold a Level 3 qualification, have at least two years' experience and usually fill 'coordinator' or 'assistant' level roles. This formalised structure and varying levels of competence and qualification enable businesses to select suitably competent people to fit the risk profiles of their organisations. Further, more specialist qualifications would be required for specific industries such as the nuclear industry or high hazard chemical manufacture.

Developing alongside IOSH was the independent National Examining Board for Occupational Safety and Health (NEBOSH), which was established in 1979 to set the syllabus for the certificate and diploma qualifications and accredit training providers to deliver the courses. The first Institution of Industrial Safety Officers (IISO - earlier name for IOSH) examination was taken in 1960 by seven candidates. Today, 35,000 people take NEBOSH exams every year, worldwide.[108]

[108] A. Hale and R. Booth, 'The Safety professional in the UK: Development of a Key Player in Occupational Health and Safety', *Safety Science*, 118 (October 2019), p. 77.

In the case studies examined in this thesis, there is very little mention of safety professionals. The coal mines did have a system of safety representatives and the Mines and Quarries Act contains extensive, prescriptive safety requirements. The offshore oil and gas industry had specialist safety requirements with specific training and management provisions to manage the risks. The dock in Shoreham where Simon Jones was killed did not have any form of safety management or representation in place. ICL Stockline opposed union activity and did not appear to have had a dedicated safety professional working in the business. Interactions with the HSE were with members of the senior management team and there was no process for worker consultation. Hickson and Welch had a strong union presence and a system of representation from trained union safety representatives, but no appointed health and safety professional. The absence of trained safety professionals does not necessarily mean there would have been a deficiency of knowledge and skills to manage the risks. The coal mining industry, for example, had specialist ventilation officers who were trained to manage the specific risks of explosive and noxious gases underground. That said, and as the case study chapters will demonstrate, there were acts and omissions, individual and collective, that contributed to each of the fatal incidents. Whether or not the presence of a dedicated, trained safety officer or manager would have changed the outcomes in any of the cases will never be known.

Methodology

The remainder of this chapter introduces the methods and sources used to address the thesis' research questions and outlines the structure of the thesis. The methodology for this study incorporates three main strands, these being oral history interviews, archival research, and a case study approach. This is an inductive study, driven by evidence rather than any motivation to confirm or falsify a particular ideology or theory. The adoption of a case study approach allowed for the inclusion of a wide range of primary and secondary source material to be cross referenced, corroborated, and analysed. The purpose was to apply a historical understanding to the application of safety practices over the period, providing new insights into the subject with research questions and methods that build a new understanding of the modern industrial fatality. The logic followed during this process was 'from the ground up' and research questions changed during the process, fitting with the method in that 'the researcher follows a path of analysing the data to develop an increasingly detailed knowledge of the topic

being studied'.[109] As noted by Cresswell and Poth, 'all researchers bring values to a study, but qualitative researchers make their values known in a study', and 'actively report their values and biases'.[110]

The project was undertaken on a part-time basis, alongside working as a chartered health and safety professional in the manufacturing sector. Research and work often informed one another, and sometimes overlapped, for example in the subject of liquefied petroleum gas (LPG) safety, which was completely overhauled as a direct result of the ICL Stockline explosion in Chapter Seven. As one of the case studies included in my thesis, and an area of industrial safety I regularly manage at work, there has been a beneficial symbiosis between work and study.

Figure 1.5 below, taken from Cresswell's *Qualitative Inquiry and Research Design*, illustrates how my chosen methods fit with the overall aims of this research. Oral history complements the research aim of understanding the essence of the lived experience, from the perspective of workers within organisations and campaigners outside. This phenomenological inquiry is then situated within the five case study chapters, supporting an in-depth examination of cultural and societal factors around the specific events chosen for analysis.

[109] J. Creswell and C. Poth, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (London, 2017), p. 21.
[110] Ibid, p. 21.

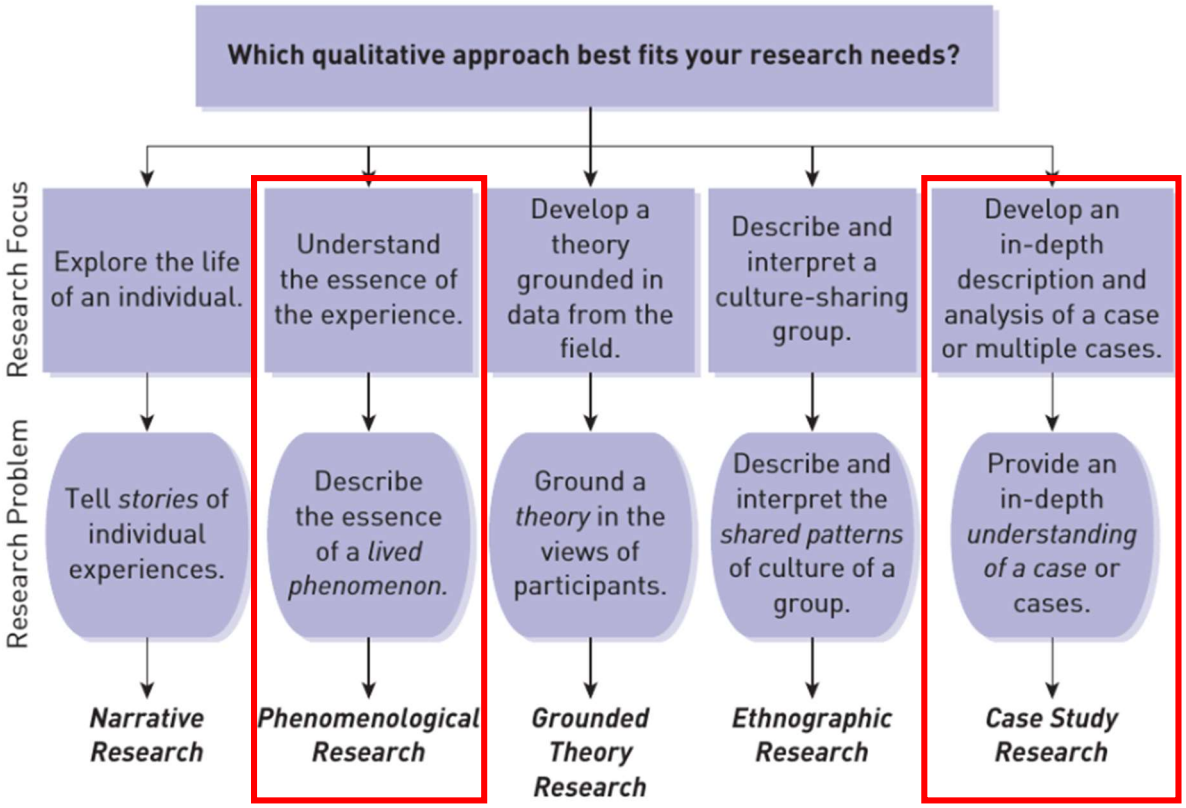

Figure 1.5 - Which qualitative approach best fits your research needs? J. Creswell and C. Poth, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (London, 2017), p. 67.

Oral History

The oral testimonies in this thesis provide a richness and value that couldn't have been achieved with any other method, and a depth of understanding that would not have been reached otherwise. All the included quotations from the oral history interviews are expressed verbatim, with pauses, dialect and slang written exactly as spoken by the participant. However, oral history as a source of historical evidence has been analysed and debated extensively, and it is largely accepted that memory evidence calls for careful treatment, in part, because the interviewee is simultaneously trying to recall events and memories, whilst also trying to make sense of those experiences and construct a narrative. Memories can be distorted over time and can be influenced by the media and public discourses in a phenomenon described by Thompson as the 'cultural circuit'.[111] Memory can be notoriously unreliable, and the autobiographical nature of oral history interviews means they are affected by the same potential pitfalls as other primary material. That said, the more traditionally accepted and 'reliable' evidence such as census

[111] P. Thompson, *Voice of the Past: Oral History* (Oxford, 2000), p. 124.

data, has also been called into question and contains its own weaknesses as source material. Thompson argued that the caution exercised when dealing with memories and oral history ought to be similarly applied to the examination of documented evidence:

> Exactly the same caution ought to be felt by the historian faced, in some archive, by an array of packaged documents: deeds, agreements, accounts, labour books, letters, and so on. These documents and records certainly do not come to be available to the historian by accident. There was a social purpose behind both their original creation and their subsequent preservation.[112]

Other analyses of the oral history method highlight different challenges, including those of transcription. Not only is transcription time-consuming, but in converting the spoken word into the written word, the transcriber is changing the meaning and flow of the oral element in a way that cannot be unscrambled by the reader. Potential pitfalls include the insertion of punctuation, which is added during transcription as 'always the more-or-less arbitrary addition' of the transcriber.[113] There is additional difficulty in conveying subtleties such as cadence, tone of voice, and length of pauses, all of which potentially hold great significance and 'can only be perceived by listening, not reading'.[114] These limitations exist alongside the fact that it is the historian who selects participants and shapes the testimony with questions, then chooses which excerpts to cite. However, 'oral histories are a necessary (not a sufficient) condition for the history of the nonhegemonic classes'.[115] That is to say, oral history amplifies the voices of those who have been absent from the majority of the history until relatively recently. None of the oral history participants in this study represent figures of authority such as company directors, HSE inspectors or judges. This is partly because these voices are already well represented in official documents such as public inquiries, but also because there simply weren't any volunteers from this category.

Historian Arthur McIvor, who is the Director of the Scottish Oral History Centre, wrote in his *Working Lives* project of oral history 'providing a bridge of sorts

[112] Ibid, p. 124.
[113] R. Perks, and A. Thomson, *The Oral History Reader* (London, 2015), p. 50.
[114] Ibid, p. 50.
[115] Ibid, p. 56.

between the present and the recent past'.[116] His study of work and its meanings incorporated a wide range of sources, including work-life oral testimony to build a contemporary social history. In doing so, he was addressing a 'recurring theme in sociological literature' that 'current debates about the trajectory of work in Britain and the developed world are distorted by a lack of historical perspective'.[117] This thesis, with its oral history elements, makes a similar contribution in providing a bridge to the recent past, and to the historical and sociological understanding of work, through the examination of industrial fatalities.

This project began in May 2019, so the Covid-19 pandemic disrupted plans for archival research and oral history interviews which meant that most interviews were conducted remotely. Ethics approval for the oral history interviews was granted through the *Converis* system, in line with Sheffield Hallam University's ethics policy, and potential research participants were identified and approached. All participants were provided with an information sheet and consent form and were made aware they had the right to withdraw consent at any time. Ethics approval was relatively straightforward because all the participants were adults who were able to fully understand and give their explicit informed consent to the process. The potential sensitivities of discussing events and traumatic experiences associated with industrial fatalities were addressed in the participant consent form to ensure a clear understanding of the subject matter and to enable participants to prepare themselves and make clear any topics they did not wish to include.

In late 2019, I attended a training session with the Oral History Society, a national organisation facilitating and developing the use of oral history which helped with preparation and planning for the interviews. The Oral History Society journal, *Oral History* publishes articles on a wide range of subjects, including oral histories of work, such as *'Dust to Dust: Oral Testimonies of Asbestos-Related Disease on Clydeside, c1930 to the Present'*, and '*I Saw It Coming: Worker Narratives of*

[116] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 4.

[117] Ibid, p. 4.

Plant Closings and Job Loss'.[118] As such, my research can be situated or aligned with similar oral history inquiries of working lives.

Semi-structured oral history interviews were conducted with a small, non-random selection of individuals whose own experiences contributed to the rich narrative and phenomenological dimension of the study. Abrams argues that it is considered 'important for the oral historian to adopt an open, informal and semi structured approach to the interview, encouraging creative, discursive and lengthy replies'.[119] This approach was the natural choice and it engendered a natural flow of memories, thoughts and anecdotes from the participants. Narrative itself is described as 'one of the ways by which people make sense of experience and communicate it to others'.[120] These narratives are constructed by the respondents and researchers must 'approach testimony alert to these issues'.[121] The limitations of such a small and non-random selection of respondents are understood. However, their contributions provide insights that hugely complement the other methods employed.

The interviewees fell into two categories: First, the worker. These participants worked in heavy industry during the period 1974-2014 and were able to provide intimate and detailed personal descriptions of their working lives, the organisational cultures they experienced, and in some cases, the fatalities and disasters they witnessed or were involved in. The second category is the activist. These participants were heavily involved in campaigning for worker safety, corporate accountability, and legislative reform in the form of corporate killing laws and specific provision for directors' duties.

My research questions (which formed the basis of the semi-structured interviews but were not necessarily asked directly) were undoubtedly sensitive. These research questions cut across vast areas of subject matter, but they all intersect at the point where a person or multiple people lost their lives at work. The victims of industrial fatality are at the core of this research, and every aspect of the events and theory examined, is viewed in the context of an event that killed a worker.

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[118] R. Johnston and A. McIvor, '"Dust to Dust": Oral Testimonies of Asbestos-Related Disease on Clydeside, c1930 to the Present', *Oral History*, 29:2 (October 2001), pp. 48-61; T. K'Meyer and J. Hart, *I Saw It Coming: Worker Narratives Of Plant Closings and Job Loss* (New York, 2009).
[119] L. Abrams, *Oral History Theory* (Abingdon, 2010), p. 124.
[120] Ibid, p. 106.
[121] Ibid, p. 106.

Naturally, this meant that some of the topics in interviews were potentially upsetting, and this was anticipated at the planning stage and factored into the ethics application and risk assessment.

A case-study approach was also a key part of the methodology, and an initial aim was to have at least one oral history participant with a direct connection to each of the five case-studies. It was not possible to find a participant for the Piper Alpha case study; possibly because there were so few survivors, and the communities involved were so traumatised. However, there have been other excellent oral history studies, such as Catherine O'Byrne's *Remembering Piper Alpha* project, which have been incorporated into this research.[122]

In the activist category I was very fortunate to secure an interview with David Bergman, who founded and ran the Centre for Corporate Accountability in the 2000s. Another interviewee, Hilda Palmer, spent her life campaigning for safer workplaces in the Hazards campaign and FACK, and is formidable and exceptionally knowledgeable. Interviewing these subject matter experts who have spent their lives advocating for workers and their families was both a responsibility and privilege.

Archival Research & Publications

This research relies heavily on several published sources including national and local newspapers, parliamentary papers, HSE publications and websites. The relatively recent nature of the subject matter meant that a large amount of relevant material was available digitally.

Early in the process of researching this thesis it became clear that two archival collections would be of particular interest: The Modern Records Centre in Warwick, and the University of Strathclyde Archive. Copies of the TUC's annual proceedings were also accessible at the University of Sheffield's Western Bank Library. Material was selected from Archives Hub by using search terms from the general, i.e., 'workplace death', and 'industrial fatality', to the more specific; 'hazards campaign', 'Simon Jones', and 'Golborne colliery'. As with the oral history element of my research, archival research was made more challenging by the effects of the Covid-19 pandemic, but it was possible to work around

[122] C. O'Byrne, 'Remembering the Piper Alpha Disaster', *Historical Reflections*, 37:2 (June 2011), pp. 90-104.

restrictions and view all necessary material. The material from the Modern Records Centre aligns loosely (in terms of content) with the workers' oral history testimony, and the material from Strathclyde is concerned with social activism, the Hazards campaign, and the work of people like David Bergman and Hilda Palmer.

The timing of the data collection phase of this project meant there were some limitations on in-person archive visits. Despite this, it was possible to make several visits to the Modern Records Centre in Warwick and the University of Strathclyde Archives. The archival material accessed during visits to the Modern Records Centre included minutes from Trades Union Congress (TUC) meetings, joint safety committees, and joint accident prevention advisory committees. These documents span the period of the thesis in full and provide a valuable and detailed insight into contemporaneous debates and concerns within heavy industry and its unions. The documents accessed at the University of Strathclyde archive mainly consisted of correspondence and publications from the Hazards Campaign, a grassroots movement with centres all over the UK. These documents included newsletters, meeting minutes, private letters and emails between interested parties, conference proceedings, and press releases. They contain extensive commentary and debate on specific cases involving workplace fatalities and elucidate the dynamics of the Hazards Campaign throughout the period in its work to make employers accountable and workers safe.

These documents all have their own limitations and when examining primary material there is always an understanding that individual writers had their own biases and motivations, and that many published sources will have been carefully sifted and curated, for example, by newspaper editors. But according to the nineteenth century German historian Droysen, the significance of the primary source material must be revealed through the interpretation of the historian.[123] Further, that historians 'should be concerned with the results of thoughts and plans of the past which had found expression in historical actions'.[124] That is to say, Droysen did not envisage the facts (of the source material) speaking for themselves because they 'stood for the past', but that through historical inquiry

[123] M. Dobson and B. Ziemann, eds., *Reading Primary Sources: The Interpretation of Texts from Nineteenth-and Twentieth-Century History* (Abingdon, 2009), p. 27.
[124] Ibid, p. 27.

and modern interpretations, the past can inform the present.[125] To expand upon this point further, 'only traces from the past that are deemed legitimate, or that were considered to be of value… will find a place in the archive'.[126] Additional 'filtering' occurs when individuals choose to donate to archives and naturally select items that best fit their own interests or agendas.[127] And to further complicate matters, the guides to archival material are 'often organized in ways that direct researchers to particular material'.[128] Thus the limitations of the archives are recognized, understood, and accounted for.

This links with the oral history interviews conducted with Hilda Palmer and David Bergman, both of whom were in regular attendance at local and national *Hazards* meetings and whose names appear frequently in publications and minutes. Alan Dalton was also part of this circle, and there is a special collection at Strathclyde containing his personal papers and correspondence. Alan Dalton has passed away, so it was not possible to interview him, but it was serendipitous that I was able to purchase his personal copy of the Robens Report, which contains his hand-written annotations throughout, giving an incredible insight into his thoughts and reactions to it at the time of publication.

Case Study Approach

Oral history testimony was used alongside a multiple case study approach, the benefits of which can be summarised by this passage from Robert Yin's book on case study methods: 'The case study is the method of choice when the phenomenon under study is not readily distinguishable from its context'.[129] Yin's examples of the types of study that benefit from the case study approach are, 'a community organisation and its neighbourhood, the implementation of personal computers in schools, and a manufacturing firm and its marketplace'.[130] All of these examples involve an event or phenomenon taking place within a complex social structure or organisation. The industrial fatality in modern Britain fits this model and therefore lends itself to an explanatory case study method. That is, a study that 'presents data bearing on cause-effect relationships – explaining how

[125] Ibid, p. 26.
[126] M. Donnelly and C. Norton, *Doing History* (London, 2011), p. 131.
[127] Ibid, p. 132.
[128] Ibid, p. 132.
[129] R. K. Yin, *Applications of Case Study Research* (London, 2003), p. 4.
[130] Ibid, p. 4.

events happened'.[131] However, it is important to make the distinction between accident causation in the proximate sense (such as the immediate cause of an explosion) and the subject of this study, which is the cause-and-effect relationships within society and organisations that enable an industrial fatality to manifest. It is also important to note that statistical data are vital components of the big picture, without which it would not be possible to understand trends in workplace accidents or prosecutions, for example. According to Cresswell, 'the hallmark of a good qualitative case study is that it presents an in-depth understanding of the case', and that this is accomplished through the collection and integration of many varied sources of data.[132] The case studies in this thesis incorporate a diverse selection of material including archival, newspapers, interviews, inquests, parliamentary proceedings, and secondary literature. The inclusion of five case studies within the research project is a 'collective' or 'multiple' case study approach, where multiple cases are used to illustrate the issues.[133]

The case studies that were selected for inclusion in this research were chosen for a number of reasons. There are five case studies each dealing with a single event, except for the first case study which covers two similar events: the Houghton Main and Golborne Colliery explosions. The case studies span the full time period considered in this thesis, with the first taking place in 1974 and the last in 2004. The table below gives a brief overview of each of the case studies.

[131] Ibid, p. 20.
[132] J. Creswell and C. Poth, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches* (London, 2017), p. 98.
[133] Ibid, p. 99.

Overview of Case Studies.

	Houghton Main & Golborne Collieries **Chapter Three**	Piper Alpha **Chapter Four**	Hickson & Welch **Chapter Five**	Simon Jones **Chapter Six**	ICL Stockline **Chapter Seven**
Month/Year	June 1975 & March 1979	July 1988	September 1992	April 1988	May 2004
Number of fatalities	5 & 10	167	5	1	9
Company	NCB	Occidental	Hickson & Welch	Euromin & Personnel Selection	ICL Plastics
Regulator	HM Mines Inspectorate	Department for Energy	HSE	HSE	HSE
Regulatory capture?	Somewhat	Yes	No	No	No (but a conflict of interest with LPG supplier)
Safety culture	Prescriptive	Pathological/stage one	Goal setting/stage two	Pathological/stage one	Pathological/stage one
Preventable	Yes	Yes	Yes	Yes	Yes
Foreseeable	Yes – history of firedamp explosions.	Yes – warning from Red Adair, high risk operations, previous incidents.	Yes – warnings from technician, previous explosions, CIMAH site.	Yes	Yes – LPG highly flammable and repeated warnings from HSE/LPG supplier
Prosecution of company?	No	No	Yes (with fine)	Yes (with fine)	Yes (with fine)
Prosecution of individual?	No	No	No	Yes, unsuccessful	No

The industries involved in the chosen case studies were underground coal mining, offshore oil and gas, chemical manufacture, and dock work. Most of the case studies involved fire and explosion, which was not an intentional link, but transpired by chance in the selection of relevant and significant cases to examine. Each case study was selected for different reasons which are detailed in the relevant chapters and set against the appropriate theory and secondary literature, to ensure that 'lessons from the case study will more likely advance knowledge and understanding' of the topic being examined.[134] Before embarking upon this research, I didn't know how the oral history elements would align with my other methods, but sections of my interview transcripts have been easy to weave into the case studies and the two methods have complemented one another hugely.

Thesis Structure

Chapter 2 provides a review of the literature relevant to this thesis and is followed by five case study chapters, presented in chronological order.

Chapter 3 examines two coal mine explosions that happened in the 1970s, just four years apart. These tragedies at the Houghton Main Colliery and Golborne Colliery occurred at the very beginning of the period covered by this thesis. In the 1970s the coal industry was in decline, and the new Health and Safety at Work etc. Act 1974 was in its infancy. The examination of these events in the context of the new regulatory landscape and contemporary attitudes and standards sets the scene by introducing the key themes to be explored throughout the thesis.

Chapter Four is an examination of the Piper Alpha Disaster, a catastrophic oil rig explosion in the North Sea that happened in 1987, killing 167 men. This case study provides an examination of some of the technical aspects of safety management, including shift handovers and permits to work, as well as providing an overview of regulatory capture.

Chapter Five looks at the jet fire at the Hickson and Welch chemical processing plant in West Yorkshire in 1992. This case study provides insight into a company that appeared to have some strong safety systems and sincere commitment to worker safety. However, an in-depth analysis reveals that there were weaknesses and flaws in the company management structure and procedures which ultimately led to the fire that killed five people.

[134] Ibid, p. 4.

Chapter Six is somewhat distinct from the other case studies in that the subject is a single fatality. This chapter explores the tragic death of Simon Jones, who was killed on his first day at work on Shoreham Docks in 1998. This case study builds on the themes already introduced in earlier chapters, whilst also further exploring social movements and activism, including oral history interviews with some of the key proponents for corporate accountability and workplace safety standards.

Chapter Seven is the final case study in this thesis and examines an LPG gas explosion at ICL Stockline Plastics in Glasgow in 2004. This case study highlights serious failings by the business, compounded by a failure of regulation that enabled the management of ICL to avoid taking necessary actions to make the site safe. This case study includes material from the official public inquiry and additional insights from an alternative inquiry report created by a multidisciplinary group of academics who collected oral testimony from survivors to build a picture of the culture within the business.

Finally, Chapter Eight provides a summary and conclusion, drawing together the themes explored in the five case studies, and offers a view on the implications of this thesis for future research and for industry.

Conclusion

Some of the events examined in this thesis have been very well explored from a psychological or socio-legal perspective, or already have large bodies of historical research dedicated to them. For example, the introduction of HSWA (and other regulatory developments), the role of trade unions in safety at work, and specific incidents, like the Piper Alpha disaster have been researched and analysed extensively. My research introduces a new angle, by delving into the context of socio-economic, organisational, legal, ethical, and behavioural factors. Thus, creating a new interface between the industrial safety industry and historical research and helping to address the lack of literature in this area.

The value of this approach is that it contributes to the ‘how and why’ of industrial fatalities, whilst also creating opportunities for knowledge exchange in historical research, the safety industry and policy development. This study also represents a new contribution to the historiography of industrial safety. By examining organisational factors and the *management* of safety through case studies, oral

history and archival material, it applies the frameworks and theory of safety management to the phenomenon of industrial fatality. This chapter has provided an overview of the forty-year period as it relates to the subject of this thesis and summarised the methodology. Each of the case studies provides a detailed analysis of the contextual factors surrounding events, as well as a crucial examination of cultural factors and worker experiences.

There is precedent for a study of this nature to influence and steer future policy direction and this thesis offers further opportunity of this nature. The History and Policy Project, a national network of over 500 academic historians providing historical perspectives on today's policy issues, exemplifies how a better understanding of history can directly help shape policy, by creating opportunities for historians, policy makers and journalists to connect. The premise of the History and Policy Project's work is that 'Those grappling with complex policy issues today need to understand how and why previous decisions were made; and to assess evidence and evaluate a range of policy options with the aid of historians' research'.[135]

Health and Safety bodies including the HSE and IOSH also conduct and fund research that helps shape today's safety industry, but the distinct lack of historical research in this area represents a missed opportunity. It is clear to me, as I have one foot in each world, how vital historical study is to the future of industry.

[135] 'Who We Are', *History and Policy*, http://www.historyandpolicy.org/who-we-are, accessed 4 March 2023.

The facts surrounding the events considered in this thesis were mostly established through extensive investigations and public inquiries. These documented proceedings provide empirical evidence upon which to build qualitative case studies. There is a rich body of literature concerned with labour history and health at work, including the often-fatal effects of workplace exposures to various chemicals and dusts. This thesis interacts with this literature, and is also informed by law, sociology, politics, psychology, organisational culture, and occupational safety. This thesis contributes to these various areas of study using the aims and research questions set out in the Introduction, and with the incorporation of the key themes of political and social factors, regulation, and organisational factors in each of the case studies. A separate literature review chapter was a necessary addition because of the interdisciplinary nature of this study and the breadth of material covered.

The reason why this thesis addresses such hitherto unexplored academic territory lies in my career as a health and safety practitioner in the industrial sector. More specifically, earlier in my career I worked for an American company that had a global Fatality and Serious Injury Prevention program.[136]

This approach is unorthodox, especially in the UK, where the Bird's Triangle model (which is examined later in this chapter) has dominated safety management and promotes the reduction of minor incidents and unsafe behaviours with the philosophy that in doing so, serious accidents can be prevented from manifesting.[138] Fatality prevention turns this model on its head and asks the question, *how are we most likely to kill someone in this business?* It is a courageous approach for several reasons but mainly because identifying and addressing the most dangerous aspects of an industrial workplace is often complex and expensive. In my working life I apply this theory regularly; always looking for the highest risks and looking at ways to eliminate or mitigate them.

[136] 'Health and Safety Management at Arconic', *Arconic.com*, https://www.arconic.com/documents/42106/101790/Arconic-HS-Statement.pdf#:~:text=Reducing%20higher%20risks%20including%20Fatality%20and%20Serious%20Injury,status%20of%20action%20plans%20to%20minimize%20the%20risks. accessed 23 April 2023.

[138] J. Reason, *Managing the Risks of Organisational Accidents* (Abingdon, 1997), p. 224.

The application of this mindset, in my professional opinion, is key to preventing serious and fatal accidents.

What is an Industrial Fatality?

The terms 'workplace fatality', 'occupational fatality' and 'industrial fatality' broadly refer to workers being killed by their employment. These terms (and the data behind them) refer to all workplace fatalities, whether caused by a sudden traumatic injury or a long-term fatal health effect (such as mesothelioma) from exposure at work.[139] Whilst there are some differences in how these deaths are recorded in different countries, these figures usually exclude road traffic accidents on public highways but include vehicular incidents that take place on-site. For example, a worker being crushed by a truck on a construction site would be included, but the same worker dying in a collision on the motorway in the same vehicle would typically be counted separately. The terms 'workplace', and 'occupational' imply the inclusion of all types of work, whereas the term, 'industrial' excludes clerical, office-based roles, and other non-industrial sectors such as healthcare or education.

There are some studies that have looked at the subject of workplace fatalities, including Mendeloff and Staetsky's comparative study from which the table below was taken. It compares fatality rates in the UK from 2005 to 2007 and the US for 2006.

TABLE I. Comparison of Work Fatality Rates in the US and UK, Selected Sectors

	UK workers	US workers
	Fatality rate per 100,000	
Manufacturing	0.97	2.08
Construction	3.17	9.03
Hotels and restaurants	0.25	0.53

Figure 2.1 - Comparison of workplace fatality rates in the US and UK, selected sectors. J. Mendeloff and L. Staetsky, 'Occupational Fatality Risks in the United States and the United Kingdom', *American Journal of Industrial Medicine*, 57:1 (January 2014).

[139] J. Mendeloff and L. Staetsky, 'Occupational Fatality Risks in the United States and the United Kingdom', American Journal of Industrial Medicine, 57:1 (January 2014). p. 6.

This study compared fatality rates in three different sectors in the UK and US. Manufacturing and construction fall into the industrial category, whereas hotels and restaurants do not. These figures include both deaths from accidents and deaths from industrial diseases. Similarly, a 2017 book by lawyer Johnathan Karmel called, *Dying to Work: Death and Injury in the American Workplace*, examined why 'the risk of workplace death is much greater than dying in a plane crash, or being a victim of a terrorist attack', but that this risk is 'hiding in plain sight' while governments and societies worry and spend money on the less prevalent (but more publicised) risks, such as terrorism.[140] Karmel's book included all work sectors and specifically noted how many workplaces that have not traditionally been recognised as dangerous are in fact, responsible for a significant amount of deaths in America.[141] Karmel's book examined both industrial diseases and fatal injuries, with one chapter dedicated solely to the latter. Literature around workplace fatalities tends to encompass all types of deaths, most of which are/were from industrial diseases. Some studies take a specific and detailed approach to certain industrial diseases. For example, Geoffrey Tweedale and Sue Bowden's study on Byssinosis in the cotton industry, or McIvor's work on asbestosis.[142] Other labour historians have focussed on welfare and occupational health, such as Vicky Long's book, the *Rise and Fall of the Healthy Factory*, and her research on disability and mental health.[143]

Karl Figlio traced the conceptualisation of accidents from early commentaries which framed them as symbolic, cosmological, and 'expected', through the sixteenth to nineteenth centuries during which, the growth of capitalism, legalisation and eventually, statistics, brought about the 'normalisation' of the

[140] J. Karmel, *Dying to Work: Death and Injury in the American Workplace* (New York, 2017), p. 2.
[141] Ibid, p. 1-2.
[142] S. Bowden and G. Tweedale, 'Mondays without Dread: The Trade Union Response to Byssinosis in the Lancashire Cotton Industry in the Twentieth Century', *Social History of Medicine*, 16:1 (April 2003), pp. 79–95; A. McIvor, 'Industrial Heritage and the Oral Legacy of Disaster: Narratives of Asbestos Disease Victims from Clydeside, Scotland' in I. Convery et al., eds., *Displaced Heritage: Responses to Disaster, Trauma, and Loss: 16,* (Woodbridge, 2014), pp. 243-250.
[143] V. Long, *The Rise and Fall of the Healthy Factory: The Politics of Industrial Health in Britain, 1914-1960* (Basingstoke, 2011); V. Long, 'Disability and Disabled People', in N. Robertson, J. Singleton and A. Taylor, eds., *20th Century Britain: Economic, Cultural and Social Change* (London, 2022), pp. 202-215; V. Long. 'Rethinking post-war Mental Health Care: Industrial Therapy and the Chronic Mental Patient in Britain', *Social History of Medicine*, 26:4 (March 2013), pp. 738-758.

accident.[144] In earlier writings, accidents were construed as the product of divine intervention as a punishment for wrongdoing or earthly sins. The historiography of earlier writings and conceptualisations of accidents provides additional context, and background for some of the more in-depth discussions later in this chapter. Examples of early conceptualisation of disasters and accidents can be found in Figlio approaches the subject from a psychological point of view, as a scholar of psychosocial studies, although a significant proportion of his work is historical in nature, with an emphasis on memory and oral history. Other useful secondary literature on the subject of early conceptualisation of accidents and disasters can be found in the book, *Historical Disasters in Context*.[145]

Roger Cooter and Bill Luckin set out some of the historiographical challenges of this subject in their edited collection, *Accidents in History: Injuries, Fatalities and Social Relations,* in which they highlighted the lack of attention accidents have received as a historical phenomenon.*[146]* According to Cooter and Luckin, there was a 'too frequent equation of a social history of the accident with the history of occupational health', and a disproportionate focus on the institutions, which has 'been allowed to force out the experiential'.[147] This thesis and its examination of industrial fatalities separates the fatal injury from the wider subject of occupational illness, and is explicitly phenomenological, thus providing an important contribution to the field.

This study also recognises and draws upon the significant body of literature that broadly addresses welfare at work, occupational health, and industrial safety in general. However, whilst there are certainly overlaps when looking at welfare, health, and industrial disease, this study is strictly concerned with sudden, traumatic fatal injuries in industrial settings in Britain. Industrial disease is not in scope, and non-industrial settings are not in scope. Hence the choice of the term, *modern industrial fatality*.

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[144] K. Figlio, 'How does Illness Mediate Social Relations: Workmen's Compensation and Medico-Legal Practices 1890–1940', in P. Wright and A. Treacher, eds, *The Problem of Medical Knowledge: Examining the Social Construction of Medicine* (1982), p. 201.
[145] A. Janku, G. J. Schenk, F. Mauelshagen, eds, *Historical Disasters in Context, Science, Religion, and Politics,* (Abingdon, 2012).
[146] R. Cooter and B. Luckin, eds, *Accidents in History: Injuries, Fatalities and Social Relations,* (Atlanta, 1997), p. 2.
[147] Ibid, p. 2.

The secondary literature falls into several overlapping categories. Firstly, the underpinning grand theory of Marx and Weber. Secondly, academic studies on risk, accident causation and the health and safety industry itself. Thirdly, labour history and histories of occupational health and safety. Finally, studies in related disciplines including psychology, and sociology, which hugely influenced safety strategies.

Grand Theory: Marx and Weber

The underpinning grand theory for much of the secondary literature aligns with Marxism and themes of the exploitation of workers by capitalist elites. Marxism defined society as 'two great hostile camps': the bourgeoisie and the proletariat, with the bourgeoisie dominating by controlling modern society with ideologies permeated through education, media and religion.[148] According to Marx, the bourgeoisie 'resolved personal worth into an exchange value' in which the working man had to 'sell themselves piecemeal' as a commodity, 'like any other article of commerce'.[149] The reduction of personal worth into a transactional value between employer and employed within a modern industrial society is naturally applicable to the examination of industrial fatalities, and is especially pertinent when looking at cases of employer negligence. The concept of a person being violently killed at work, whilst merely trying to earn a wage, is an affront to civilised society. It is, at best, a terrible, sometimes unavoidable, accompaniment to progress, and at worst (according to Marx) the brutal exploitation of the proletariat; the underclass who have no choice but to work in the factories and mines of the bourgeoisie. Marxist themes in the secondary literature reveal the tensions between profit and employee safety, which are played out in industrial settings. The role of trade unions in the history of the struggle for better and safer working conditions is another crucial aspect here. Marx stated that it was 'the unceasing improvement of machinery, ever more rapidly developing', which made workers' wages 'ever more precarious', and led to the formation of 'combinations', or trade unions, against the bourgeoisie.[150] Modern methods of communication, and the advent of the railway, had provided an opportunity for workers to unite and organise in ways that would have been slow and difficult in earlier periods, and the safety and protection of workers has always been central

[148] K. Marx and F. Engels, *The Communist Manifesto* (London, 1888), p. 2.
[149] Ibid, pp. 5-12.
[150] Ibid, p. 15.

to movements of social and political protest that campaigned for reduced hours or improved workplace conditions.

Those who campaign for stronger protections for workers, and for corporate accountability in the context of workplace fatalities, are naturally left leaning (although not necessarily Marxist), and often work with or alongside trade unions to try to address the imbalance of power that might enable negligent employers to act with impunity. As such, the grassroots organisations that feature heavily in this study (including the Hazards Campaign, Families Against Corporate Killers, and the Centre for Corporate Accountability) were founded on anti-capitalist principles, and whilst there is no attempt to analyse Marxism in any depth here, there is a recognition of the strong undercurrent of communist and socialist tradition in the struggle for better working conditions and the ways in which this interacts with the subject. Professor Steve Tombs, who was on the Board of the Centre for Corporate Accountability, has written several books and articles with explicit Marxist themes, including *The Corporate Criminal: Why Corporations Must Be Abolished.* [151]

Examples of the undercurrent of Marxism can also be found in some histories of work. Arthur McIvor's social histories of work and working lives are rich in oral testimony and first-hand experiences with a specific focus on what work means to those workers. McIvor has also researched and written about both the history of asbestos and its lethal effects on workers in Scotland, and miners' lung in Britain. His research is centred on the experiences of workers, the damage work did to their bodies, and the organised struggle of the trade unions for better conditions and pay. He wrote that 'Marxists have drawn frequently upon the metaphors of slavery, hell and imprisonment to describe the meaning of work within modern capitalist production'.[152] However, McIvor also recognised that changes over time in the nature of work were in fact 'more uneven and complex' than was conceptualised by Marx and later Marxist process theorists.[153] Marx predicted that the mechanisation of labour and the increase in technological processes would reduce the level of skill and individualism in the workforce. This has not entirely been the case though, as modern, computerised machinery often

[151] S. Tombs and D. Whyte, *The Corporate Criminal: Why Corporations Must Be Abolished* (London, 2015).
[152] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 45.
[153] Ibid, p. 59.

requires highly skilled and well-trained experts to run and maintain it (such as 3D printing, or robot cells in manufacturing processes). Interestingly, one of the foundations of modern safety theory, the hierarchy of controls, specifically calls for the elimination and automation of processes. In other words, the way to make work safer is to remove the human interactions with machinery in general, and from the point of operation in particular. These examples illustrate a more complex picture of the modern workplace than could have been conceptualised at the time Marx was writing. One such scenario is detailed an article by Zanchettin et al on safety in human-robot collaboration in manufacturing environments.[154]

Arthur McIvor's *Working Lives* looked at themes such as the decline of manual labour and trade unions.[155] This account also outlines Marxist themes on the disposability of the workforce in dangerous industries, and the role of gender and *machismo* in risk-taking behaviours.[156] *Working Lives* is structured around interviews and memories, which provide insights and anecdotes on: 'dangerous, dirty, dusty and physically exhausting work, with the constant stream of injuries and deaths in the pits, metal works and the shipyards, [which] hardened boys up, desensitizing them to danger and socialising them into a competitive, macho environment'.[157] Heavy industries are traditionally male-dominated, often home to the characteristics described by McIvor when talking about *machismo* and risk-taking. There is a current focus globally on tackling mental health issues in male-dominated industries, because of the high rates of suicide in young men, and the perceived difficulties that men face in discussing their emotions openly in a work environment.[158] Therefore, McIvor's ideas about macho behaviours (such as risk-taking), are important for today's workplaces. Whilst mental health strategies and toxic masculinity are not within the scope of this study, there are synergies in the recognition of distinct themes in stereotypical male behaviours in the workplace, and the need for strategies to address them. Hyper-masculinity and risk-taking behaviour in male-dominated, hazardous industries have been explored by

[154] A. M. Zanchettin et al, 'Safety in Human-Robot Collaborative Manufacturing Environments: Metrics and Control', *IEEE Transactions on Automation Science and Engineering*, *13*:2, (April 2016), pp. 882–893.
[155] Ibid.
[156] Ibid, p. 133.
[157] Ibid, p. 85.
[158] M. Rice-Oxley, 'Why do so Many Construction Workers Kill Themselves?', *Guardian*, https://www.theguardian.com/society/2019/aug/13/why-do-so-many-construction-workers-kill-themselves, 2019, accessed 19 June 2023.

Arthur McIvor, both in *Working Lives*, and in various articles including: *Rebuilding 'Real Men': Work and Working Class Male Civilian Bodies,* and *Dangerous Work, Hard Men and Broken Bodies: Masculinity in the Clydeside Heavy Industries.*[159] McIvor wrote that it is difficult to 'disentangle' the reasons for risk-taking at work from 'peer pressure, trying to impress fellow workers with their manliness, to maximise their income', because of pressure from management or from men becoming 'inured to danger'.[160] What is not in dispute, though, is the existence of these behaviours and whilst risk-taking behaviour is not a prominent feature in the case studies in this thesis, it is discussed in Chapter Three.

Arthur McIvor is based at the University of Strathclyde, where he is the co-director of the Scottish Oral History Centre. Several other notable academics are (or were) also based at Strathclyde, which includes a research centre specialising in sustainable development and offers postgraduate degrees in occupational health and safety. Key academics at Strathclyde include some members of an interdisciplinary group of researchers who carried out an independent, alternative inquiry into the ICL Stockline disaster, an event analysed in Chapter Seven.[161] This group includes Christine Cooper, an accountancy scholar who has published titles such as *Accounting for human rights: Doxic health and safety practices – The accounting lesson from ICL*, and *Accounting for the fictitious: A Marxist contribution to understanding accounting's roles in the financial crisis*.[162] These publications are indicative of the multi-disciplinary overlaps and interactions with the subject matter. Cooper also collaborated with Andrea Coulson, another of Strathclyde's academics, on *Accounting activism and Bourdieu's 'Collective Intellectual': Reflections on the ICL Case.*[163]

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[159] A. McIvor 'Rebuilding "Real Men": Work and Working Class Male Civilian Bodies', in L. Robb and J. Pattinson, eds., *Men, Masculinities and Male Culture in the Second World War* (London, 2018), A. McIvor and R. Johnston, 'Dangerous Work, Hard Men and Broken Bodies: Masculinity in the Clydeside Heavy Industries', *Labour History Review*, 69:2 (August 2004), pp. 135-152.
[160] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 161.
[161] Professor Christine Cooper (University of Strathclyde. Accounting Expert), Dr Andrea Coulson (University of Strathclyde. Accounting Expert), Dr Stirling Howieson (University of Strathclyde. Architectural Expert), Professor Phil Taylor (University of Strathclyde. Employment Relations Expert)
[162] 'Christine Cooper', *University of Edinburgh Business School*, https://www.business-school.ed.ac.uk/staff/christine-cooper, accessed 26 June 2022.
[163] C. Cooper and A. Coulson, 'Accounting Activism and Bourdieu's "Collective Intellectual": Reflections on the ICL Case', *Critical Perspectives on Accounting*, 25:3 (May 2014), pp. 237-254.

Max Weber's theories offer an alternative sociological foundation, albeit one subject to several competing interpretations. Weber's ideas are less explicitly referenced in the relevant secondary literature, but they do appear in the work of Ulrich Beck and Sydney Dekker, offering different viewpoints on the subjects of work, risk, and power dynamics in industry.

Weber's work has been described as 'an alternative to Marxism that explained the emergence and trajectory of Western capitalism – or effectively modernity – in more cultural terms, while still addressing, however, its historical, political and structural dimensions'.[164] Weber's theory of the Protestant work ethic – the belief that all work was holy and that hard work brought you closer to God – was that this was in fact the driving force behind the development of capitalism.[165]

Weber also disagreed with Marx on the issue of class, which Marx outlined in terms of the proletariat (that would continue to grow, causing ever-greater class divisions), and the bourgeoisie. Weber introduced the concept of the middle class, which he said would continue to grow because of the need for bureaucracy. Weber's 'modern' bureaucracy, which differed from earlier types of administration is characterised by all rule (over groups of people, whether populations or employees) requiring a staff of administrators 'executing the general ordinances and specific commands' of the leader, and by 'strict hierarchy' and 'highly articulated division of labour'.[166] Whilst these concepts are less visible in the secondary literature, Weber's work provides some nuanced underpinning theory that is evidently relevant when discussing organisational culture.

Hopfl and Harris noted Weber's observation that the result of political activity often 'bears very little relation to the original intention: often, indeed it is quite the opposite of what was intended' and for this reason legislation can result in unintended consequences.[167] In an article about unintended consequences of public policy, Preston and Roots noted that, 'Weber suggested that much of what occurred in the name of principle was a mask for self-interest and that what really matters in politics is hidden'.[168] The Robens Report contained an observation of

[164] N. Gane, *Max Weber and Contemporary Capitalism* (Basingstoke, 2012), p. 133.
[165] M. Weber, *Politics as a Vocation* (Munich, 1921).
[166] H. M. Hopfl and M. Harris, 'Post-bureaucracy and Weber's "Modern" Bureaucrat', *Journal of Organizational Change Management,* 19:1 (January 2006), p. 10.
[167] F. W. Preston and R. I. Roots, 'When Laws Backfire: Unintended Impacts of Public Policy', *The American Behavioral Scientist,* 47:11 (July 2004), p. 1371.
[168] Ibid, p. 1371.

OSH legislation that 'Each Act was the consequence of some more or less transient propaganda campaign centred on a particular hazard or problem' as legislators tried to keep up with the developments of the Industrial Revolution.[169] However, this never materialised into a coherent legal framework for the enforcement of OSH.

W. G. Carson, an 'unapologetically Marxist' academic used Weberian frameworks and terminology to explain regulatory failures and safety crimes. Carson's work on white-collar crime, which influenced later occupational safety and health scholars such as Steve Tombs, included a seminal article in 1979 on the 'conventionalisation of early factory crime'.[170] Carson noted that from the earliest introduction of factory legislation, employers' violations of these laws were not treated as real crimes. Indeed, 'employers successfully retained a "right", if not to totally uncontrolled violation in this respect, at least to substantial immunity from the penal and other adverse implications of their criminal conduct'.[171]

> As the assiduous efforts of the inspectors to devise administrative safeguards become more and more central to the development of the legislation itself, we can see a progressive depoliticization of the factory issue taking place, in keeping with what Weber saw as bureaucracy's fundamental tendency to turn problems of politics into problems of administration.[172]

Steve Tombs noted that 'so effective was the conventionalisation following the early regulatory settlement described by Carson', that 'by the time the Robens Committee considered the direction of health and safety regulation in the early 1970s, it took for granted what it called "the widely recognised fact" that criminal law had little role to play in this sphere'.[173] This paradigm that safety crimes are difficult to punish, or that there is little will for them to be punished, will recur throughout this thesis and is especially relevant to the Simon Jones case in Chapter Six.

The bureaucratisation of safety is also a subject which draws upon Weberian principles of rationalisation and some of the problems with bureaucracy. A recent

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[169] Robens, *Safety and Health at Work*, p. 182.
[170] S. Tombs and W. G. Carson, 'The Conventionalization of Early Factory Crime', *Policy and Practice in Health and Safety*, 3 (November 2005), pp. 103-125.
[171] Ibid, p. 107.
[172] Ibid, p. 114.
[173] Ibid, p. 103-104.

article by Sydney Dekker et al explored the pervasive modern problem of 'safety clutter', in other words the 'unnecessary burden' of operational bureaucracy that does not contribute to safer outcomes in the workplace.[174] The source of the problem is that in a goal-setting regulatory regime, businesses are constantly left to wonder whether they have done enough to be in compliance because there is a reverse onus of proof on the company. This often bears no relation to risk profiles, risk management or safety outcomes and is a consequence of the need to ensure there is a paper trail or evidence of all safety activities, thus providing a defence in the event of something going wrong. Examples of safety clutter include symbolic application, such as 'signs on stairs instructing workers to 'maintain 3 points of contact', taken from a genuinely hazardous activity (ladder-use) but symbolically applied in a low-risk environment.[175] Another example is 'conservatism', where a high level rule is intended to be applied with discretion or 'when appropriate' at lower levels, but ends up being strictly applied at all times.[176] The problem of safety clutter is that it is easy to accumulate and difficult to remove. Finally, to illustrate the bureaucratic burden presented by OSH in modern workplaces, Dekker et al noted that between 1974 and 2008:

> A 'mere' doubling of the number of safety statutes, but a hundred-fold increase in regulations interpreting and applying them, with a concomitant proliferation of 'service industries' for safety auditing, researching, pre-qualification, enforcement, publishing, recruitment, training, accreditation, and consultancy.[177]

The modern OSH industry is bureaucratically huge, both inside and outside of business, and while this bureaucratisation occurred over the course of the period 1974-2014, it is not a strong feature in any of the case studies in this thesis, except, to an extent, in the Houghton Main and Golborne cases in Chapter Three, and Piper Alpha in Chapter Four. This is partly because some of the case studies occurred earlier in the period when the industry was less developed, and partly because some of the businesses in the case studies were delinquent in their duties and deficient in the application of OSH. The scarcity of safety bureaucratisation in most of the case studies is a notable finding of this research,

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[174] S. Dekker et al., 'Safety Clutter: The Accumulation and Persistence of "safety" Work that Does not Contribute to Operational Safety', *Policy and Practice in Health and Safety,* 16:2 (August 2018), p. 194.
[175] Ibid, p. 200.
[176] Ibid, p. 199.
[177] Ibid, p. 204.

suggesting that firms did not take the issue seriously and thought they could get away with minimal effort.

Risk and Accident Theory - Bird's Triangle

First, this section considers the Bird's Triangle. In pre-industrial times, labour was often purchased in output: for example, by the bushel harvested. However, in an industrialised society 'capital purchased a worker's labor *time*, or *potential* labor'.[178] Because of this, strategies were pursued to 'derive as much work, and thus value possible from any amount of purchased labor time'.[179] The most well-known proponent of these strategies was Frederick Taylor with his 'least waste' and 'scientific management' theories that were popular in the early twentieth century.[180] Within this movement was the understanding that injuries lead to lost time and therefore they are a form of waste. In an effort to understand (and manage) lost time accidents, Herbert William Heinrich, who worked for an insurance company, carried out a study analysing data from around twelve thousand insurance claims in the 1920s. This was not an academic, peer reviewed study, and it has been criticised for a lack of transparency in methodology, and a strong emphasis on 'man failure' (human error).[181] The significance of this is that Heinrich concluded from his data that there was a ratio of 1-29-300 in accident data which meant that from an average data set of 330 accidents, 300 would produce no injuries, 29 would produce minor injuries, and one would be a serious injury. Later, in 1969, another insurance man, Frank Bird, carried out a similar study and made similar conclusions. Both Bird and Heinrich believed that by focussing efforts on reducing the number of low-level incidents and near misses, 'by starting at the bottom and slicing off some of the side of the triangle', that it would be possible to prevent the serious accidents from occurring.[182] There are multiple versions of these triangles and pyramids available in books, on Google, in corporate safety strategies, in policies and procedures.[183] As mentioned at the start of this chapter, this data, produced by insurance companies in the early and mid-twentieth century, formed the basis of

[178] S. Dekker, *The Safety Anarchist: Relying on Human Expertise and Innovation, Reducing Bureaucracy and Compliance* (Abingdon, 2018), p. 85.
[179] Ibid, p. 85.
[180] Ibid, p. 86.
[181] Ibid, p. 87.
[182] Ibid, p. 89; H. W. Heinrich, *Industrial Accident Prevention; a Scientific Approach* (New York, 1931).
[183] R. L. Collins, 'Heinrich and Beyond', *Process Safety Progress*, 30:1 (December 2010), pp. 2-5.

most occupational safety strategies in the last fifty years. It has driven (in some cases) an obsessive focus on 'housekeeping' and low level 'hazard spotting', in the belief that this will somehow prevent the major accidents at the top of the triangle from manifesting.

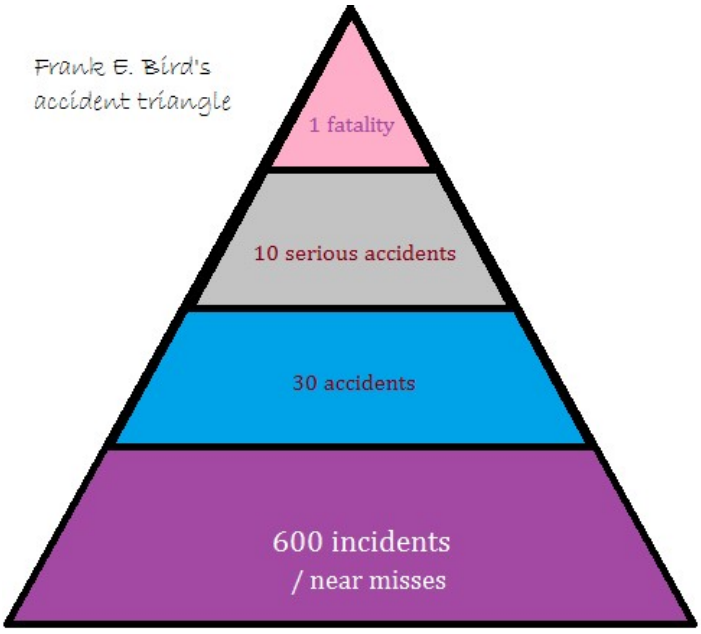

Figure 2.2 - An example of the Bird's Triangle. R. Byrne, 'Why I'd like to meet Frank', *SHP*, https://www.shponline.co.uk/blog/why-id-like-to-meet-frank/, 2016, accessed 13 August 2023.

However, despite these models being ubiquitous in the workplace and the safety industry in the late twentieth century, more recent analysis has shown that 'as soon as it gets studied by people who aren't linked to the insurance industry, worker compliance doesn't have the relationship with injuries and fatalities that Heinrich or Bird suggested'.[184] The debate on these models rumbles on, as illustrated in a 2015 article by Tim Marsh.[185]

In terms of more targeted literature on accident causation and risk reduction, this body of literature emerged in the mid to late twentieth century. In the middle of the twentieth century the Tavistock Institute was carrying out sociological and psychological research into absenteeism in industry, and the *Human Relations*

[184] S. Dekker, *The Safety Anarchist: Relying on Human Expertise and Innovation, Reducing Bureaucracy and Compliance* (Abingdon, 2018), p. 90.
[185] T. Marsh, 'Heinrich's Accident Triangle Explained', *SHP*, https://www.shponline.co.uk/common-workplace-hazards/heinrichs-triangle-health-and-safety-cpd/, 2015, accessed 1 May 2023.

journal was founded in this tradition and contains early studies in this field (examples in footnotes).[186]

In 1966, the Aberfan tragedy in Wales, in which 116 children and 28 adults were killed, seems to have accelerated interest in the subject of accident causation, and was one of the three case studies used by Barry Turner in his seminal book, *Manmade Disasters*.[187] Turner coined the term Man-Made Disaster (MMD) to denote a type of disaster previously undistinguished from natural ones'.[188] His work was one of the first studies to identify common patterns in accidents and disasters and at the time he was writing, Turner's argument was new and radical: 'An improved understanding of the nature of disasters can only be achieved by realising that disasters arise from an absence of some kind of knowledge at some point'.[189] His approach was centred on understanding how 'knowledge and information relating to events provoking a disaster were distributed before the disaster'.[190]

Turner's book was a watershed moment in that it identified the need to find patterns and understand causation, and pinpointed the growing drivers for man-made disasters, namely population growth, urbanisation, and technological advances. He devised a six-stage model to illustrate that manmade disasters are not unpredictable events, but that they have long incubation periods, and early signals which are ignored or misinterpreted.[191] This comes through in the work of later scholars including Perrow, and may seem obvious to us now, but accident causation theory as we now know it resulted from the need to understand modern disasters caused by large-scale industrial activity. Modern forms of energy, novel, large-scale industrial processes, tightly packed urban centres, and the ability of humans to alter the world around us (through the emerging understanding of DNA, or use of synthetic chemicals), were Turner's basis for the need to

[186] J. M. M. Hill and E.L. Trist, 'A Consideration of Industrial Accidents as a Means of Withdrawal from the Work Situation: A Study of their Relation to Other Absences in an Iron and Steel Works', *Human Relations*, 6:4 (November 1953), pp. 357–380; J. M. M. Hill and E.L. Trist, 'Changes in Accidents and Other Absences with Length of Service: A Further Study of their Incidence and Relation to Each Other in an Iron and Steel Works', *Human Relations*, *8*:2 (May 1955), pp. 121-152.
[187] B. Turner, *Manmade Disasters* (London, 1978).
[188] 'Man-made Disasters Twenty Years Later', *ISRM*, https://www.theisrm.org/public-library/Review%20of%20Man-Made%20Disasters.pdf, accessed 21 June 2023.
[189] B. Turner, *Manmade Disasters* (London, 1978), p. 3.
[190] Ibid, p. 3.
[191] Ibid. p. 85

understand man-made disasters. As such, the theory and discipline lagged behind the development of modern industry until Turner carried out a 'qualitative analysis of 84 official reports into accidents published by the British Government during the years 1965-75' and drew parallels and similarities between many of them.[192] The key difference, (which is part of the rationale for differentiating modern industrial fatalities from earlier deaths) is that earlier understanding of causation was largely confined to 'acts of god' or failure to follow regulations. The increasing complexity of modern industrial methods and scientific advances necessitated the development of correspondingly complex analytical methods for understanding causation.

Turner's research was arguably the precursor for much of the subsequent work on risk, accident causation and organisational factors in risk management. It was 'a descriptive-analytic [model] which seeks to understand the causes of disasters rather than prevent them', but Turner's later work and collaborations built on MMD and more recent academics have further enhanced it.[193] Twenty years after its publication, reviewers of an updated edition of *Manmade Disasters* considered its importance in 'bridging the gap between theories of vulnerability and those of resilience'; a reference to the later work of Perrow and Beck.[194] Much more recently, in 2015, Mike Lauder published *In Pursuit of Foresight: Disaster Incubation Theory Re-imagined,* a book which took Turner's theories, applied them to a number of disaster scenarios and proposed tools to avoid the failures of foresight that can lead to disasters.[195]

In 1984, shortly after the publication of *Manmade Disasters*, Charles Perrow published *Normal Accidents*.[196] Perrow is a sociologist, behavioural scientist and organisational theorist, with a wide range of influences and interests, including 'Marxian theories of industrialization and of contemporary crises'.[197] Perrow's theories hinge on the premise that the technologies or operator errors themselves are not necessarily the drivers and causes of catastrophic accidents, but that

[192] Ibid, p. 85.
[193] 'Man-made Disasters Twenty Years Later', *ISRM*, https://www.theisrm.org/public-library/Review%20of%20Man-Made%20Disasters.pdf, accessed 4 June 2023.
[194] Ibid, p. 2.
[195] M. Lauder, *In Pursuit of Foresight: Disaster Incubation Theory Re-imagined* (Abingdon, 2016).
[196] C. Perrow, *Normal Accidents: Living with High Risk Technologies* (Chichester, 1984).
[197] 'Charles Perrow', *Yale University*, https://sociology.yale.edu/people/charles-perrow, accessed 9 July 2022.

organisational structures actually contain certain characteristics that make some accidents inevitable.

Perrow set out an alternative theory to the 'conventional explanations for accidents', such as operator error, flawed design and lack of safety features.[198] According to Perrow's theory, some systems are highly complex and tightly coupled, as well as having the potential for catastrophic, unforeseeable failure.[199] Perrow's paradigmatic example of this type of system is the nuclear power station, but other examples include space craft, chemical plants, and aircraft. Specific incidents cited by Perrow to illustrate this included the Three Mile Island nuclear power plant disaster and the Apollo 13 space mission; both of which involved unforeseen and catastrophic failures. Systems which don't fit this model include mines, manufacturing, and dams, because they lack the characteristics of complexity and coupling. However, the presence of complexity and coupling are not binary and cannot be described as either present or not present. They are, instead, a continuum. *Normal Accidents* highlighted catastrophic potential in the system, as opposed to distinct elements of human error, mechanical failure or design flaws. A recent analysis of *Normal Accidents* by sociologists Silvast and Kelman concluded that despite the inevitability of normal accidents, the theory should be 'hammered home' and given prominence by decision makers, designers and managers.[200] If something is inevitable and unforeseeable, then it may seem counterintuitive to put effort into understanding it, but, according to Silvast and Kelman, this shouldn't distract from the 'common sense' of Perrow's theory.[201] They also emphasised the durability of Perrow's theory, and concluded that it has withstood much scrutiny over time. Incidents and disasters that have occurred since *Normal Accidents* would indeed seem to fit the theory: the Chernobyl nuclear power station meltdown, the Boeing 737 Max plane crashes and the Piper Alpha Disaster could all be viewed as normal accidents. Normal accidents (as envisaged by Perrow) may be inevitable and unforeseeable, but good safety systems and management could reduce the space for these types of accidents to manifest.

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[198] C. Perrow, *Normal Accidents: Living with High Risk Technologie*s (Chichester, 1984) p. 63.
[199] Ibid, p. 72.
[200] A. Silvast and I. Kelman, 'Is the Normal Accidents Perspective Falsifiable?', *Disaster Prevention and Management,* 22 (February 2013), p. 14.
[201] Ibid, p. 14.

In the late 1980s Ulrich Beck and Anthony Giddens were working separately and independently on theories of modernity and reflexivity. Giddens would later become better known as the author of *The Third Way*, and for his work as an advisor to Tony Blair's New Labour government.[202] Giddens and Beck are both credited for their work on reflexive modernity, but these parallel developments were quite independent. Giddens and Beck both studied the ways in which modernity has brought new risks from human behaviour, with Beck asserting that risk is in fact the main product of modernity. Beck cited both Marx and Weber as foundations for his own theoretical work but was critical of both frameworks. He criticised Marxist theory of the state for misunderstanding 'the experiences of modern political history', in which 'developed capitalist industrial society is quite compatible with extremely varied forms of political rule'.[203] He was also critical of Weber. However, according to Gane:

> Beck dismisses Weber's work on the grounds that it presents a theory of rationalisation that neglects the threats of manufactured risks and uncertainties that cannot be tamed by, and perhaps themselves even arise from, 'attempts at rational control'. But Beck's position, in spite of its declared intention, nevertheless adopts a Weberian framework, as it draws heavily from Weber's theory of class and from his notion of the unintended consequences of instrumental rationality. Because of this, Weber's work gives us a position from which to assess and engage with Beck's theory of risk modernity.[204]

Risk Society outlined Beck's theory of reflexive modernity and risk society and asserted that whilst humans have always been subject to disasters, the disasters have always been natural ones; extreme weather events, or plagues.[205] Even the risks of early industrialisation only had potential to create localised disasters. The uniquely global potential of ecological man-made disasters such as the Chernobyl nuclear disaster in 1986 and the Love Canal chemical poisonings from 1978 onwards were the inspiration for *Risk Society*. Beck also noted the inverse correlation between wealth and risk, in that 'poverty attracts an unfortunate abundance of risks', and wealthy people – those with privileges of education, power and high salaries – can 'purchase safety and freedom from risk'.[206] This is an important point, especially in the context of the power imbalance between

[202] A. Giddens, *The Third Way: The Renewal of Social Democracy*, (Cambridge, 1998).
[203] U. Beck, *Risk Society: Towards a New Modernity* (London, 1992), pp. 188-189.
[204] N. Gane, *Max Weber and Contemporary Capitalism* (Basingstoke, 2012), p. 114
[205] U. Beck, *Risk Society: Towards a New Modernity* (London, 1992).
[206] Ibid, p. 35.

employers and employees, and the extent to which the physical risks of work are disproportionately carried by the less wealthy in society. Those who are killed at work are very rarely in management or senior positions and are much more likely to be low-income 'shop floor' workers. That said, two company directors were killed in the ICL Stockline Disaster in Glasgow in 2004, which is the subject of the final case study in Chapter Seven.

Modern societies now put substantial effort into reducing and eliminating risk. This reflexivity, according to Beck, is the way in which 'questions of the development and employment of technologies are being eclipsed by questions of the political and economic "management" of the risks', and the process of 'discovering, administering, acknowledging, avoiding or concealing such hazards'.[207] Part of this process is the emergence of the safety industry, which includes safety systems, machine guarding, training, personal protective equipment and safety professionals, which exists specifically for this reason and links back to the potential for problems with bureaucracy and safety clutter, as previously discussed. According to Beck:

> The dominant risk paradigms have been able to surround themselves with the appearance (and self-delusion) of critical pluralistic debate and learning, through the growth of a plethora of disciplines, sub-disciplines and schools of thought vigorously competing for ascendency and recognition in the "management" of the risks of modern technological society.[208]

Beck also stated that science has a perceived monopoly on truth, and that the reality of human experience is ignored when it appears to counter scientific evidence. Science may conclude something is safe; but this may not be reflective of how humans interact with the risk in reality. An example used by Beck is that of the Pesticides Advisory Committee (PAC) in Britain, which dismissed farmers' concerns about the health effects of herbicides. The scientific literature led the PAC to confirm there was no risk, and that a dossier of evidence submitted by the farmers was, 'anecdotal, uncontrolled non-knowledge'.[209] However, further investigation showed that the 'correct conditions of use' that were used to qualify the conclusions were hardly ever adhered to because farmers often disregarded the instructions or did not have the correct spraying equipment or protective

[207] Ibid, pp. 20-21.
[208] Ibid, p. 5.
[209] Ibid, p. 5

clothing. Another angle on this can be found in Bloor's work on lay epidemiology and specifically the occurrence of miners' lung in Wales in the 1920s and 1930s, and asbestosis as identified by asbestos workers long before the first recognised in a post-mortem.[210] These examples highlighted the friction between 'expert' knowledge and the lived experience of workers whose own conclusions often eventually became the accepted scientific understanding.

Linking this to the development of safety strategy, according to Beck risks do not exist, legally, if they have not been recognised by science, and risks can also be trivialised, provided they have not happened yet. Likelihood – and the estimation of likelihood – is central to modern risk assessment. However, this is recognised in the safety industry as a subjective measure, because of the range of ways risk quantification methods can be interpreted. Both Perrow and Beck discussed the significance of events that have not happened yet – (in UK law, employers have a duty to deal with 'reasonably foreseeable' risks). Beck went on to say that a risk can therefore be minimalised to maximise productivity, but only if it has not happened yet. These ideas are significant because there is an explicit recognition that the workforce is not disposable, as it once was, and that risk is something to be avoided and reduced in modern society. However, if science can enable risk-denial for the sake of productivity, organisations would be apparently justified in failing to act on employee or public concerns. To apply this to the Aberfan disaster, 'there had been countless complaints from the local authority about the slurry that ran down the mountain and blocked drains in the streets around Pantglas School. These incontestable warnings were never taken seriously by the National Coal Board'.[211] This could be tied back to Beck's work on monopolies on truth, and the tendency to ignore lay people's concerns. In this case, (like the PAC pesticides case) there was an 'expert' body, namely the National Coal Board, unwilling to accept the concerns of the villagers. This is another example of 'anecdotal, uncontrolled non-knowledge'.[212]

Though motivation for the use of good safety strategies can come from many sources, including legislation and reaction to accidents, truly proactive strategies

[210] M. Bloor, 'The South Wales Miners Federation, Miners' Lung and the Instrumental Use of Expertise, 1900-1950', *Social Studies of Science* 30:1 (February 2000), p. 125.
[211] H. Edwards, 'Aberfan was a Man-made Disaster. 50 years on, we must Remember this', *The Telegraph*, Aberfan was a man-made disaster. 50 years on, we must remember this (telegraph.co.uk), 16 October 2016, accessed 28 October 2023.
[212] U. Beck, *Risk Society: Towards a New Modernity* (London, 1992), p. 7.

usually require both good science and strong data as justification. In sum, Perrow's *Normal Accidents* has the feel of applied theory, whether or not one agrees with the fundamental premise. *Risk Society,* in contrast, relies on some abstract concepts, and could be considered more disconnected from the application of risk management in the real world.

High reliability organization theory (HRO) is another important theoretical development which evolved in response to normal accident theory (NAT). HRO characterises some organisations as 'highly reliable' because certain behaviours and attitudes can achieve the outcome of a consistent safety record over long periods of time.[213] This is precisely *because* they are complex and tightly coupled, and the recognition of this organisational reality enables them to operate in a culture that minimises failure and learns from adverse events. HRO is, in many ways, a counter-theory to Perrow's *Normal Accidents*. Certain organisations contain features that could be considered the hallmarks of HROs, such as air traffic control, nuclear submarines, and aircraft carrier operations. However:

> HRO researchers do not maintain that such organisations are error-free; rather that they are constantly preoccupied with failure such that they can anticipate areas of potential failure and can cope and bounce back from errors when they occur. Characteristics such as a strong learning orientation, prioritisation of safety over other goals, continuous training and an emphasis on checks and procedures contribute to these organisations' impeccable safety records.[214]

Figure 2.3 below was created for the HSE's literature review of HRO, illustrating the key themes of HRO theory. This was taken from a report commissioned by the HSE in 2011 and gives a good overview of the characteristics of high reliability organisations.

[213] T. R. La Porte and P. Consolini, 'Working in Practice but not in Theory: Theoretical Challenges of High Reliability Organizations', *Journal of Public Administration Research and Theory*, 1:1 (January 1991), pp. 19-47.
[214] C. Lekka, *HSE Report RR899 - High Reliability Organisations: A Review of the Literature* (Buxton, 2011), p. 4.

Figure 2.3 - HSE's literature review of HRO, HSE Report RR899. C. Lekka, *HSE Report RR899 - High Reliability Organisations: A Review of the Literature* (Buxton, 2011), p. v.

Further development of the theory offered 'preoccupation with failure, reluctance to simplify interpretations, sensitivity to operations, commitment to resilience and deference to experience' as the defining features of HRO.[215] However, HRO research has been criticised for focusing on a narrow range of very specific organisations, and therefore lacking applicability across other types of organisations. It has also been criticised for treating safety and reliability as equivalent; the theory posits that if all components of a system operate reliably and as expected, then there should be no accidents.[216] However, this is untrue: 'one does not imply, nor require the other – a system can be reliable and unsafe or safe and unreliable'.[217] The research report of literature about HRO by the Health and Safety Executive in 2011 made similar conclusions about the limitations of the research. The report noted that the lack of transferability of the existing research meant that 'it is possible that HRO processes that are effective in some contexts may be ineffective or even detrimental in others'.[218] The HSE's literature review neatly summarised the characteristics of HROs, as identified in

[215] N. Leveson, N. Dulac, K. Marais, J. Carroll, 'Moving Beyond Normal Accidents and High Reliability Organisations: A Systems Approach to Safety in Complex Systems', *Organisation Studies,* 30 (February 2009), p. 228.
[216] Ibid, p. 234.
[217] Ibid, p. 234.
[218] C. Lekka, *HSE Report RR899 - High Reliability Organisations: A Review of the Literature* (Buxton, 2011), p. 20.

37 peer reviewed papers, whilst also concluding that it would be unlikely to be possible to lift the methods identified and apply them to more mainstream organisational contexts.[219] HRO does, however, provide an exemplar against which to judge the deficiencies of unreliable organisations.

Further commentary on the ubiquitous nature of risk management theory – which shows itself in activities as diverse as moneylending and the organisation of school trips – can be found in Michael Power's *Organized Uncertainty*:

> A growing body of scholarship in fields such as social policy, business management, law, psychiatry, sociology, political science, and international relations increasingly analyses the nature of risk and its management in different settings. In social theory and beyond the meaning of Beck's risk society thesis is debated, challenged, and applied.[220]

Bridget Hutter has published extensively on modern attitudes to regulation and risk. Hutter claims that there exists a modern fallacy that undesirable events can be entirely avoided and that someone is always to blame.[221] Hutter's numerous articles and books provide insight into public perceptions of regulation in safety and regulatory responses to events such as the Ladbroke Grove rail disaster (October 1999, 31 fatalities).[222] Hutter put forward a theory that the general public is naturally opposed to regulation, except after a high-profile disaster, when there is almost always a public call for increased regulation to avoid a recurrence; as in the case of Ladbroke Grove.[223]

Beck discussed the disconnect between scientific and social rationality, which can also be aligned with Alvin Gouldner's ideas on mock bureaucracy, in which rules or regulations may be implemented officially but are not reflected in daily behaviours.[224] Gouldner's theories date back to the 1950s, but the relevance of mock bureaucracy in the context of safety and risk is clear. In 1988, a huge explosion at the Piper Alpha oil rig in the North Sea killed 167 people. This disaster is examined in detail in Chapter Four. The rig had recently been audited, and safety control measures including a permit to work system were found to be

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[219] Ibid, p. vii.
[220] M. Power, *Organized Uncertainty: Designing a World of Risk Management* (Oxford, 2007), p. 1.
[221] B. M. Hutter, *Regulation and Risk: Occupational Health and Safety on the Railways* (Oxford, 2001).
[222] B. M. Hutter and S. Lloyd-Bostock, *Regulatory Crisis: Negotiating the Consequences of Risk, Disasters and Crises* (Cambridge, 2017).
[223] Ibid.
[224] A. W. Gouldner, *Patterns of Industrial Bureaucracy* (New York, 1954).

sufficient, but in practise, they were not fit for purpose.[225] The formal, documented system was designed to ensure high-risk tasks were being carried out with appropriate safety controls and the knowledge of senior staff. On paper, this system 'appeared perfect'.[226] Had this system functioned as intended, it would have prevented the error that caused the Piper Alpha disaster. But it was later revealed that the system was 'knowingly and flagrantly disregarded', and that employees on the rig had no commitment whatsoever to working to the procedure.[227] This disconnect between expectation and reality, or the documented system and the behaviours on the ground, is a common theme in accident investigation and incident inquiries; it could be described as the antithesis of HRO. Gouldner's, characteristics for mock bureaucracy cultures included rules not being enforced or obeyed, deviations being viewed as 'uncontrollable', or 'human nature', and rule-breaking being seen as status-enhancing.[228] This takes us back to the hyper-masculine behaviours in some male-dominated industries, as described by McIvor and discussed earlier in this chapter.

A comprehensive account of the Piper Alpha disaster by Stephen McGinty did not consider academic theories such as those of Gouldner because it instead focused on the narrative and the experiences of the men involved. However, academics including Timothy Hynes, Pushkala Prasad, James Reveley, and John Singleton have more recently applied Gouldner's theory of mock bureaucracy to mining disasters.[229] Mining is not a complex and tightly coupled industry, so it doesn't fit the NAT or HRO models. Mining disasters are more likely to be the result of human factors: 'Given that the technologies used are relatively simpler (especially in comparison with nuclear reactors and most chemical processing plants), disasters are more often caused by organizational rather than technological failures'.[230] Gouldner's model finds that 'mock bureaucracy occurs

[225] S. McGinty, *Fire in the Night: 30 Years since the Piper Alpha Disaster* (London, 2008).
[226] Ibid, p. 63.
[227] Ibid, p. 64.
[228] A. W. Gouldner, *Patterns of Industrial Bureaucracy* (New York, 1954), p. 217.
[229] T. Hynes and P. Prasad, 'Patterns of "Mock Bureaucracy" in Mining Disasters: An Analysis of the Westray Coal Mine Explosion', *Journal of Management Studies* (June 1997), pp. 601-623.
[230] Ibid, p. 605.

when an organization's stakeholders collude to break, bend or ignore rules in a manner that persists over time and becomes routinized'.[231]

Other studies track the evolution of safety management through the academic literature:

> Major disasters in the 1980s generated knowledge on process safety, and soon process safety outplaced developments in occupational safety, which had been leading before. Theories and models in this period had advanced sufficiently to explain disasters but were still unable to predict probabilities and scenarios of future disasters. In the 1980s 'latent errors' appeared in safety literature.[232]

We will return to 'latent errors' shortly, but the overall trend in the 1980s moved away from placing blame on individual human errors, and instead showed a much greater understanding of systems thinking. For example: 'Human errors were also perceived differently: they were no longer faults of people, but consequences of suboptimal interactions during process disturbances'.[233]

Human performance and behavioural safety have had a large impact on the safety industry and strategies applied to reduce errors. James Reason is widely considered to be the founder of the psychology-based human performance theory which underpins much of the safety industry's modern approaches to risk management. His work examines why humans violate or deviate from rules, and how to 'error proof' safety systems in proactive safety management.[234] Sidney Dekker is also a prominent academic in this field, having published *The Field Guide to Understanding Human Error*, and *Just Culture: Balancing Safety and Accountability*.[235] These theories have also been retrospectively applied to catastrophic failures such as the Zeebrugge and Chernobyl disasters to help understand and prevent such events from reoccurring. Human error often appears to be the cause of failure, but tools such as the 'Swiss cheese model' and deviation analysis help understand system-driven failures.[236] The Swiss

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[231] J. Reveley.and J. Singleton,.'Carbon copy: The Mock Bureaucratic Setting of Colliery Explosions in early Twentieth Century Britain and at Pike River, New Zealand', *Journal of Management History*, 24:1 (January 2018), p. 22.
[232] P. Swuste et al., 'Safety Management Systems from Three Mile Island to Piper Alpha, a Review in English and Dutch Literature for the Period 1979 to 1988', *Safety Science*, Volume 107 (August 2018), p. 224.
[233] Ibid, p. 224.
[234] J. T. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008).
[235] S. Dekker, *The Field Guide to Understanding Human Error* (Aldershot, 2006).
[236] J. T. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008), p. 97.

cheese model, created by Reason, is a conceptual tool now widely used in accident causation theory. The model is used to demonstrate how layers of protection, such as training, procedures and warning systems all have vulnerabilities (or 'holes'), and that if all these vulnerabilities line up at once, then an accident will occur. Some layers are stronger or weaker than others, but none are entirely error-proof. Deviation analysis tools and latent failure pathways help accident investigators to look beyond human error to underlying system-driven causes.[237] These tools originated in the field of psychology but are now widely recognised and used by all safety professionals. Reason's Swiss Cheese model is applied to the events analysed in Chapters Four (Piper Alpha) and Six (Simon Jones).

This thesis bridges gaps in the literature and creates new ways of understanding such events. Accounts, inquiries, and histories of industrial fatalities often involve testimony, narrative, fact-finding, and eventually storytelling. Cases with narrow focus provide opportunities for academic theories (such as Gouldner's) to be tested or posed in the examination of such events, but there has never been an academic study that draws these threads together to understand the macro phenomenon of the modern industrial fatality.

Models of Occupational Health and Safety

This section briefly covers academic literature on occupational health and safety as a discipline and a profession. The term, 'Robens philosophy' has come to be accepted and widely used, as summarised here by Sirrs:

> Since 1974, the term has been widely used to refer to the complex of assumptions and beliefs underlying the Robens Committee's recommendations; lately, socio-legal theorists such as Steve Tombs and Robert Baldwin have popularised the term in their analyses of the British health and safety system, an approach that has been adopted in several other countries, including Canada.[238]

Christopher Sirrs documented health and safety in the British regulatory state from 1961 to 2001.[239] Sirrs' main argument was that whilst the British regulatory state's role in health and safety has increasingly promoted self-regulation (since

[237] Ibid, p. 99.
[238] C. Sirrs, 'Accidents and Apathy: The Construction of the "Robens Philosophy" of Occupational Safety and Health Regulation in Britain, 1961–1974', *Social History of Medicine,* 29:1 (February 2016), p. 68.
[239] C. J. Sirrs, *Health and Safety in the British Regulatory State*, (PhD, London School of Hygiene and Tropical Medicine, 2006).

HSWA), in another sense, health and safety has 'crept forward'. Furthermore, he argued that whilst health and safety has been successful in reducing fatal workplace accidents, its legislation has come under unprecedented public and political scrutiny.[240] This has echoes of Hutter's theories on regulation and risk. On one hand, the public is resentful of regulatory 'meddling', but on the other, there are usually calls for increased regulation after a fatal accident has occurred.

Sociologist Ron Westrum created a model of organisational safety culture in 1992. Westrum's model set out three stages: pathological culture, bureaucratic culture and generative culture.[241] The pathological culture is characterised by failures (including accidents) which are punished or concealed, and messengers or whistle-blowers who are figuratively 'shot' for bringing problems to the attention of management.[242] Further, the active discouraging of new ideas, the shirking of responsibility and management teams avoiding knowledge of safety information. Westrum's other two types of safety culture are 'bureaucratic', in which messengers are listened to, and failures lead to local repairs; and 'generative', in which management actively seeks out the opinions of workers, trains and rewards them for highlighting problems and carries out far reaching reforms when failures do occur.[243]

Robert Whittingham proposed a similar but more recent model in 2008. Whittingham's three stages of safety culture largely correspond with the Westrum model, but include an acknowledgement that the three stages have loosely corresponded to different time periods in the chronological evolution of safety culture.[244] Stage one was prevalent before 1975, and was characterised as prescriptive and reactive: 'An organisation with a safety culture based on prescriptive rules will be mainly reactive, responding to problems as they arise'.[245] This approach 'corresponds to the safety controls legislated by the Factories Act 1961' and earlier safety legislation, which had been developed on an ad-hoc, industry-specific basis over 150 years.[246] After the introduction of the Health and

[240] Ibid.
[241] R. Westrum, 'The Study of Information Flow: A Personal Journey', *Safety Science*, 67 (August 2014), pp. 58–63.
[242] Ibid, pp. 59-60.
[243] Ibid, pp. 59-60.
[244] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), p. 101.
[245] Ibid, p. 101.
[246] Ibid, p. 101.

Safety at Work etc. Act 1974, stage two – a goal and target-based culture - became more common. Whittingham describes stage two as goal and target based, but 'still largely reactive in terms of anticipation of safety problems'.[247] That is, the culture will have developed to incorporate the principles of the Health and Safety at Work etc. Act 1974, in that safety performance has become an explicit corporate goal (alongside profit and productivity, for example), but that the organisation might still struggle to identify root causes and system failures, and relations with the workforce will still be largely adversarial rather than collaborative.[248]

Stage three, which emerged from 1990 onwards, is a risk-based and proactive model, incorporating continuous improvement. A company that has reached stage three will have adopted more recent strategies, including organisational learning, corporate social responsibility, and will 'anticipate[s] safety problems before they occur and implement[s] proactive measures'.[249] This stage three proactive model is still considered to be the optimal framework for positive safety management within contemporary organisations. Reactivity is a feature of Westrum's pathological culture; and Whittingham's stage one and stage two models.

Finally, 'safety culture' is a term that has been in use since the 1980s and is often associated with the investigation into the Chernobyl Disaster. A review by Zanko and Dawson in 2012 concluded that 'one of the major problems with safety culture (and organizational culture for that matter) is the general absence of agreement on its definition'.[250]

A literature review commissioned by the HSE in 2005 on safety culture and safety climate noted this lack of consensus and offered that a good framework views safety culture as a product of three interrelated aspects:

- Psychological Aspects or 'safety climate' (individual and group attitudes, perceptions and values).
- Behavioural Aspects (safety-related actions and behaviours).

[247] Ibid, p. 102.
[248] Ibid, p. 102.
[249] Ibid, p. 102.
[250] M. Zanko and P. Dawson, 'Occupational Health and Safety Management in Organizations: A Review', *International Journal of Management Reviews*, 14 (September 2012), p. 335.

• Situational Aspects (policies, procedures, organisational structures and management systems).[251]

The two models of different types of organisational safety culture, as outlined by Westrum and Whittingham share the premise that, to reach an optimal state of safety, an organisation must pass through a number of stages. Reactive safety is a characteristic of an early stage or immature safety culture, and modern expectations of organisational safety are largely predicated on the characteristics of mature, later stages of safety culture as set out in these models. The concept of safety culture is examined throughout this thesis, with an introductory section on the topic in Chapter Three on the Houghton Main and Golborne Colliery disasters.

The theory of regulatory capture was first developed by economists (notably Stigler and later Peltzman) and is concerned with the pressures that organisations and special interest groups are able to assert on government bodies to affect state interventions.[252] A narrower definition, which is useful in the context of industrial fatalities, is: 'regulatory capture is specifically the process through which regulated monopolies end up manipulating the state agencies that are supposed to control them'.[253] Examples of this phenomenon that could be applied to the subject of industrial fatalities including the Aberfan Disaster, in which the Mines Inspectorate failed to adequately regulate the National Coal Board, and the Piper Alpha Disaster, in which the regulation by the Department of Energy failed to ensure safety in the North Sea oil and gas industry. The phenomenon of regulatory capture is an important aspect in the first two case studies in this thesis. The role of Her Majesty's Inspectorate of Mines and the lack of scrutiny the regulator appears to have been subject to, especially in inquiries, is explored in the Houghton Main and Golborne Collieries chapter. The behaviour of the Department of Energy is explored in the Piper Alpha case study and is summarised in this quote from Woolfson and Beck:

> The Department of Energy repeatedly lined up with the industry to prevent the encroachment of other agencies onto its territory. This was evident at the end of the 1970s, when a Labour government inquiry into offshore

[251] 'RR367 - A Review of The Safety Culture and Safety Climate Literature for The Development of the Safety Culture Inspection Toolkit', *HSE*, https://www.hse.gov.uk/research/rrpdf/rr367.pdf 2005, accessed 10 December 2023.
[252] E. Dal Bo, 'Regulatory Capture: A Review', *Oxford Review of Economic Policy*, 22:2 (July 2006), p. 203.
[253] Ibid, p. 203.

> safety under J. M. Burgoyne recommended continuation of the current arrangements despite the industry's worsening safety record'.[254]

There is also a large body of literature concerned with white-collar crime. Within this, there are specialists in corporate crime that causes human or environmental harm. Steve Tombs' work focuses on the regulation of safety offences. In his book, *The Corporate Criminal*, co-authored by David Whyte, he set out the difficulties of holding corporate criminals to account.[255] This excerpt from the book, which refers to the work of Edwin Sutherland, illustrates the relationship between regulation and white-collar crime:

> Just as Marx had documented in his study of the Factories' Acts, Sutherland's study showed how business offenders are aided by the power of their class to influence the implementation and administration of the law.[256]

Another book by Tombs and Whyte, *Safety Crimes*, examines the specific issues of white collar-crime as it relates to health and safety legislation.[257] Much of the primary source material in this thesis relates to corporations and in which individuals, as employees, interact with them. The role of regulation and the importance of regulation in occupational safety, which individuals rely on for their personal safety and health. Steve Tombs and David Whyte were both on the Board of the *Centre for Corporate Accountability*, which was founded by David Bergman, who was one of the oral history participants in this study.

Labour History and Workplace Safety

Some elements of labour history have already been discussed within the preceding sections on grand theory, regulation and risk, with references to the work of labour historians such as Arthur McIvor, Geoff Tweedale and Vicky Long.

Labour histories contain a wealth of research on topics from before the industrial revolution to trade unions to gender and race at work. There are also studies looking at specific incidents including Gregson and Quinlan's article on health and safety in the garment industry, and Ruslan et al's work on health and safety in nineteenth century European factories. [258] Further, there is a body of literature

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[254] C. Woolfson and M. Beck, eds., *Corporate Social Responsibility Failures in the Oil Industry* (New York, 2005), p. 18.
[255] S. Tombs and D. Whyte, *The Corporate Criminal: Why Corporations Must Be Abolished* (Abingdon, 2015), p. 130.
[256] Ibid, p. 132.
[257] S. Tombs and D. Whyte, *Safety Crimes* (Cullompton, 2007).
[258] S. Gregson and M. Quinlan, 'Subcontracting and Low Pay Kill: Lessons from the Health and Safety Consequences of Sweated Labour in the Garment Industry, 1880–1920', *Labor History*,

concerned with mourning and loss in working-class communities that experienced disaster. The labour and trade union history contribution to this debate about health and safety connects with the lived working-class experience of mourning and loss manifested in a culture of grief and first-hand experience of bereavement. McIvor noted that:

> OHS literature has shown how medical recognition of occupational disorders, and the regulation of occupational health and safety, has in the past been the product of a complex interplay of actors and forces; the state, economy and politics, medical knowledge, public opinion, employers and management, workers and their trade unions.[259]

Trade unions feature heavily in labour histories concerned with occupational safety and health. One example is Bobbie Oliver's article about three unskilled, inexperienced tourists who were killed on construction sites in Australia.[260] This article includes details such as: 'Union officials arriving 40 minutes after the accident found blood and work clothing strewn about the floor where Heumann had landed', and the fact that work continued, and a major concrete pour went ahead in the immediate aftermath of the fatality.[261] This has disturbing echoes to the case of Simon Jones, who was killed on his first day at work on a dock in England, and whose colleague was expected to clean up blood and other human remains so that unloading work could continue. Simon Jones' death is examined in Chapter Six. Oliver's article used the subject of these industrial deaths as the vehicle for a study on the correlation between the decline of trade unions and health and safety standards in Western Australia.

Oral history has been touched upon in the earlier discussion of McIvor's work, and there are many other examples of relevant oral histories, such as Catherine O'Byrne's oral history project on women's experiences of the Piper Alpha disaster and Terry Brotherstone and Hugo Manson's oral history project on North Sea Oil.[262] Where possible, original interviews were used for the research in this thesis

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61:5-6 (September 2020), pp. 534-550; K. Ruslan, et al., 'Occupational Safety and Health of Factory workers in European Countries in the Nineteenth Century: Historical and Legal Analysis', *Labor History*, 61:3-4 (July 2020), pp. 388-400.

[259] A. McIvor, 'Guardians of Workers' Bodies? Trade Unions and the History of Occupational Health and Safety', *Labour History*, (119) (November 2020), pp. 1-30.

[260] B. Oliver. '"No Place for Tourists": Deaths on Western Australian Construction Sites', *Labour History*, (119) (November 2020), pp. 115-142.

[261] Ibid, p. 116.

[262] C. O'Byrne, 'Remembering the Piper Alpha Disaster', *Historical Reflections,* 37:2 (June 2011), pp. 90-104; T. Brotherstone and H. Manson, 'North Sea Oil, its Narratives and its History: an Archive of Oral Documentation and the Making of Contemporary Britain', *Northern Scotland*, 27 (February 2015), pp. 15-41.

and these are supported by existing oral histories including those mentioned above. The Britain at Work project was also consulted for further background and context.[263] Oral history transcripts in the Britain at Work project provide excellent first-hand experiences such as this quote from a woodworking machinist, Allan Tyrrell, who described the lack of safety at the start of his working life in the 1960s: 'There was no safety equipment on the machines. I mean, if you had all your fingers and thumbs you was really unusual, and I mean that, really unusual'.[264] Despite advances in machinery safety, hand and finger injuries and amputations persist in being common injuries in manufacturing.

Paul Almond is a professor of Law who has published books on the Corporate Manslaughter Act and Health and Safety in Britain.[265] Mike Esbester is a historian specialising in the history of safety, risk and accident prevention. Together, Almond and Esbester have carried out research on the changing legitimacy of the regulatory state and the health and safety industry.[266] The decline of heavy industry and the unions has contributed to a sense that health and safety is harder for the profession to justify, because the obvious high-risk industries are no longer as visible and less vocally advocating and driving safety. Esbester and Almond's work discusses public hostility to the 'nanny state' and red tape. Almond has also looked at the relationship between public and media perceptions of health and safety regulation, including public reactions to workplace fatality cases.[267] Further, Almond has published on the subject of the Corporate Manslaughter Act (2007) in the context of regulatory reform in the industry.[268]

In the period since 1974 there have been several high-profile disasters that can be seen to have helped change the course of regulation and risk management.

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[263] D. Lyddon, 'Health and Safety', *Britain at work, Voices from the Workplace, 1945-1995*, http://unionhistory.info/britainatwork/narrativedisplay.php?type=healthandsafety accessed 29 June 2023.
[264] 'Allan Tyrrell', *Britain at Work, Voices from the Workplace, 1945-1995,* http://unionhistory.info/britainatwork/display.php?irn=918&QueryPage=, 2011, accessed 29 June 2023.
[265] P. Almond, *Corporate Manslaughter and Regulatory Reform* (London, 2013); P. Almond and M. Esbester, *Health and Safety in Contemporary Britain: Society, Legitimacy, and Change since 1960* (Cham, 2019).
[266] P. Almond and M. Esbester. 'The Changing Legitimacy of Health and Safety, 1960–2015: Understanding the Past, Preparing for the Future', *Policy and Practice in Health and Safety*, 14:1 (October 2016), pp. 81-96.
[267] P. Almond, 'Public Perceptions of Work-Related Fatality Cases', *The British Journal of Criminology* 48, no. 4 (April 2008), pp. 448-467.
[268] P. Almond, 'Understanding the Seriousness of Corporate Crime: Some Lessons for the new "corporate manslaughter" Offence', *Criminology & Criminal Justice*, *9*:2 (May 2009), pp. 145–164.

The chemical plant explosion at Flixborough (1974, 28 workplace fatalities), the Piper Alpha disaster (1988, 167 workplace fatalities) and the Herald of Free Enterprise ferry disaster at Zeebrugge (1987, 193 passenger and crew fatalities) all provoked public outrage.[269] They prompted huge bodies of work to understand the cause and prevent recurrence. Where lessons have been learnt, new strategies have then been deployed to address the failings. Accounts of these events reveal the responses of the public, the regulatory industry and the safety industry. Ewen and Andrews' research on these disasters and the media reaction to them forms part of the wider historiographical landscape on public perceptions of work-related fatalities. Writing about the so called 'decade of disasters', in the 1980s they noted that:

> Together these tragedies called into question the contradiction between a government committed to deregulating the free market and its statutory obligation to protect public safety where private and commercial organisations failed to do so. While the preceding decades were certainly not immune to mass tragedy, the decade of disasters raised significant issues about the effects of the retreat of the developmental state and its replacement by the private sector on people—and their safety—in their everyday lives.[270]

In the aftermath of Piper Alpha, it was discovered that the permit to work system was not fit for purpose, and that many warning signs had been missed. However, 'there can be little doubt that the North Sea, and many offshore installations around the world, are safer today as a consequence of the changes made by the industry in the immediate aftermath'.[271] A similar reaction to the failings came to light in the aftermath of the Zeebrugge disaster, which 'paved the way for the Corporate Manslaughter Act'.[272]

Esbester and Almond took the approach of reviewing the legitimacy of the 'nebulous idea' of health and safety, as opposed to a particular agency.[273] The

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[269] The Herald of Free Enterprise ferry, run by Townsend Torresen, left Zeebrugge harbour with the bow doors open. On accelerating at the harbour's entrance, the car deck was quickly filled with water, which led to the ferry capsizing and coming to rest on its side on a sand bank.193 passengers and crew died.

[270] Ewen, S. and Andrews, A. 'The Media, Affect, and Community in a Decade of Disasters: Reporting the 1985 Bradford City Stadium Fire'. *Contemporary British History*, 35:2 (February 2021), p. 260.

[271] S. McGinty, *Fire in the Night, 30 Years Since the Piper Alpha Disaster* (London, 2008), p. 286.

[272] I. Yardley, *Ninety Seconds at Zeebrugge: The Herald of Free Enterprise Story* (Stroud, 2014). p.243.

[273] P. Almond and M. Esbester, 'The Changing Legitimacy of Health and Safety, 1960–2015: Understanding the Past, Preparing for the Future', *Policy and Practice in Health and Safety,* 14:1 (October 2016), p.82.

2011 Löfstedt Review 'expressed concern' about the barrage of negative stories being propagated in print newspapers about the detrimental effects of 'health and safety' on ordinary people's lives.[274] This is unsurprising given the rhetoric of the coalition government and ties in with the political trajectory set out in the previous section. Esbester and Almond concluded that the evidence pointed to 'the influence that different Government preferences and ideology can have at particular times; that changes of government do filter down into differing approaches and demands on regulators, making it inherently political in its operations at times'.[275]

Earlier in the period, and to relate the subject back to the case studies in this thesis, this excerpt from Esbester and Almond's article explains the scrutiny and restructuring that necessarily happened after the Piper Alpha disaster (and Clapham rail crash, both in 1988), to allay public concerns:

> No sooner had the first wave of organizational changes bedded in, than a second wave of changes had to be negotiated; following the Clapham rail crash and the Piper Alpha disaster, HM Railways Inspectorate and the responsibility for regulating and inspecting offshore installations were shifted into HSE (in 1990 and 1991), mainly as a means of addressing some perceived conflicts of interest that undermined the legitimacy of those bodies in their previous departmental locations (Department of Transport and Department of Energy).[276]

This example is one of many reactive changes to regulation and legislation that fit Bridget Hutter and Sally Lloyd-Bostock's 'regulatory crisis' model.[277]

Another theme affecting legitimacy over the period was the role of the European Union. As Almond and Esbester wrote:

> The EU has increasingly been seen by politicians, policymakers, and the media as a source of legislative interventions (most notoriously the 6-Pack regulations of 1992) and of a non-accountable bureaucratic over-reaching,

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[274] Ibid, p. 83.
[275] Ibid, p. 86.
[276] P. Almond and M. Esbester, 'The Changing Legitimacy of Health and Safety, 1960–2015: Understanding the Past, Preparing for the Future', *Policy and Practice in Health and Safety,* 14:1 (October 2016), p.85.
[277] B. M. Hutter and S. Lloyd-Bostock, *Regulatory Crisis: Negotiating the Consequences of Risk, Disasters and Crises* (Cambridge, 2017). Hutter and Bostock's book examines the ways in which major crises can affect regulation. The Regulatory Crisis model sets out the ways in which competing narratives and socially constructed responses to disasters that can affect regulators in ways that don't necessarily relate to the causes of the events.

> and precautionary unreasonableness, which has fundamentally damaged the legitimacy of health and safety as a whole.[278]

The toxicity of policymaking derived from the EU as a result of growing Euroscepticism in the 1980s and 1990s 'poisoned the well' and created 'significant legitimacy challenges', according to John Rimington, Director General of the HSE 1983–95.[279]

Finally, the decline of trade union membership and activity in the period was also examined by Esbester and Almond in relation to health and safety. They observed that safety in the workplace remained an area where unions were able to continue to make meaningful contributions, because it has remained a useful area of day-to-day business that is conducted via committees and forums, away from more potentially adversarial or political debates about wages or conditions.[280] Further details of the decline in trade union membership can be found in a recent government statistical bulletin.[281]

Pantti and Wahl-Jorgensen wrote an article in 2011 examining press coverage of British man-made disasters.[282] This included relevant analyses of public perceptions and expectations following disasters, such as this quote from the *Evening Standard* after the Paddington rail crash: 'The travelling public cares nothing for dogma and political posturing. It wants answers, and solutions'.[283]

Other notable research in this area includes *Learning from Catastrophes* by Howard Kunreuther and Michael Useem, which outlines risk perception and key concepts such as the 'five neglects' economists' model of risk.[284] Whilst *Learning from Catastrophes* has a bias towards natural disasters, it has conceptual

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[278] P. Almond and M. Esbester, 'The Changing Legitimacy of Health and Safety, 1960–2015: Understanding the Past, Preparing for the Future', *Policy and Practice in Health and Safety,* 14:1 (October 2016), p. 87.
[279] Ibid, p. 88.
[280] Ibid, p. 89.
[281] Trade Union Membership, UK 1995-2022: Statistical Bulletin, *Gov.UK*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1158789/Trade_Union_Membership_UK_1995-2022_Statistical_Bulletin.pdf 2023, accessed 10 December 2023.
[282] M. K. Pantti et al., '"Not an Act of God": Anger and Citizenship in Press Coverage of British Man-made Disasters', *Media, Culture & Society,* 33:1 (January 2011), pp. 105-122.
[283] Ibid, p. 118.
[284] H. Kunreuther, M. Useem, and A. Berger eds., *Learning from Catastrophes: Strategies for Reaction and Response* (Upper Saddle River, N.J 2010); The five neglects are, 1. Probability, 2. Valuation of potential benefits and losses, 3. Accurate use of (subjective) probability and statistics, 4. Evaluation of available alternatives, 5. Incorporation of all benefits and costs accruing to the decision maker.

applicability on disaster response and human perception of risk. As previously discussed, the prediction of likelihood is a legal requirement of risk assessment, so human perception of risk and the psychology behind it is a key theme of this research.[285] The work of academics such as Hutter and Esbester, which reference specific events and phenomena, are useful for reference and for capturing the zeitgeist, for example by examining public opinion or regulatory reaction in the aftermath of workplace fatalities or large man-made disasters.

Conclusion

Literature relevant to this thesis is extensive and multi-disciplinary. Labour histories provide context and empirical evidence of the experiences of working people with in-depth analysis of social, economic, and political factors, including the history of the labour movement. Labour histories also include oral histories and analyses of key events and time periods. This thesis further contributes to the history of the labour movement by spanning a forty-year period from the late twentieth to the early twenty-first centuries, examining incidences of industrial fatality chronologically with the inclusion of oral testimony.

Scholars of law have contributed significantly to the understanding of relevant concepts and themes including white-collar crime, corporate accountability, OSH legislation, regulation, and regulatory capture. These subjects feature strongly throughout this thesis.

The work of safety practitioners provides a link to the strategic direction of the safety industry. For example, RB Whittingham pulled together the theoretical work of many academics mentioned above and tied their theories in with specific examples to form a comprehensive study on system errors.[286] The field of psychology brings behavioural safety and a significant portion of modern safety management theory stems from here.

The subject of the modern industrial fatality has not been examined systematically from a qualitative perspective. There is a significant amount of data, and analysis of this data. But the modern industrial fatality as a phenomenon, and its impact and meanings, are hitherto neglected areas of

[285] The Management of Health and Safety at Work Regulations 1999 set out the requirement for employers to carry out risk assessment. The principle of reasonable foreseeability and the requirement to assess likelihood and consequence/ severity of harm are key to the UK's legal risk assessment framework.

[286] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008).

historical inquiry. This thesis connects the different areas of historiography examined in this chapter, whilst developing new understandings of organisational characteristics of workplaces where industrial fatalities occurred; and linking the historical findings to the practice of occupational safety throughout the period and beyond.

Chapter Three - Houghton Main & Golborne Colliery

'Everything just went silent, nobody relaxed until the men were back'. Interview with Anne Jones, mother of Simon Jones, conducted by Victoria Hill, 15 June 2023.

This chapter examines two similar events that happened a few years apart in the 1970s. These were both explosions in coal mines: one at Houghton Main colliery near Barnsley, in 1975, and the second, at Golborne colliery in Lancashire in 1979. The timing of the Houghton Main and Golborne explosions in relation to the changing regulatory landscape, developing expectations of industrial safety, and imminent decline of the mining industry in the UK means these events provide unique insights in the context of this study. An added dimension is a contemporaneous PhD thesis that examined the nature of (and interacted directly with) the Houghton Main disaster inquiry. This provides additional insights and academic analysis of the process as it took place. This chapter also offers an introduction to the concept of safety culture and an analysis of safety culture in the coal mining industry as an important aspect of the terrain. Other themes examined in this chapter include power imbalances, ineffective regulation, cultural and organisational factors, and the application of safety theory in industrial settings.

The history of British mining accidents is long and varied. The National Mines Research Society maintains a database of mining disasters, with the earliest known coal mining disaster recorded in Gateshead in 1705 where an explosion killed at least thirty men.[287] The coal mining industry in Britain was inherently dangerous, and there were many hazards that caused death, serious injury, and long-term occupational diseases:

> Impacts from heavy machinery or tools, the fall of the roof or sides of underground passages, collisions with fast-moving and heavy trams of coal, the misfiring of explosive 'shots', flooding, explosions, fires, electrocution and a great many other perils all posed a threat to a miner's

[287] 'Gateshead Colliery Explosion – Gateshead – 1705', *NMRS*, https://www.nmrs.org.uk/mines-map/accidents-disasters/northumberland/gateshead-colliery-explosion-gateshead-1705/, accessed 14 May 2023.

> well-being. In the period between 1868 and 1919, for example, 'a miner was killed every six hours' in Britain.[288]

The counties of Lancashire and Yorkshire where the disasters in this case study took place both have their own histories and tragedies that affected their mining communities. Disasters dating back to the beginning of the Industrial Revolution and up to the closure of the mines in the late twentieth century are numerous. In Yorkshire, the Lundhill Explosion in 1857 and the Swaithe Main explosion in 1875 claimed 189 and 143 lives respectively and in Lancashire, the Hulton Colliery explosion in 1910 and the Wood Pit explosion in 1878 claimed 344 and 160 lives respectively.[289] In addition to the many disasters on record, there were thousands of individual deaths and life-changing injuries. These losses are an important part of the identity of those affected, often memorialised with pithead winding wheels and commemorative plaques that can still be found in former mining communities. Rosemary Power's 2008 article explored the different aspects of mining heritage and memorialisation in Britain, and the importance and meaning of these artefacts of the industry to the communities living in them:

> Memorials include mining equipment and tubs mounted in a prominent position in the village or at the former colliery site. Plaques, stained glass windows in churches, and war memorials also featured significantly. In some cases statues or sculptures have been created, while in other places buildings are named after individuals, communities or mines.[290]

In 2021 a new national memorial to coal mining was unveiled at the National Memorial Arboretum in Staffordshire.[291] The two disasters examined in this case study were among the last to happen in Britain, as the coal mining industry began to wind down in the 1970s.

These tragic cases were selected for analysis in this thesis for several reasons. The two events happened in the years immediately after the introduction of the

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[288] K. Bohata et al., *Disability in Industrial Britain A Cultural and Literary History of Impairment in the Coal Industry, 1880-1948* (Manchester, 2019), p. 5.
[289] 'Hulton Colliery Explosion – Atherton – 1910', *NMRS*, https://www.nmrs.org.uk/mines-map/accidents-disasters/lancashire/hulton-colliery-explosion-atherton-1910/, accessed 14 May 2023.
[290] R. Power, "After the Black Gold": A View of Mining Heritage from Coalfield Areas in Britain', *Folklore*, 119:2 (August 2008), p. 170.
[291] H. Sherwood, 'In the Darkness and Dust: Memorial Recalls the Hard History of British Mining', *The Guardian*, https://www.theguardian.com/environment/2021/aug/08/in-the-darkness-and-dust-memorial-recalls-the-hard-history-of-british-mining 8 August 2021, accessed 19 June 2023.

HSWA, which provides an opportunity to examine the extent to which the new legislation had entered into industry discourse and whether it had been considered and applied. The two disasters were also linked to one another by similarity of circumstances and were the last two fatal explosions to occur in British coal mines.

Houghton Main Colliery was a coal mine just east of Barnsley, in Yorkshire. It was first sunk in 1873 and by 1975 there were 1361 men employed at the Colliery, 1191 of whom worked underground and 170 on the surface.[292] Houghton Main's history included disasters in 1886 (a cage accident that killed 10 men), an explosion in 1930 (killing 7), and an explosion in 1975 (killing 5) that is one of the subjects of this case study.[293] These three disasters represent just a fraction of the total number of men who perished at Houghton Main, most of whom died in single fatality accidents or smaller incidents that were not recorded as disasters.[294] The 1975 explosion was caused by the ignition of methane, also known as firedamp (a word which originates from the German word 'dampf', meaning vapours).

An urgent debate took place in the House of Commons on 13 June 1975 (the day after the Houghton Main explosion) in which it was noted that in addition to a number of cabinet ministers, Sir Derek Ezra, the Chairman of the National Coal Board (NCB), and Bill Simpson, the Chairman of the Health and Safety Commission were both in attendance at the pithead at Houghton Main to show support for recovery efforts and the community affected.[295] Dennis Skinner MP said during the debate that 'any investigation must take into account the fact that in many cases the optimum has been reached regarding extra productivity and that the chances of accidents of this kind will be heightened unless additional safeguards are adopted along the lines that many of us have been suggesting from time to time'.[296] Skinner's point was that productivity was being squeezed by the fact that the seams being worked were getting thinner, and the geology more challenging. These pressures, according to Skinner, should be taken into

[292] Houghton Main Colliery Explosion – Barnsley – 1975, *NMRS*, https://www.nmrs.org.uk/mines-map/accidents-disasters/yorkshire/houghton-main-colliery-explosion-barnsley-1975/, accessed 14 May 2023.
[293] Ibid, accessed 20 May 2023.
[294] The threshold for the term 'disaster', in coal mining, is five or more fatalities.
[295] HC Deb 13 June 1975, vol 893, column 817.
[296] HC Deb 13 June 1975, vol 893, column 818.

account in the investigation into the explosion and considered in the context of the wider safety of coal miners.

Golborne Colliery was a coal mine located in the Metropolitan Borough of Wigan, mid-way between Wigan and Warrington. At 11.15am on 18 March 1979, there was an underground explosion that killed three men instantly and seven more who died later in hospital. An eleventh man was seriously injured and survived. Golborne was first sunk in the 1860s and by 1979 employed 870 men, most of whom worked underground.[297] The explosion happened in the Plodder Seam development district, a two year old development, 600 feet underground and two miles from the pithead.[298] Auxiliary fans in the tunnels where the victims were working that night were not functioning, which meant that methane gas was able to build up and form an explosive concentration in the air.[299] This was ignited when an electrician who was working on the switches to restore power to the fans, created a spark. The electrician, Mr Dallimore was among those who were killed instantly in the blast.

The Golborne Colliery Disaster in 1979 was the last fatal firedamp explosion to be reported to the HSE in the UK and happened just four years after the similar fatal explosion at Houghton Main Colliery in Barnsley. A report with findings and recommendations from after the Houghton Main disaster should have been distributed, but it 'had not been circulated to colliery level because of printing delays'.[300] That said, the requirements for ventilation were already present in the Mines and Quarries Act 1954 and the Coal and Other Mines (Ventillation) Regulations 1956.[301]

Prior to Sir Derek Ezra's appointment as Chairman of the NCB, the post was held by Lord Robens, who was also the author of the 1972 Report of the Committee on Health and Safety at Work, which gave rise to the Health and Safety at Work

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[297] 'Golborne Colliery Explosion – Golborne – 1979', *NMRS*, https://www.nmrs.org.uk/mines-map/accidents-disasters/lancashire/golborne-colliery-explosion-golborne-1979/, accessed 1 October 2023.
[298] A. Dunn, 'Three Die in Pit Tunnel Gas Blast', *The Guardian*, 19 March 1979, p. 1.
[299] Auxiliary fans are used in underground mines to provide breathable, comfortable air in parts of the mine not served by the main ventilation systems. This can include dead end sections and narrow drivages.
[300] L. D. Rhydderch, *The Explosion of Golborne Colliery, Greater Manchester County, 18 March 1979: Report of the Causes of, and Circumstances Attending the Ignition and Explosion of Firedamp which occurred at Golborne Colliery, Greater Manchester County, on 18 March 1979* (London, 1979), p. 11.
[301] Ibid, p. 11.

etc. Act 1974. Mr Joe Gormley was the president of the National Union of Mineworkers, and his son was employed at Golborne, but was not involved in the explosion.[302]

In early 1979, when the Golborne incident happened, the Health and Safety at Work etc. Act 1974 had been in force for four years and was explicitly referenced in the Health and Safety Executive's report into the disaster. The HSE was itself a new organisation, having been formed as part of the provisions of the 1974 Act. The report was compiled for the HSE by Mr L.D. Rhydderch who was HM Chief Inspector of Mines and Quarries from 1977-1979.

This chapter examines the Houghton Main Disaster and the recommendations that were made in the inquiry report. It then explores the Golborne Colliery Disaster and the links and similarities between the two events, including analysis of cultural factors in the mining industry. Finally, the chapter examines safety theory and how it relates to industrial settings such as coal mining. This sets the scene for the subsequent chapters which further analyse industrial safety in the context of the other selected case studies.

Houghton Main Colliery Disaster Report & Recommendations

The 1975 explosion at Houghton Main Colliery occurred four years prior to the Golborne explosion and is connected to the Golborne explosion by several similarities in the circumstances of the events, and the fact that the Houghton Main report had not been communicated or its findings implemented in the four years between the two events. Had the findings and recommendations of the Houghton Main inquiry report been fully implemented, the likelihood of the Golborne explosion happening would have been minimal. Five men were killed and one more was seriously injured at Houghton Main, and the cause was found to be an accumulation of firedamp ignited by frictional sparking from the impeller and casing of an auxiliary fan.[303] In other words, gases that occur naturally in the mine workings had been allowed to accumulate and reach concentrations that were explosive. These gases were then ignited by a spark caused by metal-on-metal friction within a fan in the area. The occurrence of explosive gases in mines was very well understood, hence the requirement for a system of ventilation and

[302] A. Dunn, 'Three Die in Pit Tunnel Gas Blast', *The Guardian*, 19 March 1979, p. 1.
[303] J. Carver, *Report on Explosion at Houghton Main Colliery, Yorkshire: Report on the Causes of, and Circumstances Attending, the Explosion which occurred at Houghton Main Colliery, South Yorkshire, on 12th June 1975* (London, 1976).

detection. However, the Houghton Main Disaster inquiry, having examined the circumstances of this particular event, made additional recommendations for further prescriptive requirements to be added to the Regulations.

Section 129 - 1(e) of the Disaster Inquiry Report made the following recommendations:

> (e) The Coal and Other Mines (Ventilation) Regulations 1956
>
> These Regulations should be amended to include the following provisions:
>
> (i) Rules should be made for the installation and operation of auxiliary fans.
>
> (ii) Narrow drivages which require at any time to be ventilated by auxiliary means are, thereafter, constantly ventilated by positive means.
>
> (iii) The manager should specify the construction of any fence erected to prevent access to an unventilated part of a mine and should ensure that it is maintained constantly in an effective condition.[304]

These recommendations reveal an apparent tension between the Robens philosophy, which called for more self-regulation, and the disaster inquiry's demand for further detailed legislative requirements. Robens recognised that it was not possible for lawmakers to identify and legislate for every potential hazard or technical detail, and that those managing the work were best placed to understand and control the risks in their industries.

Thus, there was a clear understanding that areas of a mine being served by auxiliary fans were likely to be especially vulnerable to the build-up of firedamp by their very nature. i.e., narrow and with dead ends. Further, the use of auxiliary fans was recognised as sub-optimal and specific rules for the use of these fans should be in place. Consequently, the ventilation to these areas necessarily required specific, prescriptive legislative amendments. These recommendations were not only not circulated or communicated to the network of mines around the UK, they were also never adopted or written into law. It is not clear why this was the case, but the decline of the UK mining industry and increasing privatisation of the sector may have been factors. The backdrop nationally during the 1970s was one of pit closures and strikes with 1972 seeing the first national miners' strike since 1926. Since the appointment of Lord Robens around 400 pits had closed

[304] Ibid.

with the loss of 300,000 jobs, and all 289 remaining pits went out in the 1972 national miners' strike.[305]

The Douglas Owen PhD Thesis: Safety Culture and Safety Systems

A 1978 PhD thesis by sociologist Douglas Owen examined the nature of the inquiry into the Houghton Main Colliery explosion, with detailed analysis of the perceived imbalance of power during the process.[306] As part of his research, Owen interviewed pitmen and visited pits, as well as attending the Houghton Main inquiry proceedings, and writing to the Commissioner of the inquiry. Owen also provided his own 'alternative reconstruction' of the Houghton Main explosion, that aligned with the submissions of the National Coal Board (NCB), and Owen's own experiences of the conscientiousness of the Barnsley pitmen he had interviewed for his own research.[307]

Owen's research is of direct interest to this thesis, not only for the insights into the Houghton Main Colliery explosion and inquest, but also because his research explicitly set out to examine 'the applicability of the Robens statement'.[308] Owen was referring to the following statement in the Robens Report: 'Our present system encourages rather too much reliance on state regulation, and rather too little on personal responsibility and voluntary, self-generating effort. This imbalance must be redressed'.[309]

Owen was researching and writing in the years directly after the publication of the Robens report, the implementation of the Health and Safety at Work etc. Act 1974, the Health and Safety Commission, and the Health and Safety Executive. HM Inspectorate of Mines and Quarries fell under the organisational umbrella of the new Health and Safety Executive. Owen's contemporaneous analysis of the Robens philosophy during the Houghton Main Colliery explosion inquiry cuts across several themes that apply directly to this thesis in general, and this case study in particular. These themes include power imbalances, ineffective regulation, cultural and organisational factors, and the application of safety theory in industrial settings.

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[305] B. Elliot., *Pits and Pitmen of Barnsley* (Barnsley, 2001), p. 188.
[306] D. B. Owen., *Safety and health in Mines: the rise of Bureaucracy in the Coal Mining Industry and its Results as Evidenced by the Public Inquiry into an Accident at Houghton Main Colliery* (PhD, Aston University, 1978).
[307] Ibid, p. 11.
[308] Ibid, p. 1.
[309] Committee on Safety and Health at Work, 1970-1972, Cmnd 5034, p. 7.

Owen was not only studying, observing, and analysing proceedings; he was also attempting to intervene and positively influence the direction of the inquiry because of what he saw as a huge power imbalance and potential conflict of interest (whereby the Mines Inspectorate would effectively be marking their own homework). Robens called for more self-regulation, by which he meant more emphasis on employers and employees working together to understand and reduce risks. Self-regulation requires employers to make the changes and investments considered 'reasonably practicable' to ensure the safety of the employees.[310] This means there is an understanding that cost-benefit analysis is included in the application of investment in risk reduction. In the case of the NCB, it was, of course, taxpayers' money rather than employers', but the principle holds that self-regulation only puts the employer's *money* on the line whereas for the workers, it is their lives that are on the line.

Owen noted that despite the recent publication of the Robens Report, and its criticisms of the over-reliance on state regulation, the inquiry did not consider or mention this concept: A fact that Owen described as a 'surprising omission'.[311] It was his belief that this omission was in fact a result of the very nature of the inquiry. The immediate causes of the explosion at Houghton Main were never in dispute. The ignition of accumulated firedamp by a spark from a defective fan was accepted and agreed by all as the cause of the incident. However, according to Owen, no attempt was made by the inquiry to examine underlying or root causes (as we now refer to them), such as 'custom and practice in rule observance' or the 'special problems faced by deputies in trying to marry safety and production'.[312] Whilst Owen did not use the language that we have come to expect in modern incident investigations, his observations of the inquiry were certainly alluding to the omission of an examination of management culture, organisational failings, and the bureaucratic and procedural factors of underlying events. Furthermore, Owen's analysis was critical of the focus on 'human error', and the omission of 'any suggestion that members of the Mines Inspectorate be

[310] Health and Safety at Work etc. Act 1974.
[311] D. B. Owen, *Safety and Health in Mines: the rise of Bureaucracy in the Coal Mining Industry and its Results as Evidenced by the Public Inquiry into an Accident at Houghton Main Colliery* (PhD, Aston University 1978), p. 3.
[312] Ibid, p. 10.

held accountable for their role prior to the accident or that a change in their role might prevent similar accidents'.[313]

The Introduction and Literature Review chapters of this thesis provided some preliminary background on safety culture and safety systems, including the work of James Reason, Robert Whittingham, and Ron Westrum. 'The term 'safety culture' first came to prominence as a result of the International Atomic Energy Agency's (IAEA) initial report on the Chernobyl nuclear accident (IAEA 1986). Since then it has been discussed in other major accident enquiries and analyses of safety failures, such as the Piper Alpha oil platform explosion in the North Sea and the Clapham Junction rail disaster in London'.[314] Cox and Flin summarised a decade of studies and discussions on the subject of safety culture, including the work of Barry Turner, by stating that: 'They defined culture in terms of "the set of beliefs, norms, attitudes, roles and social and technical practices concerned with minimizing the exposure of employees, managers, customers and members of the public to conditions considered dangerous or injurious"'.[315] Cox and Flin provided a critique of some of the language around safety culture research, for example stating that Westrum's 'pathological' culture model fell into a category of 'organisational cultural typologies' that were 'beloved by management consultants, despite little evidence for their predictive validity'.[316] The distinction between 'safety culture' and safety climate' was also questioned: 'although on the surface the distinction between culture and climate may appear to be clear, at the deeper level, when one begins to compare the individual studies that make up the two literatures, the seemingly clear distinctions begin to disappear'.[317]

James Reason also addressed these issues by setting out the background of the terminology and giving his own list of 'components of a safety culture', including an ideal safety culture as 'the engine that continues to propel the system towards the goal of maximum safety', 'regardless of the leadership's personality or current commercial concerns'.[318] However, to avoid delving too far into the semantics of

[313] Ibid, p. 10.
[314] S. Cox and R. Flin, 'Safety culture: Philosopher's Stone or Man of Straw?' *Work and Stress*, 12 (September 1998), p. 190.
[315] Ibid, p. 191.
[316] Ibid, p. 192.
[317] Ibid, p. 192.
[318] J. Reason, *Managing the Risks of Organisational Accidents* (Aldershot, 1997), p. 195.

these terms, the reader should assume that throughout this chapter and thesis, discussions of 'culture' and 'safety culture' are meant in the broadest sense. That is, the 'shared values', and 'behavioural norms' within an organisation or within parts of an organisation, such as the management or the 'shop floor'.[319] Two other important terms are *human factors* and *systems*. Human factors or human errors are implicated to some extent, in almost all accidents and incidents.[320] This is because of the necessary human involvement and interactions with machinery, technology, processes and procedures, which, in hindsight, after an accident, usually provides an identifiable moment or moments when someone (apparently) did something wrong or made an error. Reason's pioneering psychological theory on human error identified complexities and variations within the broad term, which included deviations, violations, slips and lapses within the context of internal and external administrative controls.[321] It is an oversimplification, but the easiest way to define the term is that human factors are the interactions between humans and everything around them in the workplace. The system is everything else. Thus, in immature organisational cultures it is more likely that human error will be found to be the cause of accidents and incidents. As understanding of systems thinking develops, it is more likely that an investigation will begin to look beyond human error to underlying and root causes within the surrounding system.

Owen's criticism of the Houghton Main inquiry proceedings was aligned with systems thinking, which is now a widely accepted necessity in good incident investigation but appears to have been lacking in this inquiry. Systems thinking is described here by Robert Whittingham:

> Systems thinking is one of the tools of systems analysis and involves disassembling the parts that make up the whole in order to improve understanding of the system, including the ways in which it may fail. However, the parts are not examined in isolation but rather in the way they link and interact to produce a dynamic and complex whole. In other words, the behaviour of the system derives from its overall structure and it does not in this sense consist of the sum of its parts.[322]

With hindsight it is clear that a systems approach would produce a stronger understanding of contributing factors, and consequently, a more robust set of

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[319] Ibid, p 192.
[320] James Reason noted that 'human error is implicated in 80-90% of all major accidents', J. Reason, *Managing the Risks of Organisational Accidents* (Aldershot, 1997), p. 72.
[321] Ibid, p. 72.
[322] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), pp. 213-214.

corrective actions. However, this approach was not available in the late 1970s and the nature of the inquiry precluded the opportunity to examine, let alone find fault with the regulatory body as the remainder of this section will demonstrate.

Owen cited Marxist theory on bureaucracy when describing the proceedings of the inquiry as having been deliberately imposing and 'court-like', in nature, which he described as 'not conducive to the efficient gathering of evidence'.[323] According to Owen, the inquiry fitted the Marxist model of 'oppressive' bureaucracy that used 'special myths and symbols' beyond the comprehension of the majority of those giving evidence.[324] Examples given by Owen included the use of judicial language, the requirement to swear on the bible, and the rituals of court robes and standing in silence for the judge's entrance. One witness collapsed while having to stand for a long period while giving evidence, and the NCB stated that 'many witnesses found it an ordeal', in which the stress may well have impeded the witnesses from conveying their evidence in 'in the manner in which they would have wished'.[325]

Five days into the proceedings, Owen wrote to the Commissioner of the inquiry to express his concerns that he did not feel the inquiry would investigate all the relevant circumstances of the accident, and that necessary lessons would not be learnt. This was because of the natural deference to HM Inspectorate of Mines and Quarries by miners, and the fear of reprisals or consequences should they criticise the Regulator or NCB in a public forum. Owen's recommendation was that an independent chair be appointed to enable a thorough investigation of the role of the Inspectorate because, in his words, 'it is unlikely that any individual within the mining industry would take it upon himself to criticise in any way the Mines Inspectorate publicly', and that 'interested parties may feel that they are in a particularly vulnerable position to criticise an organisation with so much power'.[326] It should be noted that Owen was highly complementary of the expertise and professionalism of the Mines Inspectorate, but he was keen to point out that it was effectively shielded, by the inquiry, from opportunities to learn lessons and make improvements to the way it operated.

[323] D. B. Owen, *Safety and Health in Mines,* p. 78.
[324] Ibid, p. 77-78.
[325] Ibid, p. 78.
[326] Ibid, p. 13.

Linking this back to the Robens philosophy, Owen seemed to be aware of an opportunity to explore the very nature of the regulation of the mines. Had the inquiry interrogated the Robens philosophy during proceedings there might have been an interesting analysis of the potential merits of more self-regulation and reduced reliance on the old, prescriptive system. Unfortunately this did not happen.

His letter was strongly rebuked in a withering reply from the Commissioner, accusing Owen of casting doubt on his 'competence, impartiality, and integrity'.[327] The Commissioner's response was defensive, hostile, and somewhat arrogant, especially in light of his own opening comments at the inquiry, in which he invited anyone 'who feels he has something to offer' to come forward.[328] This response could be framed within Westrum's pathological culture model, whereby the inquiry itself was exhibiting the characteristics associated with this stage of organisational culture; i.e. the messenger is shot, and new ideas are actively crushed.[329]

Owen's interventions took place in the late 1970s, thus predating much of the work of sociologist Bourdieu who 'issued a rallying cry to stimulate academic researchers to intervene in the world of politics'.[330] However, Bourdieu's theories of *habitus* and *doxa* and his belief that academics necessarily ought to be active in public life outside of academia could all be applied to Owen's observations of the inquiry process, and his own attempts to make it fairer.[331] Owen's observations of power imbalances and his attempt to influence the inquiry stemmed from his concern that the atmosphere of the inquiry was oppressive and that some witnesses might withhold information for fear of negative repercussions. By writing to the Commissioner as he did, he was challenging *doxa*, very much in the spirit of Bourdieu's *collective intellectuals*. These concepts

[327] Ibid, p. 12.
[328] Ibid, p. 12.
[329] R. Westrum, 'Cultures with Requisite Imagination', *Verification and Validation of Complex Systems: Human Factors Issues*, (New York, 1993), p. 402.
[330] C. Cooper and A. Coulson, 'Accounting activism and Bourdieu's 'collective intellectual' – Reflections on the ICL Case', *Critical Perspectives on Accounting*, 25:3 (May 2014), p. 238.
[331] In modern societies, doxa similarly refers to pre-reflexive, shared but unquestioned opinions and perceptions mediated by relatively autonomous social microcosms (fields) which determine "natural" practice and attitudes via the internalized "sense of limits" and habitus of the social agents in the fields. Doxa is "a set of fundamental beliefs which does not even need to be asserted in the form of an explicit, self-conscious dogma", M. Grenfell ed., *Pierre Bourdieu: Key Concepts* (Abingdon, 2014).

are explored in more detail in the ICL Stockline case study, in Chapter Seven, which is the final case study and chronologically the latest in this thesis.

The Houghton Main and Golborne explosions must be considered in the context of the UK in the 1970s. It is significant that Golborne was the last such fatal explosion in a UK mine, and that it followed just four years after a very similar event. It is also important to consider that these events occurred in the period during which the new regulatory system was developing and being tested. Modern accident investigation methodology challenges organisations to ask difficult questions of themselves and look beyond immediate causes and human error. But this systemic approach was adopted *after* the Houghton Main and Golborne explosions, was not part of the HSWA, and therefore the inquiries should not necessarily be criticised for failing to adopt this approach.

Owen's observations, and his attempt to intervene, were interesting because he was considering the new legislation along with some recent theoretical developments. He also noted that the public inquiry into the 1974 Flixborough disaster had been criticised for having concentrated on the immediate causes and for failing to pay attention to the underlying circumstances of the accident.[332] One of the peculiarities of the safety industry is that we will never know how many accidents and disasters have been prevented by good planning or preventative actions. Similarly, we will never know whether a different approach to accident investigation earlier on might have resulted in lessons learned and the prevention of some or all of the incidents discussed in this thesis. But we do know that process safety, systems thinking, sincere root cause analysis and strong corrective and preventative actions are integral to twenty-first century industry. However, these techniques were not commonly understood or applied in the 1970s, although Owen certainly seemed to anticipate their importance and absence in his observations of the inquiry. The inquiry did not apply Robens' principles and this is especially evident in the recommendations for more prescriptive legislation. An application of the Robens philosophy at the inquiry would necessarily have produced a more holistic approach that might have addressed systemic and cultural factors.

[332] D. B. Owen, *Safety and Health in Mines*, p. 2; (The Flixborough Disaster was an explosion at a chemical processing plant in Lincolnshire in which 28 people were killed and 36 were seriously injured).

Cultural Factors in Coal Mining

There was a hierarchical structure of management in the coal mining industry and a reverence paid to the Mines Inspectorate. One ex-miner, Garry Nock (a maintenance engineer), remembers the preparations for HM Inspectorate's visits at Houghton Main when he was an apprentice there in the 1970s:

> Everything would be a mad rush to try and make sure everything were alright so manager would usually visit the same area the couple days before and you'd end up with the usual list of work to work stuff that he'd found that weren't quite right up to his liking and so it used to look like Queen were visiting when, when the inspector were coming.[333]

Although some miners clearly took the opportunity to speak to the inspector, unburden, raise concerns, or perhaps deliberately embarrass their managers:

> There were some er, some rough guys as you can imagine worked down pit so he sometimes got told a few home truths. You could see manager going, 'oh no, what's he said that for' and you just knew it were gonna get manager in trouble.[334]

Garry Nock also provided insights on the safety culture and the importance of strict adherence to the mining Regulations, and his own experiences of losing colleagues and friends to accidents underground. The Houghton Main Colliery explosion happened a few years before he started working there as an apprentice in 1978. Garry spoke about having to collect the statutory maintenance check books from the winding houses every day, to take them to be signed off by the Chief Engineer who was intimidating and formidable, especially for a sixteen year old apprentice. When asked if he thought the NCB and management cared about workers' safety, he replied:

> Yeah I think for the most part certainly higher up the management chain they were. And were it because they really cared or because it were part of the duties and it were written in law they'd got to do it and ultimately could end up in jail? Probably six of one, half a dozen of the other really.[335]

Interestingly, this quote about 'six of one and half a dozen of the other' in relation to *why* senior managers cared about safety, is one that could probably still be applied to most boards of directors in British businesses. There were and are, of course, moral, legal and ethical reasons for ensuring workers go home safely, but

[333] Interview with Garry Nock, former coal miner, conducted by Victoria Hill, 21 November 2020.
[334] Ibid.
[335] Ibid.

in this case study and in the others to follow, the role of effective regulation is shown to be absolutely key to maintaining standards of safety.

As a young maintenance fitter at Houghton Main, Garry witnessed one of his colleagues, an electrician, die from electrocution whilst moving some panels during the installation of a new tunnel. The accident was thoroughly investigated and the cause was found to be faulty wiring in the panel:

> They found that when these electrical panels had been installed the last time, they'd actually been coupled in wrong, so when they threw the isolation switch the power were still going through to the panels on the other side that at that point should've been dead. But the guy missed a very important thing. When he turned the isolation off and put his lock on it he should've tested to see if it were dead, so he had a, he actually had a device in his pocket, and if he'd a put it on to the pins or the cable, it woulda telled him that that cable were still live.[336]

This led to a campaign called 'DLI or Die', referring to the deadline indicator device that the electrician had not used in this instance. The picture below in figure 3.1 shows a sticker from the campaign.

Figure 3.1 - A DLI or Die sticker from the *DLI or Die Campaign.* DLI or Die sticker from the Author's personal collection of mining memorabilia.

Garry also remembers colleagues who were killed by roof falls during a common practice of working in a large cavity above a newly driven tunnel. The practice required miners to work under the unsupported cavity above the steel arch to support it with wood and make it safe.

[336] Ibid.

> There were occasions when you had to work unsafe, to make things safe, if that makes sense? And, on two occasions I know where guys had been working unsafe to try and make it safe, there's been a further roof fall and they've got killed unfortunately.[337]

In Garry's personal experience, safety standards declined over the period of his twenty year mining career, and he attributed this decline to increasing privatisation and in particular, the effect that bonus schemes had on ways of working. In a retrospective BBC article on the Golborne disaster, 'Yorkshire miners' leader, Arthur Scargill, said the Coal Board incentive bonus scheme had led to a "staggering increase" in the number of deaths in British pits'.[338] Arthur McIvor also noted the dangers of bonus schemes in hazardous male-dominated industries. Whilst acknowledging that work can be good for the human mind and body, McIvor also explored the damage it did to the bodies and the 'high risk-taking ethos prevalent within manual labouring jobs in the mid-twentieth century (especially those that were front-loaded with bonus systems and where workers, once injured or killed, could be easily replaced)'.[339]

There is evidence of growing concern of the effects of bonus systems on safety. A series of meeting minutes from the TUC's Joint Accident Committee (JAPAC) reveal discussion and investigations into the practice of output-related bonuses in relation to fatal accidents.[340] Minutes from the April and May 1975 committee meetings included discussions about the drop in number of fatal accidents, with comments that the numbers were still unacceptably high for 1973/74.[341] Questions also arose from the statistics as to why there had been a drop in accidents attributable to 'error of personal judgement' and whether or not there was a link 'between bonus schemes and safety performance'.[342] A member of the committee carried out an investigation into Special Steels in Sheffield, which had a relatively high wage in relation to production, but he reported back that there was 'no marked difference' in injuries and fatalities relative to other facilities.[343]

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[337] Interview with Garry Nock, 21 November 2020.
[338] '1979: Three die in Golborne mine blast', *BBC News*, http://news.bbc.co.uk/onthisday/hi/dates/stories/march/18/newsid_4226000/4226271.stm, accessed 19 June 2023.
[339] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 152.
[340] Meeting Minutes, 28 May 1975, Accident Prevention Advisory Committee (JAPAC), Modern Records Centre, Warwick, MSS.292D/611.436/5.
[341] Meeting Minutes, 7 April 1975, Accident Prevention Advisory Committee (JAPAC), Modern Records Centre, Warwick, MSS.292D/611.436/5.
[342] Ibid.
[343] Ibid.

These discussions in the JAPAC minutes in the mid-1970s are anecdotal and do not provide conclusive answers one way or the other, but what they do show is that there was a concern for the effect that production-related bonuses might be having on safety. Garry Nock's experience was that bonuses became increasingly personal (related to shift and seam outputs rather than the output of the whole colliery), and that this changed the dynamic and led to more selfish ways of working. The following excerpt describes the practice of digging out and setting steel arches in place to support the new tunnels:

> We might get an extra ring up which'd be an extra £50 a day bonus you know, so it were, it were an incentive bonus but I think it were also a bit of an incentive to push the limits. Again, you've, you know, as guys working in a tunnel you knew, again, and if the roof conditions were poor, you wouldn't do it. You'd do it if you think you can get away with it, you know.[344]

There was, however, a clear understanding of the dangers and the potential consequences of making mistakes. Many sources of mining history show the depth of brotherhood and solidarity amongst coal miners, which was born of the dangers and working conditions, and solidified during the miners' strikes. McIvor summarised that 'the shared experience of wage labour and hardship gave working class communities their cohesion and cemented working-class camaraderie and solidarity'.[345]

Stephanie Ward's article on miners' bodies and masculine identity in British coal mines from 1900-1950 further detailed the shared experiences and the sense that, 'the mines were filled with the blood of generations of miners was a powerful yet common image within mining communities. Miners' bodies became a part of the mine and not only upon death underground'.[346] This was because, 'the underground world of the miner was filled with displays of manliness from the physical exertion of cutting coal and filling trams to the bravery and nerve needed to fire shot and avoid collapsing seams'.[347]

Garry Nock described the seriousness with which he and his colleagues understood the dangers, and how they protected one another:

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[344] Interview with Garry Nock, 21 November 2020.
[345] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 272.
[346] S. Ward, 'Miners' Bodies and Masculine Identity in Britain, C.1900-1950', *The Journal of Cultural and Social History,* 18:3 (May 2021), p. 454.
[347] Ibid, p. 447.

> Everybody were aware of what could happen and everybody sort've watched everybody's back, I mean, you quite literally depended on your work colleagues sometimes for your life you know it's everybody were watching each other's back.[348]

The monthly visits from HM Mines Inspectorate effectively motivated the management to demonstrate standards were being maintained. In the inherently dangerous industry of coal mining, the hierarchical structure and the policing of compliance by management and inspectors was an important aspect of the culture. But equally important was the men's experience and expertise in self-regulating their own behaviour when no one was looking.

These recollections demonstrate three important points that directly relate to the Houghton Main and Golborne disasters. The first is that coal miners were hyper-aware of the inherent dangers of their jobs, and that they protected one-another and took the dangers very seriously. The second is that they also show that many coal miners were willing to take calculated and educated risks for convenience and extra financial bonuses. Finally, despite the miners' expertise and risk-management, it is also evident that seemingly small lapses in judgement or procedural adherence could result in catastrophe, as in the case of the young fitter who was electrocuted. Similarly, the fitters at Golborne will have been acutely aware of the danger of potentially creating a spark when switching on the auxiliary fans, but the failure of multiple layers of protection (ventilation, air monitoring, intrinsically safe equipment), and the decision to switch on the fans led to disaster. The implication for safety management from these insights is that the human is the weakest link in the system and therefore the importance of strengthening the other control measures is the key to accident prevention. This concept was in development in the late 1970s and early 1980s but was not yet a part of the discourse in safety management. Thus, when a human inevitably fell foul of the systemic failings over which they had little control, their act or omission was likely to be viewed as causative when in fact, it was a symptom of failings elsewhere in the system.

The Golborne Explosion and Immediate Aftermath

On the afternoon of the 17 March 1979, the auxiliary fans were being inspected at intervals 'not exceeding four hours' on the Manager's instructions.[349]

[348] Interview with Garry Nock, 21 November 2020.
[349] L. D. Rhydderch, *The Explosion of Golborne Colliery, Greater Manchester County, 18 March 1979: Report of the Causes of, and Circumstances Attending the Ignition and Explosion of*

Inspections of the Plodder seam on the afternoon and in the evening of the 17 March found that everything was normal, that all auxiliary fans were working, and that firedamp concentrations were consistent with the statutory inspections. There were no abnormal or high readings detected during these inspections. Later that night, a deputy, A. Molyneux, was carrying out his inspections when 'he realised as he approached the P2 Return Drivage that the fan ventilating the drivage was stopped'.[350] On further investigation he found that the fan was hanging from one chain only and had come away from its ducting. He isolated the fan by switching it to the off position and fenced off the entrance to the P2 return drivage because he would have been unable to restore the ventilation personally. He continued his inspection and found that the fans in the P1 intake drivage had also stopped. He attempted to re-start them, but the relevant circuit breaker switch had tripped and would not close, so he telephoned the surface and was advised to fence off the P1 intake drivage. These issues were reported in the deputy's statutory reports and the colliery logbook, and further communicated verbally at the 6am shift change. The day shift, including Overman J. Crooks, made arrangements to further investigate the situation and plan for the electrical work to replace the damaged fan in P2 return drivage. A ventilation officer, W. McPherson, was brought in to assist the supervision of the work. The original electricians who had been expected to carry out the work were not available, so electricians were called in from elsewhere in the colliery, and Colin Dallimore was called in from home to assist. Part of the planned work involved moving some existing switches and installing two additional new switches, but when Colin Dallimore went to do this, he found that the busbar he had planned to connect to was not available. On reporting this to management, he was instructed to restore power to the original switches to avoid any further delays to the fans being switched back on. Work continued throughout the morning, and at approximately 10.30am, Dallimore telephoned the surface to report that he was almost ready to restore power. The last known message from Plodder District was received at 10.50am by deputy manager Eaves on the surface, who

Firedamp which occurred at Golborne Colliery, Greater Manchester County, on 18 March 1979 (London, 1979), p. 2.
[350] Ibid, p. 3.

confirmed he was satisfied with the arrangements in place for the restoration of power to the original switches as described above.[351]

It was established during the course of the investigation that the fans ventilating P1 intake drivage had been switched off for between 10 and 15 hours prior to the explosion.[352] Around 11.20am on the 18 March, a deputy by the name of McGuire who was working on the Main Intake heard two muffled thuds, felt his ears popping, and felt a momentary reversal of air, followed by clouds of dust.[353] This was the first indication that something was wrong. McGuire, another deputy called Smith, and an Overman called Crooks were the first to raise the alarm by telephoning the surface, and McGuire was instructed by the Undermanager on the surface to investigate what had happened in Plodder seam, while the other men organised the safe evacuation of the rest of the men from other parts of the mine. McGuire and a locomotive driver helped to locate the victims, who were badly burnt. By 13.50 all the victims had been found and transported out of the mine, including the three who had died instantly, the seven wounded men who died from their injuries later, in hospital, and Brian Rawsthorne, the apprentice who would be the only survivor of the blast. Rescue teams were on site within fifteen minutes, and ambulance men from Hindley and Wigan broke their strike to transport the injured men to hospital. The schematic in Figure 3.4, taken from the inquiry report, shows the general layout of the Plodder seam where the explosion happened.[354] In the process of researching this case study, efforts were made to trace and contact Brian Rawsthorne to request an interview for this study. Unfortunately, these attempts were not successful.

When the HSE's report into the explosion at Golborne was published, the *Guardian* newspaper reported that 800 miners at the colliery walked out in protest at specific references to the actions of the deceased electrician Colin Dallimore.[355] The report cited a number of technical and human factors involved in the explosion, but the local branch of the NUM and Dallimore's colleagues were furious at the suggestion that he might be blamed for what had happened. Two weeks later, another *Guardian* article quoted survivor Brian Rawsthorne at the

[351] Ibid, p. 3.
[352] Ibid, p. 5.
[353] Ibid, p. 4.
[354] Ibid, Plan 1.
[355] M. Morris, 'Pit Stops over Report', *The Guardian*, 11 October 1979, p. 2.

inquest as saying that 'no one man should be blamed for the disaster', whilst 'referring to the blame apparently being put upon electrician Colin Dallimore'.[356] The anger felt by the miners at Golborne points both to their fierce sense of loyalty to their colleague, and to their clear understanding that explanations that relied on individual blame would have neglected to acknowledge the many interdependent causal factors of the explosion.

The Control Measures at Golborne

The Golborne Colliery inquiry report described the arrangements for safety (in mines generally and at Golborne specifically) in significant detail. Some of the details are especially pertinent and these warrant discussion in relation to safety culture and control measures. The design of air intake and return in underground mines is essential to the provision of breathable air to those working underground, and for the prevention of the build-up of toxic or flammable gases. Methane is a naturally occurring flammable gas that is released from the ground when coal is excavated, and the enclosed nature of coal mines can create conditions in which methane can accumulate in explosive concentrations. The phased development of the ventilation for the development of the seam consisted of five separate development stages, which had been completed to stage three on the 14 March, four days before the explosion. Records from Golborne confirm that a considerable amount of thought had been put into planning the ventilation in P1 drivage, both by management and by ventilation specialists.[357] The work being carried out on the day of the explosion was part of a planned shutdown to upgrade the ventilation of P1 drivage because the length of the seam had increased.

All the electrical equipment in the Plodder Seam (excluding cables) was meant to be designed and installed to be flameproof and 'intrinsically safe', meaning it was specifically designed to reduce the chances of ignition (of a flammable atmosphere) from either surface temperature or sparks. A flammable atmosphere can occur when air and a flammable gas are mixed at the right concentration to support combustion. For methane, this is between 5% and 17% methane concentration in the air. Fixed air sampling was installed within the Plodder Seam, and specifically at three points in the P1 intake and return, with methane and CO^2

[356] 'No One Man to Blame' for Pit Disaster, *The Guardian*, 25 October 1979, p. 3.
[357] L. D. Rhydderch, *The Explosion of Golborne Colliery, Greater Manchester County, 18 March 1979: Report of the Causes of, and Circumstances Attending the Ignition and Explosion of Firedamp which occurred at Golborne Colliery, Greater Manchester County, on 18 March 1979* (London, 1979), p. 2.

concentration readings given at 11-minute intervals. These readings could be read remotely, from the surface.[358] As a further layer of protection, safety lamps and personal methanometers were worn by those working underground. The ventilation systems should have prevented the build-up of methane gas in the tunnels, and the air monitoring systems were in place to alert miners if for any reason this failed to work. Communication systems were in place throughout the area, including seven telephones for communication with the surface, and an intrinsically safe loudspeaking communication system.[359]

However, there was disagreement after the explosion as to whether the equipment being worked on had, in fact, been intrinsically safe. The NUM's own report into what happened stated that 'the electricians thought they were working on a circuit of a type that was intrinsically safe'.[360] The Golborne inquiry report stated that the equipment being worked on was not built to intrinsically safe standards and recommended that all such equipment should be built to this standard in future.[361]

The Golborne inquiry report made clear that a significant amount of thought and expertise had been deployed in the consideration of the ventilation of the P1 intake drivage as the development increased in length. Frequent weekend stoppages took place to allow for work to be carried out on the ventilation system. This work, and any associated de-gassing operations, were carried out under the careful supervision of specialist ventilation officers. It was sometimes the case that electrical work needed to be carried out and that the fans needed to be switched off for this to happen. This was not an unusual situation, and was, according to the inquiry, sometimes unavoidable.[362] The recommended maximum permissible time for ventilation to be switched off (as referenced in the report into the disaster) was between 2.5 and 3 hours but on the day of the explosion they were left switched off for 10-15 hours.[363] This reliance on

[358] Ibid, p. 2.
[359] Ibid, p. 2.
[360] P. Hildrew, 'Miners' Leader Criticises Inquiry into Pit Disaster', *The Guardian*, 10 October 1979, p. 2.
[361] Ibid.
[362] L. D. Rhydderch, *The Explosion of Golborne Colliery, Greater Manchester County, 18 March 1979: Report of the Causes of, and Circumstances Attending the Ignition and Explosion of Firedamp which occurred at Golborne Colliery, Greater Manchester County, on 18 March 1979* (London, 1979), p. 12.
[363] Ibid, p. 12.

procedural adherence, specifically adherence to the maximum length of time the fans should be left switched off, is known as an *administrative control*.[364]

It is worth noting here that the requirement to carry out risk assessments did not enter the legislative vocabulary in the UK until 1999. Contrary to popular belief, there is no explicit requirement in the HSWA to carry out risk assessments or to document the significant findings of these assessments. Employers' main duties under the HSWA at the time of the Golborne Colliery explosion are set out in Section 2 of the Act:

> (a) the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health;
>
> (b) arrangements for ensuring, so far as is reasonably practicable, safety and absence of risks to health in connection with the use, handling, storage and transport of articles and substances;
>
> (c) the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees;
>
> (d) so far as is reasonably practicable as regards any place of work under the employer's control, the maintenance of it in a condition that is safe and without risks to health and the provision and maintenance of means of access to and egress from it that are safe and without such risks;
>
> (e) the provision and maintenance of a working environment for his employees that is, so far as is reasonably practicable, safe, without risks to health, and adequate as regards facilities and arrangements for their welfare at work.[365]
>
> The explicit requirement to carry out risk assessments first featured in Section 3 of the Management of Health and Safety at Work Regulations 1999:
>
> **Risk assessment**
>
> **3.**— (1) Every employer shall make a suitable and sufficient assessment of—
>
> (a) the risks to the health and safety of his employees to which they are exposed whilst they are at work; and
>
> (b) the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking.[366]

[364] Administrative controls, which include training and procedures, are widely recognised as an important part of risk control, but as being weak layers of protection because of the reliance on human behaviour and procedural adherence.
[365] The Health and Safety at Work etc. Act 1974, Section 2.
[366] The Management of Health and Safety at Work Regulations 1999, Section 3.

Returning to the concept of administrative controls (specifically the 2.5 - to-3-hour maximum recommended time without ventilation), this term belongs to a now widely adopted model called the hierarchy of controls.

The hierarchy of controls model is a simple concept that ranks different control measures in order of priority and effectiveness. At the top of the hierarchy of control is elimination, which is the first and most effective control measure available. The principle of elimination in the context of the hierarchy of control is that if something is hazardous then the employer must consider whether it could be eliminated. An example of this would be the elimination of the need to work at height by bringing the equipment to ground level to be serviced. This would eliminate the possibility of workers falling from height during the task. Next in the hierarchy is substitution, an example of which would be to replace a very noisy piece of equipment that could cause noise induced hearing loss, with something much less noisy. There are multiple versions of this model, but the National Institute for Occupational Safety and Health (NIOSH) example below is representative of the concept.

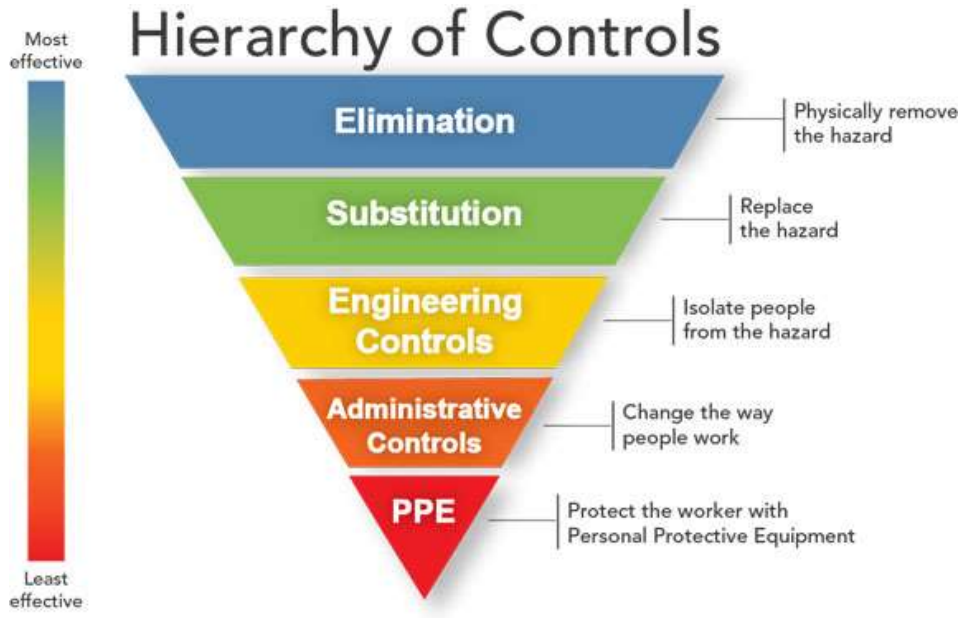

Figure 3.2 - The Hierarchy of Controls. 'Hierarchy of Controls', *NIOSH*, Hierarchy of Controls | NIOSH | CDChttps://www.cdc.gov/niosh/topics/hierarchy/default.html, accessed 28 May 2022.

Use of the term 'hierarchy of control' has changed over time with virtually no use prior to 1950 and increased prevalence from 1970 onwards.[367]

Administrative controls are considered to be one of the least effective control measures because there is a total reliance on procedural adherence. Human nature is such that rules can be forgotten, ignored, circumvented in order to save time or make life easier, and deliberately broken. This quote illustrates the point:

> As you can imagine in any walk of life there were guys that were straight down the middle wouldn't deviate from X,Y or Z and there were other guys that were a little bit more flexible, erm, and but again human nature kinda dictates that if you can get away without doing something you'll, you'll try and save a bit of time so you could have a little bit more rest and, and certainly when bonus and money comes into it I think I found that were when people started to take more shortcuts.[368]

In addition to this tendency to take shortcuts to make life easier, the additional layer of control that should have been provided by supervision was not always robust:

> So some of the guys would break the rules, erm, most of the deputies I say, would be on top of you and give you a bit of a telling off if, er well that's probably polite way of putting it, er, but give you the dressing down if if you sorta bent the rules and that but some of em again as you can imagine were as, as bad as the guys that they was trying to manage so…[369]

Therefore, if a potential hazard presents a critical risk to human life or health then multiple layers of protection are needed to ensure it doesn't manifest. James Reason's Swiss Cheese model contains the concept of 'defences in depth' as illustrated in figure 3.3 below taken from his 1997 book.[370] The reality, according to this model, is that all control measures (or defences) contain weaknesses, as represented by the holes in the Swiss cheese. Because of this, it is necessary to provide many layers, so that if one layer of defence fails, the next layer of defence should still prevent the incident. As with root cause analysis, this methodology was developed at least twenty years after the Houghton Main explosion.

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[367] *Google Books N-Gram Viewer*, search term 'hierarchy of controls', https://books.google.com/ngrams/graph?content=hierarchy+of+controls&year_start=1800&year_end=2019&corpus=en-2019&smoothing=3, accessed 10 May 2022.
[368] Interview with Garry Nock, 21 November 2020.
[369] Ibid.
[370] J. Reason, *Managing the Risks of Organisational Accidents* (Aldershot, 1997), p. 9.

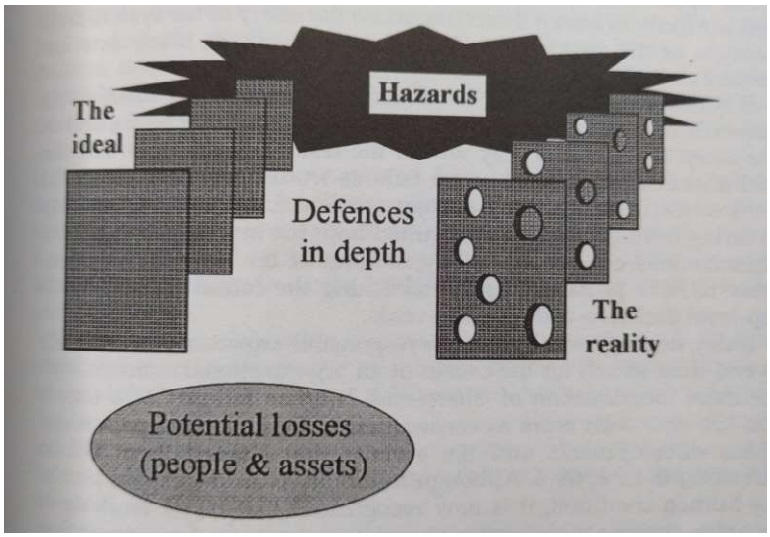

Figure 3.3 - Defences in Depth (the Swiss Cheese Model). J. Reason, *Managing the Risks of Organisational Accidents* (Aldershot, 1997), p. 9.

The rules regarding the length of time it was permissible for the ventilation to be switched off were reliant on workers adhering to the time limits, but the other layers of protection (personal alarms, static air monitoring, and telephones) should have alerted the men in the area to the flammable atmosphere long before it was ignited. It is not clear why these measures failed.

Conclusion

This case study of two mining disasters introduced some of the attitudes towards work and safety in the mid-1970s. It has also given some background and context to events surrounding the introduction of the HSWA. At the time of the disasters, the Act was still in its infancy and the Mines Inspectorate had been brought under the organisational umbrella of the new Health and Safety Executive. The Owen thesis demonstrates how problematic the regulatory relationship was between HM Mines Inspectorate and the NCB in that the respect and reverence to the Inspectorate made it virtually impossible to criticise their work in the Houghton Main inquiry. The problem of complicated regulatory relationships will be revisited throughout this thesis. The JAPAC meeting minutes cited in this chapter contained this line, from slightly later, in 1986; ‘experience has shown that employers do not make improvements on there [sic] own. They need to be

persuaded, by trade union action supported by health and safety law'.[372] This sentiment was at odds with the Robens philosophy, and was more aligned with the analysis of critics like Kinnersley and Dalton who had little to no faith in employers proactively working with their employees to improve safety.[373] The theme of tensions between employers and regulators will recur throughout the coming chapters.

This chapter has also provided an opportunity to explore some of the cultural aspects of industrial safety and organisational theory. These themes are further analysed in the other case studies in this thesis.

The Golborne Colliery explosion should have been prevented by the corrective actions from the earlier Houghton Main disaster. All the information that could and would have prevented it was known and had been written up in detail in the report into the Houghton Main Colliery disaster. The fact that the recommendations of that report were not circulated or acted upon in the four intervening years was a terrible failure of the NCB and the Government of the day. The suggested prescriptive amendments to The Coal and Other Mines (Ventilation) Regulations 1956 that would have mandated more reliable control measures to protect against the inherent weaknesses of auxiliary fan use, were never made. This points to organisational failings; another theme that will be revisited throughout the thesis. That said, there were already detailed and prescriptive instructions and Regulations in place that had not been fully adhered to. In some respects, this supports the notion that further prescriptive legislation was not the answer, and that Lord Robens' assertion that more self-regulation was required, was not without merit. The two public inquiries appear to support the position that neither the Mines Inspectorate nor the coal industry at large had yet adopted the Robens approach. Further, there is little evidence that there was yet any understanding or adoption of systems thinking, root cause analysis, or appreciation of the importance of organisational culture. These concepts were beginning to emerge in the late 1970s but had not yet filtered through to the workplace and consequently, this period was a transitional era in industrial safety. This conclusion doesn't neatly find favour or fault with either the pre-Robens

[372] TUC JAPAC meeting minutes, 14 February 1986, Joint Safety Committees, Modern Records Centre, Warwick, MSS.292E/146.18/7 Box E71.
[373] Pat Kinnersley and Alan Dalton both campaigned for better health and safety standards and were both involved in the nationwide Hazards campaign.

regime or the post-Robens philosophy. The dichotomy is, in some senses false, especially when applied to these cases. This is because whichever system of thinking or safety philosophy one adopts, there is no excuse for what happened in either case. However, the failings cannot be attributed to pre-Robens-style reliance on prescriptive legislation, nor can the absence of goal-setting or systems thinking be blamed. Underground coal mining was so hazardous to life and limb that the total prevention of all disasters could be considered unachievable. It is for this reason, and the fact that modern methods of accident prevention and causation were not yet available or in use in the industry, that these cases do not fit the model of modern industrial fatalities.

These two early examples of industrial fatalities after the introduction of the HSWA and Robens philosophy have served to introduce the key concepts. The next four chapters will further examine these concepts whilst providing a chronological progression through the examination of the remaining case studies.

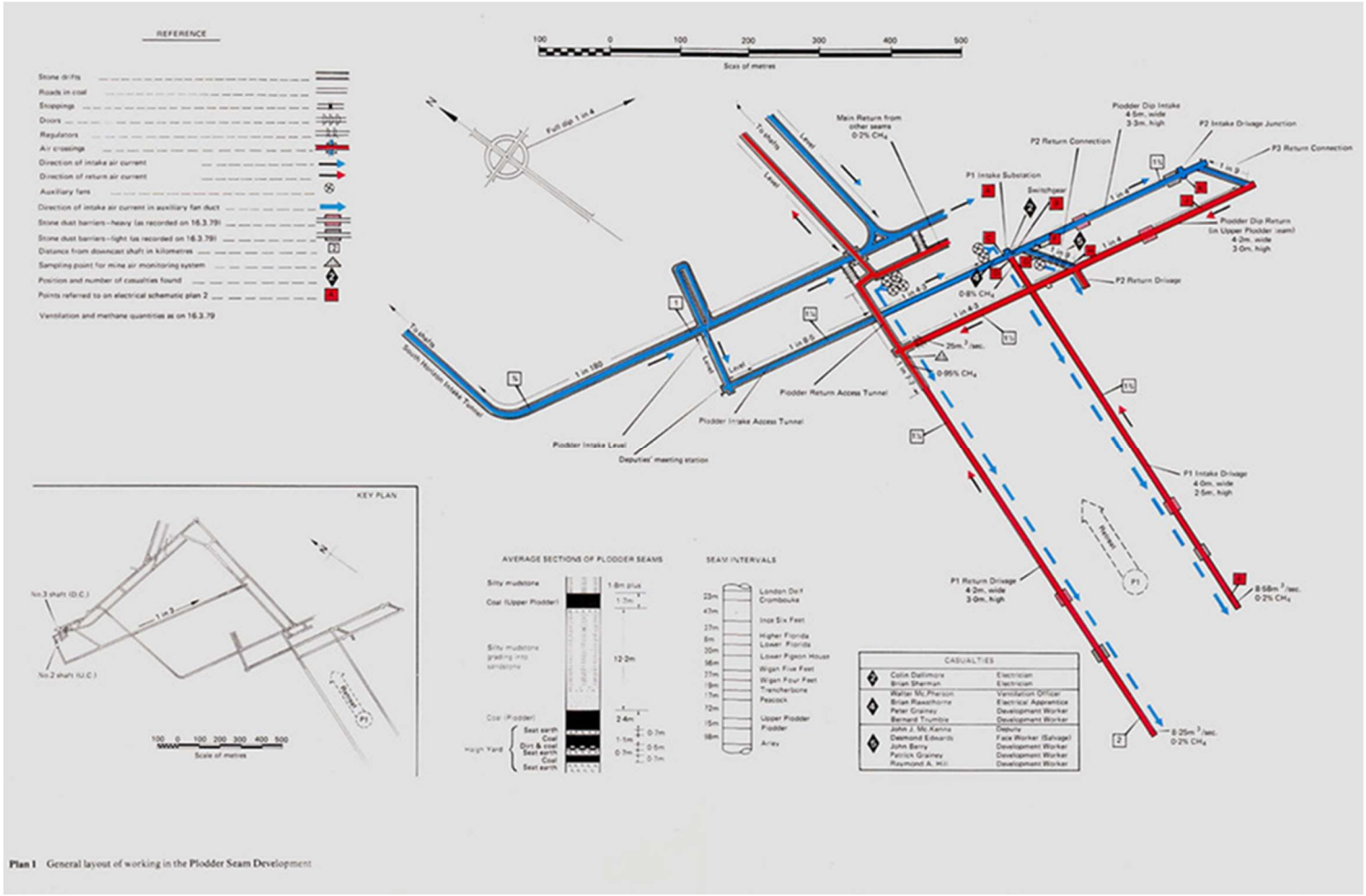

Figure 3.4 - Schematic of the Plodder Seam Development at Golborne Colliery. L. D. Rhydderch, *The Explosion of Golborne Colliery, Greater Manchester County, 18 March 1979: Report of the Causes of, and Circumstances Attending the Ignition and Explosion of Firedamp which occurred at Golborne Colliery, Greater Manchester County, on 18 March 1979* (London, 1979).

> Piper Alpha has been described as the embodiment of everything that was wrong with the North Sea Oil Industry: 'the ruthless pursuit of profit, the reckless disregard for safety, and the endemic use of blacklisting'. [374]

This case study explores the failings of organisational culture and regulation that led to the disaster. Firstly, this chapter provides a brief outline of the events of the disaster. Secondly, it defines the 'reactive safety' model and offers a framework of organisational characteristics into which the Piper Alpha disaster will be placed. Thirdly, it examines primary material such as the report of the public inquiry into the disaster and newspaper articles to illustrate how the disaster fits into the reactive safety model.

Woolfson and Beck wrote that 'the occurrence of this event [the Piper Alpha disaster] was not circumstantial. Rather, it was the outcome of an intrinsically flawed regulatory safety regime and an employer-dominated labor-relations regime'.[375] This case study does not aim to establish the proximate causes of the disaster (these are known and are extensively detailed in the Cullen Report), but instead provides an insight into the organisational culture and regulatory failings that enabled it to happen.[376] This chapter advances the debate by applying the theory of organisational safety management to an examination of this well-known tragic event, providing a new perspective and offering valuable insights for the safety industry and supporting a wider understanding of the disaster itself.

Elements of Occidental's organisational culture, which played out on Piper Alpha, can be used to illustrate how the organisation operated prior to the disaster, and how management inaction and complacency *enabled* a foreseeable tragedy. This chapter pulls together strands of survivor memories, contemporaneous reporting, and inquiry evidence, and examines events in the context of organisational safety management theory.

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[374] C. O'Byrne, 'Remembering the Piper Alpha Disaster', *Historical Reflections,* 37:2 (June 2011), p. 90.
[375] C. Woolfson and M. Beck. eds. *Corporate Social Responsibility Failures in the Oil Industry* (New York, 2005), p. 15.
[376] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990).

Technical Causation

The following paragraphs serve to introduce some of the established facts of the disaster with further in-depth analysis explored later in the chapter. Piper Alpha was an oil rig situated in the North Sea, owned and operated by Occidental Petroleum since the discovery of the oil field in the early 1970s. On the night of the 6 and 7 July 1988 a series of explosions on the platform caused the deaths of 167 men. Of those on board at the time of the incident, only 61 survived; mostly by jumping from the platform into the sea, because the specified means of emergency evacuation (by helicopter) was rendered impossible by the fire itself, and the weather conditions on the night.[377] A public inquiry to establish the cause of the Piper Alpha disaster was set up in November 1988. Known as the first Cullen Report (after the judge – William Douglas Cullen – who oversaw the inquiry) its findings were published in November 1990 and established the facts of the disaster, as follows:

On the day of the accident, a pressure safety valve (PSV) on a condensate pump had been removed during routine maintenance and this information was not communicated effectively via the permit to work (PTW) system and shift handover process. There was normally one pump in operation and one pump on standby with no automatic changeover process so if a pump tripped out or stopped for any reason it was necessary to manually start the standby pump.[378] On the night of the disaster, the pump in operation failed, and Pump A (which should have been physically locked off to prevent accidental operation) was activated as the standby pump. Pressure safety valves were fitted to equipment and pipework on the rig to protect against overpressure and much of the equipment was fitted with two PSVs, but the single pressure safety valve on Pump A had been removed, so excess gas had nowhere to go to 'flare off'.[379] The removal of a PSV for routine maintenance will likely have been a relatively frequent activity, the critical safety of which should have been well controlled under the PTW process.

A PTW system is a formal, written system that is used to control certain types of work; usually high risk or potentially dangerous. PTW systems are a method of authorising certain activities on site (such as work at height, or hot work), and

[377] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 225.
[378] Ibid, p. 22.
[379] Ibid, p. 22.

also form part of the shift handover process, which is widely recognised as a critical point of communication.[380] PTW systems are intended to ensure appropriate measures are taken, and important information is communicated to relevant parties to protect the people carrying out the scope of work covered by the permit, and anyone else who might be affected. The Cullen Report gave extensive narrative detail of the system but did not reproduce a copy of the written permit for the public report, so it is not available for examination. However, Lord Cullen concluded that the failure of the permit system was multi-faceted, and several aspects of these failures will be referred to in more depth later.[381]

There was no consistently applied locking or tagging system to indicate that the condensate pump was not in a safe condition.[382] (Lockout, tagout, or LOTO, is a long established and widely adopted safety control measure designed to prevent the accidental or unauthorised start-up of equipment. A physical lock, usually a padlock, is applied to the isolated equipment to guarantee that accidental operation cannot occur.) There was a system in place on the rig for electrical isolations, but other forms of hazardous energy, such as hydraulic or gravitational energy, were not covered by a consistent practice of physical locking. Details of recommended methods of LOTO were available at the time of the disaster in the Occupational Safety and Health Administration (OSHA) codes, the National Institute for Occupational Safety and Health (NIOSH) publications, and the HSE's guidance.[383] The Cullen Report noted that, 'in view of the wealth of experience available within Occidental it is hard to understand how there were critical and obvious omissions in the PTW system, such as a method of locking off isolation valves to prevent inadvertent de-isolation'.[384]

The failure to control the isolation of Pump A, and several other contributing factors led to a primary gas explosion when it was switched on in error. In a compounding factor, there were two further platforms in the same oilfield which had gas pipelines on a network that joined the Piper Alpha platform. These two

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[380] R. Lardner, *Offshore Technology Report, OTO96003, Effective Shift Handover - A Literature Review* (Edinburgh, 1996).
[381] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 225.
[382] Ibid, p 193.
[383] 'Guidelines for Controlling Hazardous Energy During Maintenance and Servicing (1983)', *NIOSH*, https://www.cdc.gov/niosh/docs/83-125/, accessed 28 June 2023.
[384] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 231.

platforms, the Claymore and the Tartan continued production, sending gas down the pipelines to Piper even after they had been made aware of the explosions.

The primary explosion was so large that it destroyed the control room. The deluge system, which might have helped reduce or contain the fires, was switched to manual, so it could not be activated. The fires and the wind direction prevented helicopters from reaching the platform to rescue people, so the men on the rig were forced to decide whether to follow their training and wait for help, or jump into the sea, which was full of debris and fire.

The platform was destroyed in a matter of hours and the Piper Alpha disaster 'is widely acknowledged to have been the world's worst in the offshore oil industry'.[385] There have been other offshore disasters, such as the Deepwater Horizon disaster, which had human casualties and severe ecological impacts, but no other disaster has resulted in such a devastating loss of human life, before or since.[386] The public inquiry into the Piper Alpha Disaster, known as the Cullen Report, will be analysed throughout this case study.

Organisational Factors & Reactive Safety

This case study demonstrates the Piper Alpha disaster as an example of an immature, prescriptive, and reactive safety regime, which ultimately provided fertile ground for *disaster incubation*, as set out by Barry Turner:

> Common causal features [of disaster incubation] are rigidities in institutional beliefs, distracting decoy phenomena, neglect of outside complaints, multiple information-handling difficulties, exacerbation of the hazards by strangers, failure to comply with regulations, and a tendency to minimize emergent danger.[387]

This incubation was catalysed by *universals and conditions*, (ever-present hazards associated with a particular domain of activity) as identified by James Reason in his psychology-based studies on human error.[388]

The public inquiry into the disaster by Lord Cullen found that Occidental's safety policies and documented procedures were not at fault. In fact, they were detailed in the report as being comprehensive and it was noted that they 'should have

[385] T. Brotherstone and H. Manson, 'Voices of Piper Alpha: Enduring Injury in Private Memory, Oral Representation and Labour History', *Scottish Labour History*, 46 (2011), p. 71.
[386] The Deepwater Horizon rig, operated in the Gulf of Mexico by BP, suffered a blowout in April 2010 which led to the deaths of 11 members of the crew and the worst oil spill in history.
[387] B. A. Turner, 'The Organizational and Interorganizational Development of Disasters', in *Administrative Science Quarterly*, 21:3 (September 1976), p. 378.
[388] J. Reason, *The Human Contribution* (Aldershot, 2008), p. 124.

been adequate for the purposes of securing that appropriate safety and emergency equipment and procedures were in place and working as they should'.[389] But whilst the documented systems were highly prescriptive in nature, the inquiry found that there were serious deficiencies in the *management* of these systems, and there were no attempts by Occidental to ensure they were being implemented in an effective manner. Prior to the Robens Report and the Health and Safety at Work etc. Act 1974 (HSWA), the regulatory position was that to follow a totally prescriptive approach would mean that when an accident occurs, the first priority would be to check whether the equipment was compliant with regulations and whether the prescribed procedures had been followed. If they had, 'then essentially the company would be exonerated from any responsibility for the accident since they had followed all the necessary rules'.[390] The Robens philosophy promoted a greater reliance and judgement and the willing cooperation of employers and their employees, as opposed to simply a strict adherence to regulations.

It is important to note that at the time of the disaster, whilst the HSWA did apply to offshore installations, the HSE was not yet responsible for their regulatory enforcement. This changed soon after the disaster. Almond and Esbester noted that the 'bedding in' of the new HSE and HSC, which included the consolidation of a number of inspectorates under the HSE's regulatory function, had only recently taken place when further changes were required:

> No sooner had the first wave of organizational changes bedded in, than a second wave of changes had to be negotiated; following the Clapham rail crash and the Piper Alpha disaster, HM Railways Inspectorate and the responsibility for regulating and inspecting offshore installations were shifted into HSE (in 1990 and 1991), mainly as a means of addressing some perceived conflicts of interest that undermined the legitimacy of those bodies in their previous departmental locations (Department of Transport and Department of Energy).[391]

In Chapter Three it was evident that at the time of the Houghton Main and Golborne disasters, the Robens philosophy and emergent theories of accident

[389] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 224.
[390] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), p. 101.
[391] P. Almond & M. Esbester, 'The Changing Legitimacy of Health and Safety, 1960-2015: Understanding the Past, Preparing for the Future', *Policy and Practice in Health and Safety*, 14:1 (October 2016), p. 81.

prevention and causation were largely absent from the inquires and indeed the surrounding discourse. The extent to which this had progressed in the intervening decade is explored in the remainder of this chapter.

Occidental, in 1988, was operating in a prescriptive and top-down safety culture that was out of date and deficient in many ways. This inadequacy was not recognised, acknowledged, or rectified by the operators of the platform despite repeated warnings and missed opportunities. Occidental's hostility towards 'messengers', their refusal to take ownership of failings and their inability to make necessary reforms are all characteristics of Westrum's pathological safety culture model. The lack of attention paid to workforce concerns and the 'unidirectional, downward communications' were also features of the systems in place prior to the disaster, and these are textbook characteristics of Whittingham's stage one safety culture.[392] There was also a clear pattern of foreseeability and inaction which further fits the reactive safety model.

Piper Alpha and the Issue of Foreseeability

Barry Turner's 1978 disaster incubation model set out 'preconditions' for disaster, 'which typically fall into place over an extended period of time, sometimes taking as long as several years to build up'.[393] Turner's 'preconditions' included rigid hierarchies and problems with communicating important information to the right people. Another characteristic he defined was a management structure with an unrealistic view of the organisation, with the power to 'appoint staff who reflect its own prejudices and overrule objections, warnings or complaints originating from those outside the organisation who are not under their control'.[394] More recently, Mike Lauder elaborated on Turner's theories:

> At the heart of the foresight problem is the issue of why management fails to catch these problems as they emerge. This can be summarised as being because they do not see the signals of danger, they do not appreciate what they are being told or they do not act appropriately. Time and again we see that management were in possession of the vital piece of information but due to structural secrecy they failed to see or appreciate the importance of the information to hand. There are many research

[392] Ibid. p. 101; R. Whittingham, *Preventing Corporate Accidents; An Ethical Approach* (Oxford, 2008); R. Westrum, 'Cultures with Requisite Imagination', *Verification and Validation of Complex Systems: Human Factors Issues*, (New York, 1993), pp. 401-406.
[393] B. Turner, 'Causes of Disaster: Sloppy Management. (Correction Needed to avoid Disasters)', *British Journal of Management*, *5*:3 (September 1994), p. 216.
[394] Ibid, p. 217.

> papers that talk about the types and the nature of the signals that are missed but they fail to explain convincingly why this happens.[395]

Lauder's recent research posits a theory by which Turner's work on the causes of failure is 'refine[d] and reimagined' as a tool for foresight.[396] This has direct potential for applicability in organisational risk management in the future and if successful, this could herald the emergence of a 'stage four' safety culture model.

To understand the foreseeability of a fatal accident on Piper Alpha in the late 1980s, we should examine the general nature of offshore extractive industries and their prior safety regimes, followed by the specific nature of Occidental's management of Piper Alpha and the history of events and inspections before the disaster. The offshore oil industry had a high rate of fatalities and injuries in the 1970s and 1980s, as an inherently dangerous industry that had already suffered large scale disasters with significant loss of life.[397] These inherent dangers included the travel to and from the rigs by helicopter or small charter plane, indeed, on the 6 November 1986, 45 men died when the Chinook helicopter they were travelling in crashed in the North Sea. They were returning from the Brent oilfield at the time of the crash.[398] Other dangers included the inhospitable weather conditions in the North Sea, the flammable and explosive nature of the substances being extracted, the heavy machinery and equipment on the rigs, and the remoteness of the locations.

The work activity on the platforms was dangerous, with similar activities as those being carried out in other heavy industry sectors such as mining, quarrying, shipping, or manufacturing, meaning that the tasks on the platforms often involved machinery, electricity, rigging, and working at height. These factors, and 'the ever-present tension between production and protection' are known as 'universals'; or 'ever-present hazards associated with a particular domain of

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[395] M. Lauder, *In Pursuit of Foresight: Disaster Incubation Theory Re-imagined* (Abingdon, 2016), p. 66.
[396] Ibid, p. 3.
[397] In 1980 The Norwegian Alexander L Kielland accommodation platform in the North Sea capsized, killing 123 workers; Dick Mutch, 'Keilland tragedy 'shows cost' of oil activity, *Aberdeen Press and Journal*, Thursday 10 April 1980, p. 14.
[398] C. Craig, et al., '45 Lost in Copter Plunge', *Aberdeen Evening Express*, 6 November 1986, p. 1.

activity'.[399] In other words, there was a high baseline level of danger associated with the environment and the work.

However, psychologist James Reason asserted of these universal hazards that, 'their mere existence is insufficient to explain why people are repeatedly – but not invariably – ensnared by them', and that 'the argument to be offered here is that, in hazardous work, this motive force is derived from an organisation's safety culture – or more often, from the lack of it'.[400] The stage one reactive safety culture in Occidental's management and on Piper Alpha was the necessary driver or motive force in this case.

In the years preceding 1988 there were, on average, 48 fatalities per year in the UK extractive and utility industry. Mining and quarrying are counted in a separate category, so it is fair to assume these 48 fatalities per year were almost exclusively attributable to the North Sea oil industry. A useful comparison for reference is the rate of fatal injuries per 100,000 workers, which averaged 7.9 in the seven years prior to 1988 in the extractive industry; whilst in manufacturing the average rate was 2.1 for the same period.[401] (Earlier data was recorded differently, making longer term comparisons problematic.)

Despite the highly profitable nature of the industry, and the high levels of injury and fatality, sufficient resources were not always allocated to the management of safety systems and repairs to critical safety equipment. The public inquiry into the Piper Alpha disaster found that Occidental 'had considered production more important than safety' and had deliberately delayed some major repairs to the fire deluge system in order to maintain production levels and spread the cost of the work.[402] The American OSHA system predated HSWA and there would have been no likely lessening of safety standards or safety expectations for Occidental, by virtue of being an American organisation.

There were also other warnings and missed opportunities specific to Piper Alpha and Occidental's management that illustrate the foreseeability of the disaster.

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[399] J. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008), p. 124.
[400] Ibid, p. 125.
[401] 'RIDHIST - Reported fatal and non-fatal injuries in Great Britain from 1974 (.xlsx)', *HSE*, https://www.hse.gov.uk/statistics/tables/ridhist.xlsx, accessed 27 June 2023.
[402] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 247.

Having been built for oil extraction only, gas extraction capability was added to the installation later. The addition of gas extraction capability introduced additional risk of explosion and prolonged high-pressure gas fire to the platform. This change of process should have prompted a review of the engineering safety controls on the rig. The risks *were* considered by Occidental's management in June 1987 after a report was commissioned by their Loss Prevention Department. The report outlined the risks of a high pressure gas fire and highlighted how in the event of this scenario, the platform's steel support members could be weakened and that the gas pipelines 'would take hours to depressurise because of their capacity'.[403] It was also highlighted that there was no direct action that could be taken from the platform itself to stem the flow of hydrocarbon in the event of an oil or gas riser rupture. The Cullen Report stated that 'Occidental Management can have been in no doubt as to the grave consequences to the platform and its personnel in the event of a prolonged high-pressure gas fire'.[404]

In 1984 there had been an explosion and evacuation of Piper Alpha, which was subsequently examined by an internal board of inquiry. During the emergency, all 179 personnel on board were successfully evacuated by helicopter. Safety Superintendent Captain Clayson (who took part in the inquiry) wrote a memorandum entitled, 'how it was vs how it could have been'.[405] In this memorandum, Clayson outlined scenarios in which evacuation by helicopter might be impossible and also explained why the use of lifeboats for evacuation would also not be feasible in certain weather conditions.[406] But Clayson's predictions of an emergency situation with no means of evacuation were considered to be an 'unlikely' worst case scenario by Occidental's management. The public inquiry found that the potential difficulties with emergency evacuation created genuinely difficult problems to solve, and that Occidental had not received any advice on alternative or more reliable methods. It also noted that this 'made it all the more imperative that both incident prevention and the means of fighting any fire should have been of the highest standard'.[407] In other words,

[403] Ibid, p. 227.
[404] Ibid, p. 227.
[405] Ibid, p. 225.
[406] Ibid, p. 225.
[407] Ibid, p. 227.

there should have been much more emphasis on prevention and mitigation and less reliance on evacuation, which was known to be unreliable and problematic.

There had been a fatality on Piper Alpha in September 1987 for which Occidental was prosecuted under HSWA and pleaded guilty.[408] This fatality was reported in the *Scotsman* in 1989 when the Aberdeen Sheriff made recommendations at the inquiry. At the time of the inquiry into the 1987 fatality, the disaster that destroyed the rig had already happened, but the Sheriff noted that 'it was obvious no one had given any consideration to elementary safety precautions'.[409] Frank Sutherland was a rigger who fell to his death on the platform during a maintenance operation that had been significantly modified from the scope of the original permit to work. Occidental's own Board of Inquiry into the fatality found that 'the expansion of the original scope of work to the extent that it required the raising of the motor did not alert the supervisor to the additional measures that might have been taken to ensure the safe condition of the new workscope'.[410] The change in scope and the decision to change the lifting method happened over the course of the day shift and crossed into the night shift. As previously highlighted, the permit to work system and shift handover communications are vital to maintaining safe systems in high-risk industries and they failed to protect Sutherland.

At the time of this fatality, it was still the responsibility of the Department for Energy to inspect and investigate offshore facilities. The report by the inspector into the 1987 Sutherland fatality found that his death was caused by 'a poor handover procedure and inadequate supervision'.[411] Further, the complaint to which Occidental pleaded guilty stated that 'there was inadequate communication of information from the preceding day shift to the night shift during which said accident occurred', and that 'no new permit was taken out' when the scope of the work significantly changed.[412] These findings are relevant because the inadequacy of the permit to work system and shift handover communication

[408] Ibid, p. 245.
[409] 'Call for Changes after Rig Death', *The Scotsman*, 10 March 1989, p. 3.
[410] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 198.
[411] Ibid, p. 245.
[412] Ibid, p. 245.

process were also identified in the public inquiry (into the 1988 disaster) as major failings.[413]

It is sometimes noted that Piper Alpha was subjected to a safety inspection on 26 June 1988 (a week before the disaster), and that 'there were no points of major concern' raised by the inspector.[414] However, the inspector did not witness a shift handover or verify what he was told about the process by the maintenance lead hand. In fact, 'no attempt was made to assess the overall quality of the permit to work system in light of the [Sutherland] fatality'.[415] In no way did the Department for Energy's 'superficial' inspection on 26 June negate the findings of the Sutherland fatality prosecution or close out any of the 'clear cut and readily ascertainable deficiencies'.[416] The superficial nature of this inspection must be considered in the context of the wider relationship between the Department for Energy and the offshore oil industry, and a phenomenon of 'regulatory capture', as identified by Carson.[417] Regulatory capture, according to Carson:

> Has been identified as a process whereby a regulatory agency comes to wholly identify the public good with the interests of the industry it regulates. If we apply this definition to the U.K. offshore industry, then "capture" was nearly complete. The Department of Energy repeatedly lined up with the industry to prevent the encroachment of other agencies onto its territory. This was evident at the end of the 1970s, when a Labour government inquiry into offshore safety under J. M. Burgoyne recommended continuation of the current arrangements despite the industry's worsening safety record.[418]

J. M. Burgoyne was an oil consultant who headed an eight-man committee into offshore safety. The committee was 'fundamental(ly) split' on who should regulate the offshore oil industry, with the two union members strongly in favour of giving the task of regulation to the Health and Safety Executive, and the remaining majority in favour of continued regulation by the Department for Energy.[419]

On the morning after the disaster, a Parliamentary debate included a statement from Cecil Parkinson MP, Secretary of State for Energy, and questions from John Prescott MP (Labour, in opposition) on several aspects of safety in the offshore

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[413] Ibid, p. 245.
[414] Ibid, p. 246.
[415] Ibid, p. 246.
[416] Ibid, p. 253.
[417] W. G. Carson, *The Other Price of Britain's Oil* (Oxford, 1982).
[418] Ibid.
[419] D. Turnbull, 'Union leaders Attack Choice of Safety Watchdog', *Aberdeen Press and Journal*, 7 March 1980, p. 13.

oil and gas industry and the arrangements for regulation. Parkinson responded with the following remarks:

> On the question whether my Department should continue to carry out this work as agent for the Health and Safety Executive, as he knows, this was carefully examined by the Burgoyne committee, which reported in 1981. That committee said in its majority report that the present arrangements were, in its opinion, the best possible. I accept that there was a minority report which disagreed, but the majority report, whose recommendations the Government accepted, felt that the present arrangements were the best.[420]

Internally, the issues with the permit to work system and poor communication had been raised on numerous occasions, both formally and informally by employees. The various supervisors on the platform had departmental safety meetings every five weeks, followed by a supervisors' safety meeting, chaired by the Offshore Installation Manager. Evidence given at the public inquiry revealed repeated attempts to bring these concerns to the attention of the management. The maintenance lead hand gave evidence to the public inquiry that 'the majority of the maintenance department and also contractors were critical both of the communication methods and the permit to work system'.[421] At a seminar at the Occidental head office in Aberdeen in early 1988, the permit to work system was criticised and described by the maintenance lead hand as 'totally inadequate'.[422] Lord Cullen concluded that these concerns raised by the maintenance department, were 'well founded, [and] underline the grave shortcomings in Occidental's approach to potentially dangerous jobs'.[423]

Further prophecy came from specialist fire fighter Paul Neal 'Red' Adair, who had attended a prior explosion on Piper Alpha in 1984 and predicted that the North Sea would one day be hit by a 'major catastrophe'.[424] Red Adair (who was also an international celebrity in this period), was a Texan expert in extinguishing and capping oil well fires, both onshore and offshore. Indeed, he returned to the destroyed Piper platform after the 1988 disaster, to assist with the aftermath.

To summarise foreseeability, the industry was high risk with a baseline of universal hazards which were well known and understood. There was a lack of

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[420] HC Deb 07 July 1988 vol 136 cc1193-200.
[421] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London, 1990), p. 197.
[422] Ibid, p. 197.
[423] Ibid, p. 197.
[424] 'A Risky Business', *Economist*, 9 July 1988, p. 26.

interest and investment in safety improvements from the business, and inspections by the regulator were cursory. The fire deluge system was known to be defective, and upgrades were not completed as quickly as they could have been because of the impact this would have had on production. There had been previous disasters elsewhere and a fatality on Piper Alpha the year before the 1988 disaster, in which maintenance and the permit to work system were identified as significant contributing factors. There had also been concerns raised by workers over several years about the permit to work system and poor communication. This combined evidence illustrates the foreseeability of a major accident and the prior knowledge of specific system flaws that created enhanced vulnerability on Piper Alpha.

Inaction and Complacency

One of the defining characteristics of a stage one reactive safety culture is that 'very little attention will be paid to the concerns of the workforce, who are regarded as merely components of the system alongside machinery and plant'.[425] This was evidently the culture on Piper Alpha in the case of workers' concerns about the permit to work system specifically, and more generally in the management style on the platform, which largely corresponded with Westrum's 'pathological' culture. Many of the survivors gave accounts of this, such as Alexander Clark, who 'told how he and others had persistently demanded changes in working practices since Piper began production'.[426] He went on to say that he had been complaining to management about the problems with the permit to work system 'from the beginning' and couldn't see any reason why the concerns of the workforce had not been acted upon.[427] The public inquiry also witnessed further evidence of Occidental's pathological characteristics and behaviour. Occidental's legal team were accused of 'grossly improper' conduct during legal submissions, by attempting to 'pre-empt' the function of the inquiry with press releases, and by acting with an air of 'injured innocence'.[428] Occidental was also accused by Hugh Campbell QC (representing the unions) of a 'massive downgrading' of the disaster, by referring to it as the Piper Alpha incident.[429] At

[425] R. Whittingham, *Preventing Corporate Accidents; An Ethical Approach* (Oxford, 2008), p. 101.
[426] I. Lundy and C. Gall, 'Safety "Second to Production"'. *Aberdeen Press and Journal*, 14 April 1989, p. 1.
[427] Ibid.
[428] 'Piper Alpha Inquiry Rebuke', *Aberdeen Press and Journal*, 31 October 1989, p. 1.
[429] Ibid. p. 1.

the 1988 Trades Union Congress, the TUC went on record to criticise the government:

> In light of the Piper Alpha tragedy, Congress condemns the failure of government to heed the TUC's evidence to the Burgoyne Enquiry into North Sea safety, and its rejection of the minority report published by the TUC representatives, which argued for avoidance of conflict of interest by Government Departments responsible for both promotion of an industry and its occupational safety.[430]

The TUC report also cited the Government's conflict of interest and failure to effectively regulate two other industries that had also recently been in the spotlight for fatal disasters. These were Maritime safety in relation to the Herald of Free Enterprise disaster, and rail safety, in light of the King's Cross fire. Offshore oil and gas, shipping, and rail, were 'three major industries where safety standards are not monitored by the Health and Safety Executive'.[431]

Further contemporaneous trades union commentary on the tragedy included extensive coverage and analysis in the *National Communications Union Journal.*[432] At least two members of the NCU were killed on Piper Alpha and a further three survived.[433] The NCU journal reported that 'safety arrangements in the North Sea are far from adequate, and that the trade union movement is effectively prevented from making a real contribution to the improvement of safety standards. Many oil companies refuse to recognise unions'.[434]

The industry undertook a range of 'union-avoidance strategies'; the result of which was 'fairly widespread victimisation of union activists'.[435] The concerns of the workforce were not only ignored, but also deliberately discouraged and silenced because of the potential hindrance they might cause to production and profits. Woolfson and Beck attribute this culture to the reliance (by the UK) on US oil operators, which was necessitated by insufficient technological and financial

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[430] *Report of Proceedings at the 1988 Annual Trades Union Congress, London*: Trades Union Congress., 1988, p. 469.
[431] Ibid. p. 469.
[432] National Communications Union Journal, 1988, The Royal Mail Archive, POST115/1156, September 1988, p. 136. (Courtesy of Dr. N. Robertson as part of her work on a separate project)

[433] Ibid.
[434] Ibid.
[435] C. Woolfson, & M. Beck, 'Union recognition in Britain's offshore oil and gas industry: implications of the Employment Relations Act 1999. *Industrial Relations Journal*, *35*:4 (June 2004), p. 346.

resources in the early years of commercial oil exploration.[436] The US regime brought 'an industry ethos antithetic to organised trade unionism and collective bargaining'.[437] In 1988 after the disaster the TUC renewed its earlier calls for union recognition in the industry:

> In order to enable offshore workers to have statutory rights under the Health and Safety at Work Act, Congress insists that the Safety Representatives and Safety Committees Regulations be extended forthwith, with recognition ballots being held on individual platforms.[438]

Onshore, the UK Labour governments of the 1970s had promoted 'orderly industrial relations' and 'trade union recognition'; but offshore oil and gas operators saw this as a potential hindrance to production, and actively opposed and 'attempted to limit' trade union activity.[439] There were attempts to address some of these issues (and the rivalry between the different unions offshore), with the Inter Union Offshore Oil Committee (IUOOC), which was established in Aberdeen in 1974. However, this proved to be 'largely ineffectual', and 'by the 1980s, with the arrival of a Conservative government in the UK, union officials found that oil company resistance to their presence had, if anything, stiffened'.[440] Research has shown that unionised workplaces are statistically safer places for employees and according to Arthur McIvor:

> Robust and compelling evidence from the mid-twentieth century - that unions were a powerful countervailing force to workplace dangers, as key sentinels shielding workers' bodies - is followed by evidence of increasing occupational illnesses in the period of union decline and precarious work from c. 1980.[441]

The resistance to union activity weakened the voices of workers on Piper Alpha, and diminished their potential to positively influence practices that protected them from harm.

According to James Reason, there is an 'inevitable conflict' between safety and production because businesses must remain profitable in order to remain

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[436] Ibid, p. 346.
[437] Ibid, p. 345.
[438] TUC Proceedings, 1988, p. 469.
[439] C. Woolfson, & M. Beck, 'Union Recognition in Britain's Offshore Oil and Gas Industry: Implications of the Employment Relations Act 1999. *Industrial Relations Journal*, *35*:4 (June 2004), p. 345.
[440] Ibid, p. 346.
[441] A. McIvor, 'Guardians of Workers' Bodies? Trade Unions and the History of Occupational Health and Safety'. *Labour History*, no. 119 (November 2020), pp. 1-30.

viable.[442] This conflict creates 'cultural drivers – time pressure, cost-cutting, indifference to hazards, the blinkered pursuit of commercial advantage and forgetting to be afraid', which drives 'different people down the same error-provoking pathways to suffer the same kinds of accidents. Each organisation gets the repeated accidents it deserves'.[443] In the context of Piper Alpha, there is clear evidence of this conflict and the cultural drivers towards repeated accidents. Furthermore, the relationship between the British state and oil capital has been described as 'mutually beneficial', and 'symbiotic', to the extent that 'the nature of the relationship between the regulator and regulated has implications for the ability of the HSE to pursue strict enforcement strategies which may have the effect of, for example, interrupting production'.[444] This is further evidence of the presence of regulatory capture described earlier in the chapter. (In 1988 the offshore oil industry was regulated by the Department for Energy rather than the HSE but the observation by Whyte about the symbiotic relationship and difficulties with enforcement are equally applicable).

This chapter has established that Occidental was operating Piper Alpha with a high baseline of universal hazards and a culture of commercial pressures and indifference to safety. This can be seen to have been compounded by the inability of the regulator to exert effective surveillance and enforcement, which might have compelled Occidental to tighten up their practices had there been a genuine threat of prohibition notices (or similar enforcement mechanisms that would have halted production until rectified). However, as previously noted, regulatory capture manifested as a result of a conflict of interest for the Department for Energy, and the voices of the workers and trade unions had been effectively suppressed. As noted above, the TUC expressed fury after the Piper Alpha disaster at both the conflict of interest and the suppression of union activity.

Where opportunities presented themselves for Occidental to address some of the known deficiencies in its safety management systems, there was a sustained lack of meaningful action. The Cullen Report found that there were 'significant flaws' in Occidental's management of safety and that management were 'too easily

[442] J. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Farnham, 2008), p. 126.
[443] Ibid, p. 127.
[444] D. Whyte, *Power, Ideology and the Regulation of Safety in the Post-Piper Alpha Offshore Oil Industry* (PhD, University of Liverpool, 1999), p. 220.

satisfied' that systems were being operated correctly and that 'all was well'.[445] Management failed to provide training and there was a lack of preparedness for a major emergency. 'They adopted a superficial response when issues of safety were raised by others' and did not take the necessary steps to resolve the known issues with the fire deluge system.[446] The likely consequences of a major incident were abundantly clear, and yet Occidental took little interest in preventing one or mitigating the potential effects.

Occidental's approach to safety, as evidenced in the Cullen Report, was completely against the Robens philosophy, which advocated for a goal-setting approach, with proactive risk management and strong communication between workers and management.

The evidence demonstrates not only complacency and inaction, but also explicit hostility to employee concerns and union activity. There were multiple warnings and opportunities to put measures in place that may have resulted in a different outcome at the time of the disaster, but none of these warnings or opportunities were acted upon. It was not a lack of foresight but a lack of willingness to address the warnings and the weaknesses in the systems. Occidental's safety culture was so deficient and fits both the pathological and stage one reactive safety culture models. Figure 4.1 shows James Reason's Swiss Cheese model applied to the circumstances of the Piper Alpha Disaster.

[445] Cullen, The Hon. Lord, *The Public Inquiry into the Piper Alpha Disaster, 1 & 2* (London 1990), p. 238.
[446] Ibid, p. 238.

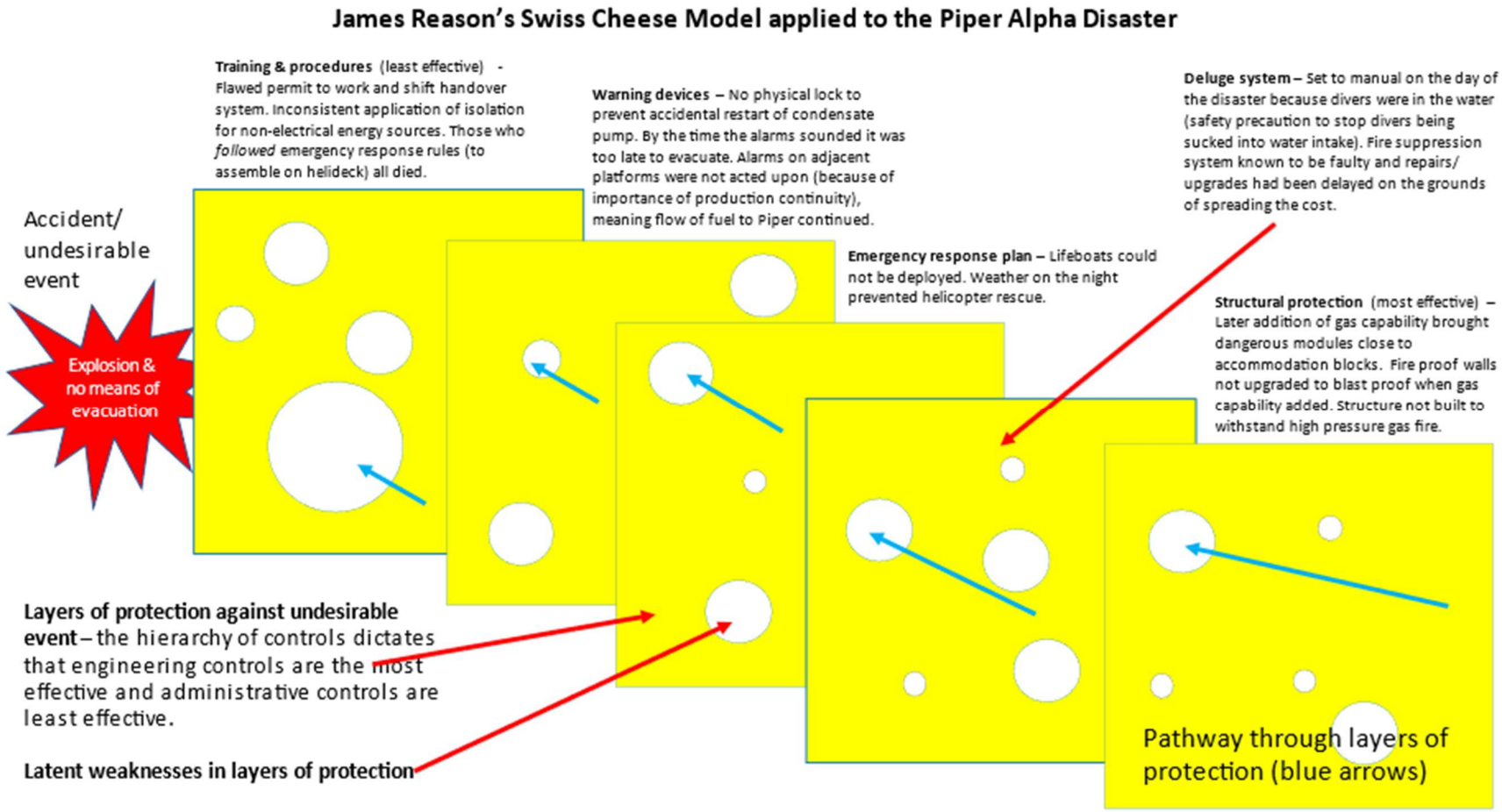

Figure 4.1 – James Reason's Swiss Cheese model applied to the Piper Alpha disaster.

Disaster and Reaction

Early news reports of the disaster were on the front pages of the national newspapers on the morning of the 7 July 1988, but the full magnitude of the disaster was not yet known. *The Times* reported on its front page that a 'massive rescue operation was underway' and that 191 men were missing.[447] The same report in *The Times* ended with two paragraphs outlining previous accidents and fatalities on the Piper Alpha platform, and the fact that this was 'the third accident at North Sea installations in the past week'.[448]

The initial reports of the explosion and rescue operation quickly gave way to horror, followed by anger and blame. Coverage of the survivors' experiences included horrific details of the desperation on the platform in the absence of a means of escaping the fires and explosions. On 8 July survivor accounts included language such as 'it was fry and die, or jump and try', and 'I felt my head being cooked'.[449] Those who had followed their training and waited in the accommodation block or on the helipad for rescue, did not survive. Only the men who went against their training and jumped into the sea survived.

Interviews with survivors in Aberdeen indicated though, that there had always been an acceptance by the workforce of 'the high price to pay for Texas Gold', and that on this occasion the price had been lives.[450] Two days after the disaster, survivors were talking to the press about getting back to work as soon as possible. 'They spoke of mortgages, children, £400 a week. After a decent interval, there was a feeling that most would soon prepare to risk "the price" again'.[451] The implication is that £400 a week wages made the considerable risk worthwhile to those who worked on the oil platforms, who knew and understood the dangers, but were prepared to accept the odds. The role of the man as breadwinner, and the relationship between work (and dangerous work in particular) and masculinity, are likely to have been factors in this risk acceptance. An analysis of the post-war relationship between work and masculinity can be found in Arthur McIvor's *Working Lives* which features a full chapter on the subject. One aspect of masculinity highlighted in McIvor's work was the culture

[447] '191 Missing in Oil Platform Inferno', *The Times*, 7 July 1988, p. 1.
[448] Ibid.
[449] 'It was Fry and Die or Jump and Try', *The Times*, 8 July 1988, p. 3.
[450] *The Times*, 8 July 1988, p. 3.
[451] *The Times*, 8 July 1988, p. 3.

of *machismo* and deliberate risk-taking behaviour as a rite of passage for many men in dangerous industries. [452] Interestingly, the public inquiry found no evidence of this sort of behaviour and in fact heard multiple accounts of the professional and conscientious way in which workers took pride in their duties. That said, a recent ethnographic study involving interviews with North Sea oilmen confirmed the presence of risk-taking culture by the 'North Sea Tigers'. The following quotation provides a summary: 'Tigers ruled the oilfield from the 1970s to the 1990s. Culture depicted a unique, concentrated hypermasculinity; men fighting, engaging in strength displays, competing for who could take and perform the most risk, and downplaying dangers of working in a high-risk, remote, hydrocarbons drilling environment'.[453] The study also contained further details of specific risk-taking activities such as:

> The guys then, they wanted to show off, show they were tough individuals. The guys will jump eighty to ninety feet in the air off the drill-pipe without a harness. If you fall from that you're not going to survive. These things used to go on. Or the guys would slide down the pipe, like a fireman's pole from the drill area.[454]

Whilst the public inquiry identified safety concerns that were raised prior to the disaster, there is also evidence, cited by Woolfson and Beck, that offshore workers were afraid to raise safety concerns or make a fuss because they risked losing their jobs if they did so.[455] Less than 36 hours after the explosion, serious questions were being asked of the offshore safety regime and Occidental's management of Piper Alpha. Concerns were also raised that survivors giving evidence to the public inquiry about the safety regime might be penalised for their honesty.[456]

The inquiry into the disaster produced a report with 106 recommendations. At the time of the Piper Alpha disaster there was little in place by way of deterrent for businesses that failed to fulfil their duty of care and subsequently had fatalities in their workforce. The Health and Safety at Work etc. Act 1974 was not regarded

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[452] A. McIvor, *Working Lives: Work in Britain Since 1945* (Basingstoke, 2013), pp. 77-115.
[453] N. N. Adams, 'Four Distinct Cultures of Oilfield Masculinity, but Absent Hegemonic Masculinity: Some Multiple Masculinities Perspectives from a Remote UK Offshore Drilling Platform', *Journal of Contemporary Ethnography* (August 2022), p. 353.
[454] Ibid, p. 12.
[455] C. Woolfson & M. Beck, 'Union recognition in Britain's offshore oil and gas industry: implications of the Employment Relations Act 1999'. *Industrial Relations Journal*, *35*:4 (June 2004), p. 346.
[456] 'Inquiry fears', *Daily Mail*, 9 August 1988, p. 13.

as effective in holding corporations to account, and the Piper Alpha disaster contributed to calls for reformed laws on corporate killing. There was a cumulative effect from the late 1980s after a string of disasters including Piper Alpha, the Herald of Free Enterprise ferry disaster (1987, 193 fatalities), the King's Cross underground fire (1987, 31 fatalities), and the Clapham Junction rail crash (1988, 35 fatalities). A 2007 PhD thesis on the proposed reform of corporate manslaughter legislation by Alexandra Jacobs concluded that 'companies will take the safety of their employees seriously enough only when it becomes too costly for them to ignore it'.[457] One survivor of the Piper Alpha disaster, a diver called Ed Punchard, blamed 'the culture of profit and greed' for the act of 'industrial violence' that took the lives of many of his friends and colleagues.[458] Shadow Energy Secretary John Prescott MP said 'there was a conspiracy between the oil companies and the Government to sweep safety under the carpet in favour of getting oil offshore as quickly as possible'.[459] He also called it 'deplorable' that the wealthy offshore oil industry largely expected its workers to pay for their own training; thus creating a situation where these certificates were often 'bought in the pub'.[460] Prescott went on to say that Occidental should not be singled out for criticism because 'the Department for Energy's attitude to all the oil companies was the same'.[461]

One oilman who was on leave at the time of the disaster, and returned to the Brent platform a week after it had happened, wrote a poem that captures some of the themes outlined above:

> Excerpt from ***None of us Know*, by Brian Gilbert**
>
> This could be the last trip.
>
> None of us know.
>
> Why do we go there?
>
> None of us know.
>
> Perhaps it's the money.

[457] A. Jacobs, *Will the new offence of corporate manslaughter motivate companies to prioritise safety over profit?* (PhD, University of Birmingham, 2007), p. 306.
[458] S. Millar, 'Blood and black gold: A decade after the Piper Alpha Disaster', *The Guardian*, 6 July 1998, p. 2.
[459] D. Telfer, 'Measures Since Alpha too Little, too Late', *Aberdeen Press and Journal*, 25 August 1988, p. 11.
[460] Ibid.
[461] Ibid.

Do they really believe

that's why we do it

- For just two weeks of leave?

They are a family apart

These men of the oil,

But give them a choice

They'd all choose the soil.

~

But still we keep on going,

The dice of life we throw,

Why do we go there,

None of us know.

But we still keep on going,

The oil must flow.

Why do we go there?

None of us know. [462]

Legacy

Piper Alpha is widely regarded as having been a seminal moment and turning point for offshore safety. It has been described as 'the wakeup call' to the industry, and that 'since then safety has been paramount'.[463] The disaster and subsequent public inquiry recommendations led to the Offshore Installations (Safety Case) Regulations 1992 under which it is incumbent on the operator to document all major hazards and the control measures that have been taken to reduce them to an acceptable level. The Secretary of State for Energy, Mr John Wakeham, reported in Parliament that the recommendations of the Cullen Report would be implemented and that 'The Government accept Lord Cullen's conclusions and recommendations. Arrangements have been put in hand to progress the necessary detailed work'.[464] It led to the regulation of the sector being assigned to the Health and Safety Executive, because the Department for Energy had a (now recognised) conflict of interest. However, no one was ever held criminally

[462] 'Oilman sums up their Feelings in Verse', *Aberdeen Press and Journal*, 13 July 1988, p. 7.
[463] R. Pagnamenta. 'Harsh Lessons Learnt from Piper Alpha', *The Times*, 19 February 2009, p. 3.
[464] HC Deb 12 November 1990 vol 180 column 330.

accountable for the disaster. Lord Kennet asked HM Government in Parliament in 1991 why this was the case. The written response, from The Lord Advocate (Lord Fraser of Carmyllie) that no criminal proceedings would follow because 'It was concluded on the basis of all the available evidence that the cause of and any criminal responsibility for the disaster could not be established on the higher test, required in criminal proceedings, namely, proof beyond reasonable doubt'.[465] This was partly due to the loss of evidence as a result of the complete destruction of the rig but the reader may draw their own conclusions about the reasons for the lack of accountability in this case.

Proposed changes to corporate killing laws progressed at a slow pace but eventually led to the Corporate Manslaughter and Corporate Homicide Act 2007. The Act was described as 'the most significant change to health and safety law in 30 years' and made it possible to examine the collective management actions of an organisation and impose unlimited fines.[466] In theory, the proposed large financial penalties and the relative ease with which a new Corporate Manslaughter law could be applied, should have helped focus minds on the culpability of senior management in corporate killings. The lack of union recognition was also addressed in the creation of the new Offshore Industry Liaison Committee (OILC) trade union. This was partly driven by a small group of survivors, most prominently Bob Ballantyne.[467]

Since the introduction of changes outlined above, the safety record of the North Sea industry has improved, 'but the death toll continues'.[468] The average fatal injury rate per 100,000 workers in the extractive industries in the ten years after Piper Alpha was 6.2 compared with 7.9 in the seven years prior (as mentioned previously, this figure does not include mining and quarrying, so it can be almost exclusively attributed to offshore oil and gas extraction). The manufacturing sector's rate was 1.6 for the same period, compared to 2.1 in the seven years before Piper Alpha.[469] (Data prior to 1981 was recorded differently.) Figure 4.2 below excludes the financial year of 1988/89 of the Piper Alpha deaths (which

[465] HL Deb 11 December 1991 vol 533 c35WA (written answer).
[466] F. Gibb, 'Negligent firms face huge fines for deaths', *The Times*, 5 April 2008, p. 34.
[467] T. Brotherstone & H. Manson, 'Voices of Piper Alpha: Enduring injury in private memory, oral representation and labour history', *Scottish Labour History*, 46 (2011) p. 72.
[468] D. Wighton, 'Even one death is too many'. *The Times*, 22 April 2010, p. 43.
[469] 'RIDHIST - Reported fatal and non-fatal injuries in Great Britain from 1974 (.xlsx)', *HSE*, https://www.hse.gov.uk/statistics/assets/docs/ridhist.xlsx, accessed 27 June 2023.

skew the long-term trend). What is clear from the pre-Piper Alpha and post-Piper Alpha data is that the fatal injury rates did decrease in the extractive industries, but that they decreased more quickly in the manufacturing sector in the same period.[470]

	Extractive & Utility (Excluding mining & quarrying)	**Manufacturing**
1981-1988	7.9	2.2
1989-1998	6.2	1.6
% Change	-22%	-27%

Figure 4.2 – Comparison of work-related fatalities in the UK extractive and utility sector and manufacturing sectors. Collated by the author from data in 'RIDHIST - Reported fatal and non-fatal injuries in Great Britain from 1974 (.xlsx)', *HSE*, https://www.hse.gov.uk/statistics/assets/docs/ridhist.xlsx, accessed 27 June 2023.

In this context, the downward trend in fatal injuries in the extractive industries in the UK represents a failure to achieve the level of improvements seen in other industries during the same period. The offshore industry's response to the Cullen Report was described by Woolfson and Beck as being 'characterized by latent resistance to new regulatory requirements and the industry's continuing prioritization of concerns over costs and expenditures'.[471]

Finally, in a 2008 article in Glasgow's *Sunday Herald*, published on the twentieth anniversary of the disaster, the following observations were made: 'North Sea oil workers who whistleblow about safety issues are routinely sacked, creating a "culture of fear" 20 years after the disaster'.[472] It was also reported that allegations of blacklisting or 'not required back' (NRB) of workers following safety complaints

[470] Ibid.
[471] C. Woolfson and M. Beck, eds., *Corporate Social Responsibility Failures in the Oil Industry* (New York, 2005), p. 16.
[472] J. Bynorth, 'Rig Workers who Whistleblow over Safety Issues are "Routinely Sacked" Twenty years after the Piper Alpha disaster', *Sunday Herald*, 6 July 2008, p. 8.

were being investigated by the HSE.[473] Thus, the disaster did lead to some important changes to regulation, but problematic management culture within the oil and gas industry may have been more difficult to effectively address.

Conclusion

The nature of the offshore oil and gas industry and the inherent dangers faced by those who work offshore are established facts. However, it is important to note that, 'risk, danger, and even tragedy are packaged as part of the romanticism of offshore oil', but that research carried out prior to the disaster revealed this to be 'part of an ideological smokescreen' for 'the passive compliance of the UK government to mask the industry's harsh treatment of its offshore work force'.[474] Carson noted that the language of the frontier was deliberately applied: 'Whatever the priority allocated to safety in the planning and execution of offshore operations, the frontier image is one that readily reconciles readers to the inevitability of accidents. People are killed at inhospitable frontiers'.[475] Thus, despite the romanticisation and normalisation of the dangers of offshore work, it does not follow that high fatality rates should be accepted or normalised.

In a highly prescriptive safety culture such as it was on Piper Alpha in 1988, it might have served Occidental (and the industry) to place blame on individuals and human error. But more than a decade after the introduction of the Health and Safety at Work etc. Act 1974, it was no longer acceptable to merely comply with the letter of the law. The expectation was, and still is, to comply with the spirit, and this requires organisational accountability. Tony Barrell, an expert in major hazard control and chief executive of North Sea Safety at the HSE from 1993-1994, was interviewed after the disaster. Having been involved in investigations into many major disasters (including the Flixborough explosion in 1974, the Bhopal disaster in 1984 and the Kings Cross Fire in 1987), he said that 'It's not just due to, um, one particular person not following procedure or doing something wrong. You always come back to the fact that things are, uh, sloppy and ill-organized and unsystematic, um, right from the top of the company, uh,

[473] Ibid.
[474] J. House, 'Review of The Other Price of Britain's Oil by W. G. Carson', *Canadian Journal of Sociology, 9*:1 (Winter 1984), pp. 115-116.
[475] W. G. Carson, 'The Other Price of Britain's Oil: Regulating Safety on Offshore Oil Installations in the British Sector of the North Sea', *Contemporary Crises*, 239 (July 1980), p. 240.

downwards'.[476] This sentiment aligns with Barry Turner's work in *Manmade Disasters*.[477]

Whilst it could be argued that in absolute terms, the permit to work procedure was not correctly followed, this was only the immediate cause of the disaster. This case study has illustrated the pathological safety culture that created the latent conditions of failure. There were systemic failings that allowed for a weak PTW and shift handover process and these were the underlying and root causes.

Occidental managed Piper Alpha in a highly reactive and prescriptive regime which was hostile to workers' concerns. Warnings and opportunities were routinely disregarded and investments in critical safety systems were deliberately delayed to maximise profits. To return to the two safety culture models discussed throughout this case study, the management of Piper Alpha fits into Westrum's pathological culture; not wanting to know about problems, punishing whistle-blowers, concealing failures and discouraging new ideas.[478] Having explored Occidental's safety culture, it has been clearly shown to have operated almost exactly as defined above, by Westrum. Similarly, the characteristics of Whittingham's stage one model are evident. Whittingham described an organisation that enforced rules in a downward style of communication, with little consultation with the workforce and a blame culture. This sort of organisation would be more likely to have repeat accidents of the same nature because root causes were not addressed. Sadly, in the case of Piper Alpha, this led to the loss of 167 lives.

In 2008, the lack of prosecution (of Occidental) for the Piper Alpha disaster was described by the leader of the Scottish Trades Union Congress, as 'the biggest crime' of the disaster.[479] With organisational failings having been so plainly evidenced in the public inquiry, it doesn't feel just, that nobody was held to account for such an avoidable and devastating loss of life. Carson, who predicted the disaster, said in 2008 that 'safety cutbacks combined with the pressures to extract oil, gas and other resources throughout the world will lead to another

[476] 'Spiral to Disaster (Piper Alpha)', *Vimeo*, https://vimeo.com/307690569, accessed 1 October 2023.
[477] B. Turner, *Manmade Disasters* (London, 1978).
[478] R. Westrum, 'Cultures with Requisite Imagination', *Verification and Validation of Complex Systems: Human Factors Issues*, (New York, 1993), pp. 401-406.
[479] J. Bynorth, 'Rig Workers who Whistleblow over Safety Issues are "Routinely Sacked" Twenty years after the Piper Alpha Disaster', *Sunday Herald*, 6 July 2008, p. 8.

major accident'.[480] This prediction was borne out in 2010 when the Deepwater Horizon disaster killed eleven workers and caused immense environmental harm in the Gulf of Mexico.

[480] Ibid.

Chapter Five – Hickson and Welch

‘I saw the jet come across. And that’s something I never wanted to see because you know immediately, you know you really know immediately’.

Interview with Les Shaw, Transport and General Workers’ Union branch secretary and Hickson and Welch employee for 30 years, conducted by Victoria Hill, 30 September 2021.

This chapter examines a fatal jet fire at the Hickson and Welch chemical manufacturing facility in 1992 in which five people died. The company was undergoing a significant change in the management structure at the time of the incident and appears to have had a relatively proactive and progressive organisational ethos. This contrasts strongly with other notable cases in that there is little evidence of negligence or systemic failure at Hickson and Welch. In fact, there is evidence of the business seeking external support and making concerted efforts to improve and achieve standards of excellence. The site seemed to have a constructive relationship with the Health and Safety Executive, and had invested in loss prevention consultants, training programmes, and new roles to underpin a commitment to quality, safety, health, and the environment. There was a strong union and the shop steward, Les Shaw, provided an oral history interview for this thesis. The nature of the site’s activities was high risk and fell under specific health and safety legislation including the Notification of Installations Handling Hazardous Substances Regulations 1982 (NIHHS) and the Control of Industrial Major Accident Hazards Regulations 1984 (CIMAH). The details of this case must be viewed with this in mind because safety failures at an installation of this nature would be highly likely to have catastrophic consequences. As with Piper Alpha, the Hickson and Welch facility could be regarded as having had a high baseline of universal hazards, so the careful management and control of these hazards was vital.

Hickson and Welch was a manufacturer of organic chemicals in Castleford, West Yorkshire employing around 900 people on the site, which had been in operation since 1915. The company specialised in the production of ‘aromatic compounds including nitrotoluenes’, which are an intermediate product that would go on to be

used in a manufacturing process elsewhere to make end products such as dyes, agricultural, and photographic chemicals. [481]

On 21 September 1992, during the non-routine cleaning of a still base (tank), an explosion occurred which killed five people. The coroner's inquest recorded verdicts of accidental death with thirteen contributory factors listed. The company was subsequently prosecuted under the Health and Safety at Work etc. Act, where they pleaded guilty and received a fine of £250,000 plus £150,000 costs awarded to the HSE. The lessons learnt from this incident were shared by the HSE with the advice that all chemical manufacturing facilities should ensure they had been adequately reviewed and addressed to ensure a similar incident could not happen again elsewhere.

The Incident

On the day of the incident a cleaning operation was taking place in a vessel known as '60 still base'. This vessel was used to distil organic liquids in batches and a semi-solid sludge rich in dinitrotoluenes and nitrocresols had built up inside it over time.[483] It had never been cleaned out since its initial installation in 1961 and it was thought that there was a normal ebb and flow of such sludge in the process, but that a recent operation had left a larger volume in 60 still base and that this was affecting product quality and slowing distillation times.[484] Therefore a decision was taken to plan a cleaning operation which involved building a temporary scaffold around the tank and having employees use rakes to get the sludge out and into a skip below. The vessel contained an internal steam coil which was used for three hours to heat and soften the residues before workers began to rake out the contents from their position on the temporary scaffold. The HSE's report described how the use of the heating coil 'started a self-heating (exothermic) runaway reaction in the residue leading, with disastrous consequences, to deflagration and a jet flame'.[485] Figure 5.1 below, taken from the HSE's report into the accident shows the layout of the vessel with a temporary

[481] HSE, *The Fire at Hickson & Welch ltd: A report of the Investigation by the Health and Safety Executive into the fatal fire at Hickson & Welch Ltd, Castleford on 21 September 1992* (Buxton, 1994), p. 3.
[483] Dinitrotoluenes are a yellow crystalline solid at room temperature that becomes a combustible liquid when heated. Nitrocresols are yellow crystals that are toxic, corrosive, and polluting. When heated, they can be explosive.
[484] HSE, *The Fire at Hickson & Welch Ltd*, p. 8.
[485] Ibid, p. 1.

scaffold in place for the cleaning operation and the build-up of sludge inside. The red circle shows the opening where the jet flame exited the vessel horizontally.

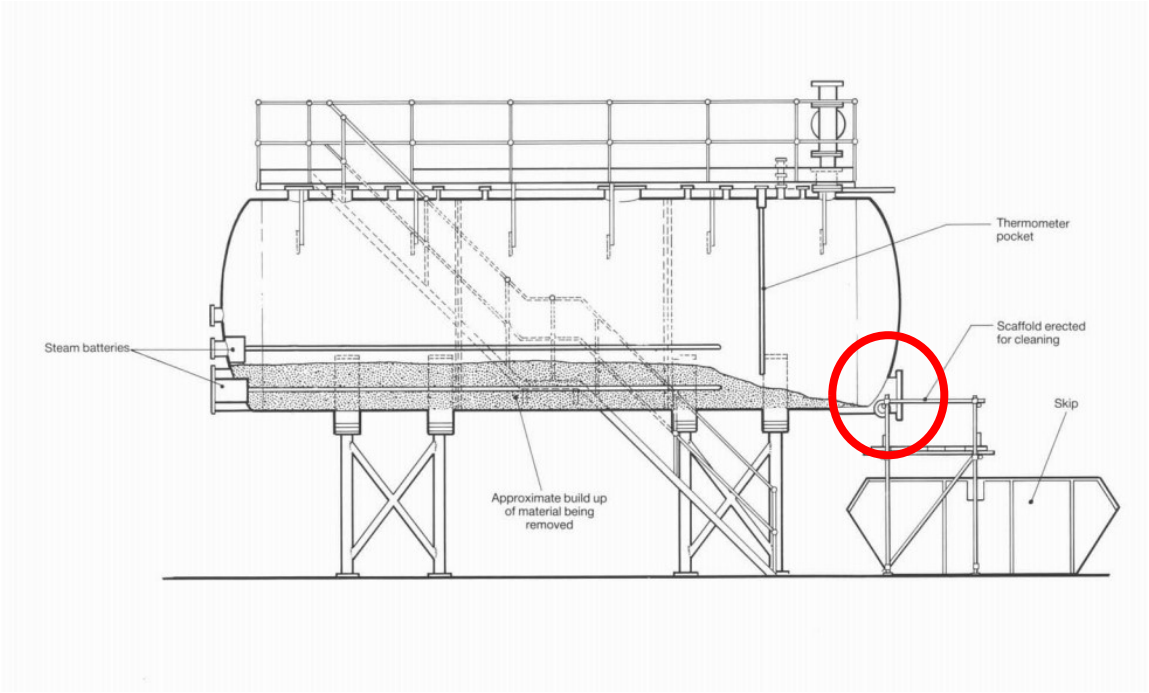

Figure 5.1 – 60 Still base with temporary scaffold. HSE, *The Fire at Hickson & Welch Ltd,* p. 10.

The jet of flame was so fierce that it cut through an adjacent control room building, instantly killing two men who were inside it at the time. Three other men inside the control room building suffered serious burns and two of these men later died in hospital. Beyond this control room was a four-storey office building with 63 people working inside. The office building's windows were shattered, and rooms were set on fire. Everyone in the office block managed to evacuate except for one young woman who was overcome by smoke in the second-floor toilets. She was rescued by fire fighters but died two days later in hospital. Seconds before the jet fire occurred at 1.20pm, there was one worker on the scaffold who was continuing with raking out the sludge while others had left the area to do other tasks. This worker noticed a small blue glow through the manway, and realising the danger, he jumped off the scaffold and to safety just in time.[486] Eyewitness reports say the jet fire lasted around one minute and then subsided, leaving localised fires in and around the buildings. The on-site Hickson and Welch firefighting team made initial attempts to tackle the fires at the still base and

[486] Ibid, p.12.

control room, and a total of 22 fire appliances and 100 fire fighters attended. The fire killed five people: four men in the control room and one woman in the office block.

Background on Previous Explosions and HSE Enforcement Action

The 1992 incident was not the first fatal explosion at Hickson and Welch in Castleford. In 1926 there was an explosion that killed two men. In 1930 there was another explosion in which 13 people were killed, 32 were injured, and the site was largely destroyed. It was reported that a fire in the nitric acid plant caused the 1930 explosion which sounded 'like an earthquake' and left hundreds of homes in the surrounding area uninhabitable.[487] The site was rebuilt and changed hands several times over the years, but always retained its core capability of producing intermediate chemicals. These prior incidents give an indication of how volatile the chemicals being processed at the facility could be, and the operators of the plant can have been in no doubt about the dangers.

More recently, the company had been prosecuted in 1986, under the HSWA for a chemical incident and had been subject to an enhanced HSE inspection regime in the years following the prosecution.[488] The HSE's inspection regime at Hickson and Welch had three aims:

> (a) to conduct a planned preventative inspection with particular emphasis on those parts of the site defined as 'major hazard installations';
>
> (b) to investigate significant accidents, incidents and dangerous occurrences in order to discover the underlying causes, particularly in respect of management systems failures which contributed to these events; and
>
> (c) to collate information on the company's performance from the above activities and to present this as evidence to senior management, periodically, to justify improvements in the management of health and safety.[489]

The HSE's emphasis on the 'major hazard installations' on the site is highly significant. It is a reference to the CIMAH Regulations which applied to Hickson and Welch initially in relation to the use of chlorine and arsenic acid on site.[490] Updates to the Regulations in 1991 brought more substances in scope and

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[487] 'Like An Earthquake (1930)', *British Pathe,* https://www.britishpathe.com/asset/55868/, accessed 24 August 2021.

[488] HSE, *The Fire at Hickson & Welch Ltd*, p. 28.
[489] Ibid, p. 28.
[490] Ibid, p. 27.

Hickson and Welch had submitted all required documentation to the HSE in relation to this requirement, including an off-site emergency plan and information for the public. The HSE was keen to stress in their post-incident report (into the fatal 1992 explosion) that the focus of their prior inspection activity had been on the 'major hazard installations' as defined by the Control of Industrial Major Accident Hazards Regulations 1984. Not all parts of the site's operations fell under these Regulations, and the Messnier Plant (the equipment involved in the fatal jet fire in 1992) was itself *not* subject to CIMAH controls. The storage of some of the chemicals used in the process was in scope, but the operation itself was not. As a result, by the HSE's own admission, this area was not being regularly scrutinised by the Regulator. That said, 'the section of the nitrotoluenes area which include[d] the Meissner plant last received a preventative [HSE] inspection in February 1990'.[491]

The HSE report into the 1992 incident refers to the preceding years and gives a largely favourable overview of Hickson and Welch in terms of the company's responses to their advice and noted its compliance with two enforcement notices that had been served since 1987. Both of these notices related to 'major hazard installations' on the site and were not related to the Messnier plant operations. Enforcement notices are a formal regulatory mechanism used by the HSE when unsatisfactory or dangerous conditions are discovered, usually during an onsite inspection, but sometimes as the result of a concern raised by an employee or member of the public. There are two levels of enforcement notice; a lower level 'improvement notice' which gives the company a set period to make improvements to the plant or machinery of concern, and a higher level 'prohibition notice', which prohibits the use or operation of the equipment until it has been rectified and made safe.[492] There appears to have been a reasonably constructive open dialogue between the HSE and Hickson and Welch, with the company requesting advice from HSE's Accident Prevention Advisory Unit in 1988. The HSE held a one-day seminar for management and trade union representatives in April 1988 to support the site's management in implementing an internal auditing system for the health and safety policy and arrangements.[493] An independent loss prevention specialist was brought in, and the audit results

[491] Ibid, p. 29.
[492] Health and Safety at Work etc. Act 1974, Part 1 (21) and Part 1 (22).
[493] HSE, *The Fire at Hickson & Welch Ltd*, p. 29.

were shared with the HSE by Hickson and Welch's Environmental, Safety and Quality Affairs Director.[494]

Hickson and Welch had a varied record on safety, having suffered two fatal explosions and being subject to regulatory scrutiny and enforcement action. The company itself was mindful of the recent high-profile incidents at Flixborough and Bhophal and the 'wider context' in which safety issues were being seen by the public, and customers.[495] They had been successfully prosecuted by the HSE and recently served with enforcement notices but all indications pointed to a business that was engaging with the regulator in a positive way, and investing time and resources in correcting issues and identifying further opportunities for improvement. This observation is reinforced by the experiences and memories of Les Shaw, whose oral history interview is quoted below.

Organisational Culture at Hickson and Welch

Les Shaw worked at Hickson and Welch for over thirty years, having started as an engineering apprentice in 1967 at the age of 15. He has fond recollections of working at Hickson and Welch, especially prior to the tragic accident in 1992:

> Each shift had a cricket team, a football team, a seven a-side, and shift one would play against shift 2, and the engineers would play against them. Management had a team, junior management, and some of the directors would play. And in the summer we had a cricket knock out tournament and it was that sort of company.[496]

He also recalled the strong sense of belonging and the trade union's good relations with management. There had been industrial action over pay, coincidentally just a few weeks before the miners' strike started in 1984, but this was resolved and the union and management were able to move forwards and work well together:

> You had strong trade unions and you had strong management but you also had games you had fun, I know it sounds… but you did, you had lots of fun. We had a big canteen, we used to have an hour and a quarter for a lunch break, people in canteen for the lunch break you know what I mean?[497]

There were several coal mines and a glassworks in the local area around Castleford and Les recalled the strong community spirit in the area, with many

[494] Ibid, p. 29.
[495] R. Hall, 'An Element of Change', *Total Quality Management*, 4:4 (August 1992), p. 222.
[496] Interview with Les Shaw 21 September 2021.
[497] Ibid.

families who had mining backgrounds or still had fathers working in the pits. However, after the fatal incident he felt the company changed and much of the community spirit was lost:

> There weren't as many things like that, it was almost like the glue that… it wasn't the same. We still had little bits going on but it wasn't the same. It's like Christmas. Every department at Christmas used to go out with their wives to local things to have a meal and have a party. All different departments. Some of them stopped, things like that.[498]

These insights are a powerful reminder of the terrible impact of industrial fatalities on the workplaces and the communities affected. They also demonstrate that Hickson and Welch was a pleasant place to work where union activity was very much part of the culture, and the management worked constructively with the workforce to maintain good relations.

To understand some of the decisions and events that contributed to the explosion it is vital to look at the management structure and permit to work system. A new management structure had been put in place across the whole site and had only become operational in the nitrotoluenes area (where the explosion happened) on 7 September 1992.[499] This was just two weeks before the incident occurred. The implementation of the new management structure had been a two-year process that was 'agreed after a lengthy negotiation with the Transport and General Workers Union'.[500] The old structure was described as 'hierarchical' with plant managers responsible for small production teams led by supervisors. Under the old system the plant managers reported into area managers who reported into one of three factory production managers.[501] The new system was a matrix structure with five area managers each responsible for a distinct area and 'provided with technical, planning and maintenance support for their respective areas'.[502] A supervisory level position was eliminated, and a new, more skilled role of team leader was created. It was at this level where decisions manifested in the events on 21 September 1992.

In August 1992, one month before the fire, the Human Resources Manager of Hickson and Welch had an article published in *Total Quality Management*. This

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[498] Ibid.
[499] HSE, *The Fire at Hickson & Welch Ltd,* p. 25.
[500] R. Hall, 'An Element of Change', *Total Quality Management,* 4:4 (August 1992), p. 221.
[501] HSE, *The Fire at Hickson & Welch Ltd*, p. 24.
[502] Ibid, p. 24.

article detailed the reasons for the restructure and how it was implemented, with a tone that displayed pride and a sense of accomplishment in what had been achieved. The restructure was planned in response to commercial pressures for 'high standards of service, process conformance, product integrity and repeatability', in other words the need for a consistent and conforming product, delivered on time to the customer.[503] This is in fact the perennial challenge in all manufacturing environments where pressures to make product can lead to corner cutting, poor safety, and poor-quality product. Constraints such as skills shortages and machinery break downs can impact negatively on delivery, sometimes known as OTIF (on time, in full to customer). This, 'the ever-present tensions between production and protection', was described by James Reason as one of the *Universals* in all organisations.[504] We will return to this point again later.

Hickson and Welch's senior leadership believed that the proposed new matrix management system would lead to improvements in the quality and consistency of their product and their operational capabilities. Safety was also cited as a major benefit of the reorganisation, especially in the context of stakeholder engagement and public perceptions of the business. There is, however, some mileage in the theory that the mention of safety was an afterthought, bolted on after the plans had already been made. The reason this is worth considering is that the philosophy of Total Quality Management (TQM) did not take safety into account and was not aimed at improving safety. A 1989 article (unrelated to Hickson and Welch), on TQM contained the word 'quality' 86 times, 'cost' 14 times, 'value' 31 times, and 'improvement' 22 times.[505] The word safety did not appear in the article. Separately, a large study in the US, published in the *Journal of Business* in 1988 included a comprehensive definition of TQM that did not contain the word safety, and the results were measured exclusively in financial terms.[506] The findings of the study 'indicate[d] that performance, measured by both accounting

[503] R. Hall, 'An Element of Change', *Total Quality Management* (August 1992), p. 221.
[504] J. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008), p. 138.
[505] J. J. Kaufman, 'Total Quality Management' *Ekistics*, *56*(336/337) (August 1989), pp. 182-187.
[506] G. S. Easton and S. L. Jarrell, 'The Effects of Total Quality Management on Corporate Performance: An Empirical Investigation', *The Journal of Business*, 71:2 (April 1998), pp. 253–307.

variables and stock returns, is improved for the firms adopting TQM'.[507] These examples have been cited because they are contemporaneous to the Hickson and Welch events and illustrate why the references to safety in the article written by Hickson and Welch's HR Manager, may have been somewhat disingenuous.

For balance, a browse of the safety journals from the same period reveals some attempts to link TQM to safety, but the theme is one of a theoretical potential symbiosis rather than accepted wisdom. A 1994 article in the journal, *Professional Safety* described how, 'An increasing number of articles in business publications address the natural fit between safety and quality'.[508] This emerging mindset certainly did go on to become ubiquitous in management theory but was in its infancy around this time and does not feature in Robert Hall's TQM article.

Modern management systems have become increasingly integrated, and there is a greater sensitivity to the potential for 'silos' of activity or behaviour, which can be counterproductive. The table below is taken from a 2003 journal article and illustrates a combined, integrated management systems approach.

1	Eliminate duplication/redundancy: • Use same administrative controls to drive all program elements
2	Ensure compliance with applicable regulatory requirements including: • OSHA PSM • EPA RMP • OSHA Safety and Health • EPA Environmental • DOT Materials Transportation • Other as applicable
3	Ensure compliance to company/industry standards • ISO 9001 • ISO14001 • QS 9000 • Responsible Care
4	Clarify responsibilities and ownership for managing, performing and verifying the work
5	Maximize cost efficiencies/business results including the transition period for implementing change in the system
6	Achieve goals/objectives with minimum effort
7	Provide flexibility/adjustability within the new system to facilitate continuous improvement
8	Develop a management system where performance can be managed against

[507] Ibid, p. 254.
[508] W. E. Lischeid, 'TQM & Safety: New Buzz Words or Real Understanding?', *Professional Safety,* 39:6 (June 1994), p. 31.

Figure 5.2 – copy of a 2003 table illustrating an integrated management systems approach. R. Holdsworth, 'Practical Applications Approach to Design, Development and Implementation of An Integrated Management System', *Journal of Hazardous Materials*, 104:1-3 (November 2003), p. 195.

More recently in 2012, the British Standards Institute published a guide (PAS99) to implementing integrated management systems.[509] However, the TQM methodology of the early 1990s was very much geared towards efficiency and cost-saving. This view is supported by Les Shaw.[510] Shaw was a prominent Union figure in the Transport and General Workers' Union, eventually rising to Branch Secretary. His recollections of Hickson and Welch were largely very positive, and he does not feel that the management were to blame for the fatal fire. However, he *did* consider the restructuring exercise under Robert Hall's HR tenure to have been about efficiency and cost-cutting rather than safety.[511]

The restructure was a substantial undertaking, and it is only because of the *TQM* article that such good insights into the motivations and the intent of the business are available, although this was their own story they were telling, making a favourable slant much more likely. A large amount of management time and resources were allocated to the restructure project, with a 100% increase to the site's training budget and the appointment of a new training and development manager role.[512] A new Director level role was also created for Health, Safety, Environment, and Quality. The business was proud of the changes it was making and there appears to have been a sincere intent and effort to improve several aspects of the organisation in this radical shake-up of the company's structure. However, the changes were not welcomed by all and may have had unintended consequences that contributed to the explosion. According to the HSE report:

> The new system was not without its critics. Area managers were generally acknowledged to have significant workloads. They were responsible not only for production activities within their areas but also for maintenance which had previously been the responsibility of the Works Engineering Department. A number of the area managers had approached senior

[509] 'PAS99 Integrated Management: Features and Benefits, BSI, bsi_pas_99_features_and_benefits.pdf (bsigroup.com)https://www.bsigroup.com/globalassets/localfiles/en-gb/pas-99/resources/bsi_pas_99_features_and_benefits.pdf, 2020, accessed 04 November 2021.
[510] Interview with Les Shaw, 30 September 2021.
[511] Ibid.
[512] J. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008), p. 224.

management about their problems and in specific areas this was under review.[513]

The decision to clean out 60 still base was made by the area manager and one of the site shift managers on Thursday 17 September, three days before the incident. According to the HSE report, 'the area manager (AM) who had overall responsibility for the nitrotoluenes area had worked at the factory for over 30 years. Under the previous management system he had worked as plant manager on the Meissner plant'.[514] The cleaning method, including the erection of the scaffold and access through the front manway was agreed, and the area manager requested for this preparation to be done over the weekend, but this did not happen. This meant that when the area manager arrived for work on the Monday morning a decision on whether to go ahead with the cleaning had to be made quickly. According to the HSE report, 'the AM was assured by team leaders, however, that preparations could be made quickly to minimise down time. Immediate arrangements were made to provide a scaffold and skip which were in place by 10.15 am'.[515]

This scenario rings alarm bells for several reasons at this point. It was a non-routine procedure, being hastily planned, by a team that was newly restructured. Any changes to plant or processes can have unintended consequences and in the case of Hickson and Welch, 'the cleaning operation was being carried out by an inexperienced team reporting to an overworked manager' and 'problems can be caused by management of change that has not taken factors like these properly into account'.[516] David Eves (a former Deputy Director General of the Health and Safety Executive) cited one of the root causes for the Hickson and Welch disaster as 'loss of corporate memory due to organisational changes involving reductions in the number of experienced, knowledgeable staff'.[517] Hickson and Welch's leadership described the restructure in terms of 'fewer, higher calibre, higher performing people with enhanced skills, producing higher quality product and service, working within a flatter structure… paid more'.[518] This type of business vision, in line with contemporaneous fashionable terms such as

[513] HSE, *The Fire at Hickson & Welch Ltd,* p. 24.
[514] Ibid, p 24.
[515] Ibid, p. 11.
[516] D. Eves, *Disasters: Learning the Lessons for a Safer World* (Abingdon, 2010), p. 55.
[517] Ibid, p. 56.
[518] R. Hall, 'An Element of Change', *Total Quality Management,* 4:4 (August 1992), p. 223.

downsizing and rightsizing, was described by David Eves as 'the latest manifestations of a difficult economic period'.[519] The changes had, however been very much packaged up by Hickson and Welch as an innovative strategy for increasing employee commitment and improving product quality. Their human resources director detailed some of the problems encountered during the process in the August 1992 *TQM* article. He described 'lengthy discussions' with supervisors and trade union representatives, and the 'considerable persistence' that had been required to maintain the momentum.[520] He also reported that 'morale suffered' amongst these groups, which in turn 'had a knock-on effect into the whole industrial staff area'.[521] This points to a connection between the restructure and the decisions taken on the day that led to the fire.

But this assumption could be misplaced. James Reason wrote of the conditions at NASA prior to the Columbia disaster and that NASA had been through a similar period of 'leaning and meaning', cost-cutting, and downsizing, as were the 'buzz words of the age'.[522] However, he went on to explain that it would be a counterfactual fallacy to attribute the cause of the accident to these conditions because 'all accident investigations reveal systematic shortcomings'.[523]

> There are always organisational interventions that could have thwarted the accident sequence, but their absence does not demonstrate a causal connection. So the fallacy is this: if things had been different then the accident would not have happened; *ergo* the absence of such differences caused the accident.[524]

If we apply this logic to the Hickson and Welch case, then it would be incorrect to attribute causation to the management restructure and organisational change. That said, the need for clear lines of reporting and responsibility within a high hazard environment are obvious. Any amount of confusion, misunderstanding, poor communication, or hesitancy could have disastrous consequences. This was also true in the case of Piper Alpha, where the permit to work system failed and those in the control room on the rig did not feel they had the authority to stop

[519] D. Eves, *Disasters: Learning the Lessons for a Safer World* (Abingdon, 2010), p. 56.
[520] R. Hall, 'An Element of Change', *Total Quality Management,* 4:4 (August 1992), p. 224.
[521] Ibid, p. 224.
[522] J. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008), p. 133.
[523] Ibid, p. 138.
[524] Ibid, p. 138.

the flow of hydrocarbons after the first explosion, thus missing an opportunity to slow down or stop the deflagration that destroyed the platform.

Les Shaw spoke of his pride in the safety systems at the facility: 'there'd been explosions before, right, but they'd got… and we, not just the trade union, we the people who were there actually believed that we'd got a lot of good safety systems that we'd brought in with management'.[525] He also remembered the shock and disbelief when the explosion happened: 'all of a sudden this happened and we started looking and saying, "but we've got all these systems now, how can it, how can it go wrong?"'.[526]

The Permit to Work System

Three hazardous work permits were raised on the day, in relation to the cleaning of 60 still base, but these were all lost in the fire. 'These permits were issued by a team leader who had not worked on the Meissner plant for 10 years, preceding his appointment on 7 September 1992. This team leader attended refresher training on the permit system on 25 August 1992 but had not received any refresher training for his work on the Meissner plant'.[527] Two of the permits that were issued referred to the removal of the man lid to gain access for raking out the sludge, and the third permit was for blanking off the inlet to the vessel (this was not done). A specific permit was not raised for the task of cleaning out the vessel itself: this was confirmed by 'Technician Trevor Davies [who] told the inquest that no specific safety instructions had been given before a team set to work to clear out the slurry with metal rakes. Hazardous work permits had not been issued'.[528] The inquest also heard that, 'at 10.15am the team leader made out a work request and permit for a fitter to remove the man lid. The fitter arrived to sign on for the job at 11.l0 am and shortly afterwards he went for lunch. At this stage the AM was concerned about delay and operatives who were standing by to remove the sludge volunteered to take off the man lid. This was authorised by the same team leader who made out another permit'.[529] This sequence of events appears to describe an area manager losing patience with the fitter, and instead permitting his own operatives to remove the man lid to save time. This begs the

[525] Interview with Les Shaw, 30 September 2021.
[526] Ibid.
[527] HSE, *The Fire at Hickson & Welch Ltd*, p. 26.
[528] M. Wainwright, 'Chemical tank "directed explosion through factory" leaving five dead', *The Guardian,* 9 March 1993, p. 2.
[529] HSE, *The Fire at Hickson & Welch Ltd,* p. 11.

question of authority: who *should* have been authorised to remove a man lid, and who should have been authorised to write the permit for this action? The purpose of a permit to work system is to control hazardous activity and prevent accidents and incidents. If a system is sufficiently flimsy to allow it to be overridden for the sake of saving time, then it is unlikely to be robust enough to work effectively.

Les Shaw, who was part of the engineering department himself, strongly refuted any suggestion that procedures at Hickson and Welch were weak, or unsafe. He described the shock and incredulity after the fire, that stemmed from a sincerely held belief that there were strong safety systems in place:

> You see, there'd been explosions before, right, but they'd got… and we, not just the trade union, we the people who were there actually believed that we'd got a lot of good safety systems that we'd brought in with management, that we'd argued with management about…
>
> And all of a sudden his happened and we started looking and saying, 'but we've got all these systems now, how can it, how can it go wrong?' And so you get that, you do get that. It's like an outpouring, it's not grief, it's an outpouring of, 'we thought we were good' but you can't be good when five people are dead, if you know what I mean.[530]

The HSE report contained the lessons and recommendations, including lesson 6 pertaining specifically to the permit system: 'Persons authorised to issue permits to work should be sufficiently knowledgeable about the hazards associated with the relevant plant. If "authorised" personnel are relocated to former workstations refresher training should be given and recorded before re-authorisation'.[531] Unfortunately the permit system, which may have ordinarily served its purpose, did not provide good levels of control on the day of the fire. This was because a manager had been recently relocated into the area without refresher training, and furthermore, he 'was dealing with several other problems which required his attention and one of his manufacturing controllers was on holiday. The newly appointed team leaders therefore assumed most of the responsibility for the task'.[532] Whilst Les Shaw recalls strong safety systems (layers of defence), these factors outlined above all represent weaknesses which created a pathway to the disaster. By examining the conditions and factors on the day of the fire to James Reason's Swiss Cheese model (see Figure 5.3 below), it is evident that there were problems with the layers of defence at every level. These weaknesses in

[530] Interview with Les Shaw, 30 September 2021.
[531] HSE, *The Fire at Hickson & Welch Ltd*, p. 33.
[532] Ibid, p. 33.

the defences may have been present in varying degrees, for some time. But on the day of the accident, these aligned, resulting in the deaths of five people.

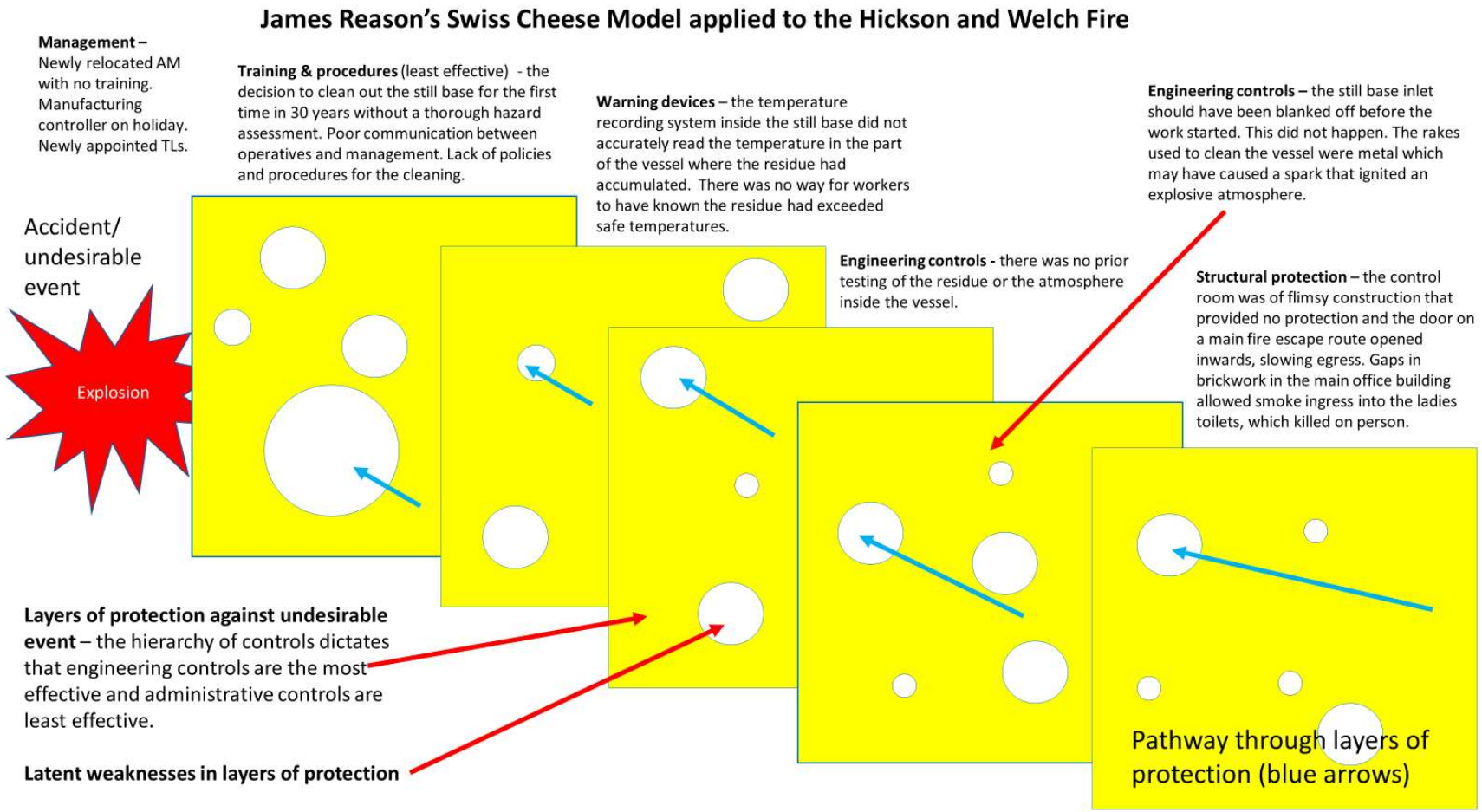

Figure 5.3 – James Reason's Swiss Cheese Model applied to Hickson and Welch.

Foreseeability

It has been established that activities on site at Hickson and Welch were high risk, and that there were recent changes to the organisational structure. These two factors, i.e. high-risk activity and organisational change, represent what James Reason called *Universals*, which he described as the 'ever-present hazards associated with a particular domain of activity'. [533]

However, Reason asserted of these universal hazards that, 'their mere existence is insufficient to explain why people are repeatedly – but not invariably – ensnared by them', because there must also be a motive force to drive people into these 'treacherous pathways'.[534] Further, 'the argument to be offered here is that, in hazardous work, this motive force is derived from an organisation's safety culture – or more often, from a lack of it'.[535] In some cases of industrial disasters the necessary motive forces that pushed the *Universals* into fatal accidents can be easily identified as these often stemmed from the conflict between safety and production. It is often clear that the weakest link is in the balance all businesses must strike, whereby risk must be reduced *as far as reasonably practicable*, whilst maintaining a profitable operation.[536] In other words, it was a site where dangerous activity was taking place daily, but that didn't mean someone had to get hurt.

Breaking down the issue of foreseeability starts with the acknowledgement that this was a hazardous industry where multiple potential scenarios for a major incident existed. Secondly there are the questions of whether the specific scenario that occurred on 21 September 1992 could be predicted. In terms of the hazardous nature of the activity at Hickson and Welch, this was not in any doubt, because of the previous explosions, the organisational understanding of the processes, and the requirements of the CIMAH Regulations. Les Shaw described complex emergency response planning sessions, which included local emergency services, scenario-based training, and feedback to ensure

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[533] J. Reason, *The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries* (Aldershot, 2008), p. 124. Reason used the following example of Universals: In the maritime world the universals would include rocks, shallows, currents, tides, other vessels. Unplanned contact with these universals causes damage.
[534] Ibid, p. 125.
[535] Ibid, p. 125.
[536] The term, 'reasonably practicable' is derived from Edwards v. National Coal Board 1949 and was also included in the Health and Safety at Work etc. Act 1974.

preparedness for a major incident, should one occur.[537] There was a good understanding of the potential for a major incident of this nature, and there were measures in place to mitigate the effects of such an incident.

Moving onto the specific scenario; there had been some investigations prior to the explosion into the best methods for removing the residues from the MNT system. ‘In a report produced by the then AM in February 1988 he concluded that "the practice of distilling large inventories in 60 still base of 'potentially' unstable materials is not wise"’.[538] However, the site’s development department conducted a thermal stability assessment on the same process and ‘when plant trials were carried out in the spring of 1988 it was found that the thermal stability of the substances involved was much greater than had been forecast by earlier simulations’.[539] In October 1988 ‘procedures based on batch sampling and thermal stability testing were introduced to maintain what was considered to be an adequate margin of safety’.[540] It later transpired however that these procedures had disadvantages relating to quality and increased downtime. Downtime is the term used to describe periods during which manufacturing equipment cannot produce product. This could be the result of a breakdown, planned maintenance, cleaning, or change overs from one process to another. Downtime is detrimental to production and is therefore often targeted when looking for process efficiencies. In September 1992 the issue was under review by senior technologists in the business ‘but the work was proceeding slowly and causing a certain amount of frustration’.[541]

The HSE investigation found that ‘on 15 June 1992 a senior process technologist wrote to senior management expressing his frustration in a memo which stated that ‘it is my view that we are within five years of a major accident on the MNT distillation system"’.[542] There was knowledge within the company that there were serious concerns of the potential for a major fire or explosion in residues in the MNT system and enough technical expertise at all levels to properly investigate

[537] Interview with Les Shaw, 30 September 2021.
[538] HSE, *The Fire at Hickson & Welch Ltd: A report of the investigation by the Health and Safety Executive into the fatal fire at Hickson & Welch Ltd, Castleford on 21 September 1992*, (Buxton, 1994), p. 29.
[539] Ibid, p. 29.
[540] Ibid, p 29.
[541] Ibid, p. 30.
[542] Ibid, p. 30.

these concerns. This just did not happen quickly enough, and 'the AM authorised removal of sludge from 60 still base without any attempt to identify this material, the hazards and the risks involved'. The residue contained organic nitro compounds and it is well known that these substances can be induced to undergo exothermic decomposition at elevated temperatures, leading to thermal runaway. [543] Based on this information the scenario was entirely foreseeable and according to the HSE, preventable, had there been an assessment of the hazards, and suitable precautions before starting the cleaning operation.[544]

When considering whether Hickson and Welch *should* have predicted and prevented the explosion, Mike Lauder's work on foresight and hindsight is helpful:

> 'The problem was not … that organisations had too little information … but too much'. This statement is supported by many post-disaster inquiry reports. These show that the required information is often available within the organisations. The problem is just that it is in the wrong place or is not given the priority that hindsight would indicate it deserved.[545]

Furthermore:

> As Turner state[d], hindsight provides a clearly defined problem. Those tackling problems that require foresight do not have this luxury. They suffer from "the inability to see any pattern within an activity or series of events": where they think they do see patterns these may just be personal constructs that have little correlation with reality. If we are not to beguile ourselves with illusions of control we need to accept events may be more random than we may like. We need to think of chaos as being the real norm.[546]

Conclusion

When examining the Hickson and Welch case, the work of James Reason is incredibly pertinent:

> All rational managers accept the need for some degree of protection. Many are committed to the view that production and protection necessarily go hand in hand in the long term. It is in the short them that conflicts occur. Almost every day, line managers and supervisors have to choose whether or not to cut safety corners in order to meet deadlines or other operational demands.[547]

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[543] Ibid, p 31.
[544] Ibid, p 1.
[545] M. Lauder, *In Pursuit of Foresight: Disaster Incubation Theory Re-Imagined* (Abingdon, 2016), p. 137.
[546] Ibid, p 139.
[547] J. Reason, *Managing the Risks of Organisational Accidents* (Aldershot, 1997), p. 5.

The management commitment to safety was evident at Hickson and Welch, but in the moment, when those at supervisory level had to make decisions, the system failed. When asked specifically about production pressures at Hickson and Welch, Les Shaw felt strongly that safety took priority, that everyone understood the risks, and that management didn't put people under undue pressure to produce:

> We thought our safety systems were there, and they were. Safety systems were there. If people felt they were under pressure, I'd like to say they wouldn't buck a safety system, but I'm a realist on any site. I'm talking about a process operator now. If he wanted to do that it were easier for him to do that, then, he's got half an hour to go for a cup of coffee, sometimes unfortunately that sort of thing's happening in all industry. So I would never categorically say… but that's not pressure, that's them doing an easy thing.[548]

The one action that could and almost certainly would have prevented the explosion was a thorough hazard assessment and a considered safe system of work.[549] Such an assessment would have identified the potential hazards associated with the heating of an unknown substance. The control measure for this would have been to determine the chemical properties of the material being raked out of the vessel. Had this analysis taken place, the chemists on site would have been able to advise against applying heat to the nitrotoluene. The only explanation for the failure to undertake this analysis is that doing so would have further delayed the cleaning operation and had a knock-on effect on production. The cleaning operation was conducted on the authorisation of a team leader who was under time pressure and no permits were issued for the hazardous activity itself.

Once the cleaning operation got underway, the jet fire became inevitable. However, this need not have resulted in five deaths. It is likely that the four men in the control room would have survived if not for the close proximity and flimsy construction of the control cabin, and the inward opening door that slowed the men's escape. Had the cabin been designed differently, been more appropriately located, and had good escape routes, they would have been much more likely to survive. Similarly, the woman who was killed in the office block toilets may well have survived if fire safety controls had been properly maintained.

[548] Interview with Les Shaw, 30 September 2021.
[549] HSE, *The Fire at Hickson & Welch Ltd*, p. 32.

Compartmentation in the building was compromised, leading to the smoke ingress in the toilets where she was found.

The sincerity with which the company appeared to approach matters of safety, (as per Les Shaw's recollections), is something that sets this case apart from many others. That said, the apparent good intentions and confidence in the safety systems were not sufficient to prevent the incident. At the High Court, whilst passing sentence, 'Mr Justice Holland said: "This was not just a casual breach of employers' duty but a plain gap in an employer's management arrangements which should not have been there." The firm accepted it had "completely failed" in its obligations'.[550]

If anything, the Hickson and Welch fire represents a very textbook organisational catastrophe. The latent weaknesses, which exist in all organisations, but do not always manifest in tragedy, could be viewed as having lined up perfectly on the day of the fire at Hickson and Welch. Thus, a classic 'Swiss Cheese' situation arose. Whilst this was both foreseeable, and preventable, it must also be acknowledged that a combination of human error and circumstance can defeat almost any safety system.

[550] M. Wainwright, '250,000 Pounds fine for Fatal Blast'*,* *The Guardian***,** 31 July 1993, p. 8.

Chapter Six - Simon Jones

‘They call it an accident… Something which is foreseeable and can be avoided can never be an accident, that’s negligence’. Interview with Anne Jones, mother of Simon Jones, conducted by Victoria Hill, 15 June 2023.

Simon Jones was killed on his first day as a casual temporary worker on Shoreham Docks, Brighton, on 24 April 1998. He had been on site for only two hours working as a stevedore when he was crushed to death by the jaws of a crane grab in the hold of a cargo ship. He had received no training and had no prior experience of working in this environment. He had been employed by Personnel Selection, an employment agency, and the site where he died was owned and operated by Euromin, a Dutch supplier of aggregates and concrete to the UK building industry. This case study was the only chapter to feature a single fatality with all the other case studies being incidents in which multiple people lost their lives. Researching and writing about Simon’s case provided an opportunity to grasp (to a small extent) the terrible human cost and societal effects of industrial fatalities. Oral history interviews with Simon’s mother and some of the other people who campaigned for justice after his death provided insights into the devastation caused by it and the sense of injustice that lingers to this day. This chapter enabled an examination of Simon’s personal circumstances. He was intelligent, politically motivated, and planning to return to university before his death. Simon’s face features on the memorial campaign website and numerous posters and articles about what happened to him and the work of the campaign after his death. Thus, his life and his personality resonated fiercely in this case study in a way that was unfortunately not possible for the victims in other chapters. The Simon Jones case is included in this thesis because the circumstances of his death hinged on the culture of casualisation of labour and the additional risks to workers from casualised labour, and his case is strongly linked to subsequent debates about corporate killing laws. Casualisation was one of several labour market changes towards the end of the twentieth century that

included the decline of heavy industry, and the growth of 'atypical/non-standard work', and 'precarious forms of employment'. [551]

An article in the *Guardian* noted that 'Mr Jones had himself been a campaigner against bad working conditions', 'and a supporter of the Liverpool dockers and their two-year strike against casualisation' meaning that Simon became a victim of the bad working conditions he had campaigned against.[553] In an article about the implications of labour market restructuring on Occupational Health and Safety (OHS), Michael Quinlan wrote that there was a lack of research on the subject but that findings were 'consistent with a hypothesis that higher levels of labour volatility and casualised employment, and a weakening of worker unionisation and empowerment that usually flows from this have worse OHS outcomes'.[554] Quinlan also noted that casualised labour could often lead to underreporting of accidents and injuries for a number of reasons, including ignorance, fear of losing the job, and also a tendency for accidents involving temporary or agency workers to be less likely to be reported by companies who consider these workers to be outside of their official workforce.[555]

Casualisation might enable employers to use labour without the usual investments in training and benefits they might otherwise be obliged to provide (this is discussed later in the chapter). This can be a financially attractive option for businesses, especially, as in this case, where the need for labour can be sporadic and unpredictable because of the nature of the work. Simon's death led to a huge campaign by his family and friends, who publicised the lack of corporate accountability, took direct action, and lobbied relentlessly for changes to corporate killing legislation. Few cases of a single workplace fatality could be seen to have had so much impact on public discourse and policymaking.

The combination of the particularly horrific and egregious circumstances of Simon's death, the determination and activism of his family and friends, and the timing of events situate this case uniquely in the historical context. The Law

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[551] M. Quinlan, 'The Implications of Labour Market Restructuring in Industrialized Societies for Occupational Health and Safety', *Economic and Industrial Democracy*, 20:3 (August 1999), p. 429.
[553] S. Milne 'Work Death Action Sought', *The Guardian*, 23 February 1999, p. 10.
[554] M. Quinlan, 'The Implications of Labour Market Restructuring in Industrialized Societies for Occupational Health and Safety', *Economic and Industrial Democracy*, 20:3 (August 1999), p. 430.
[555] Ibid, p. 430.

Commission had published a report in 1996 containing a review of the current involuntary manslaughter laws, and proposed changes.[556] New Labour had been elected in 1997 under the leadership of Tony Blair (securing a 179-seat majority - the biggest in its history) with manifesto pledges centring on fairness and social justice; this coincided with the tail end of a period of terrible disasters in rail, football stadia, shipping and offshore oil and gas, largely accompanied by the public perception of a lack of corporate accountability, as highlighted by Ewen and Andrews, and Paul Almond.[557] Changes to corporate killing laws were in the pipeline and the *Simon Jones Memorial Campaign* joined other campaign groups such as *Hazards* and the *Centre for Corporate Accountability* who were already actively campaigning in this area. These campaigns and the eventual changes to corporate killing laws provide an important added perspective for this case study and the thesis as a whole. Internal correspondence within the *Hazards* movement around this time shows that hopes were high before the 1997 general election that an incoming Labour government would 'reverse the march towards deregulation and the downward spiral of workplace health and safety standards inflicted on working people during the previous 17 years of Tory rule'.[558] However, despite being invited to meet with the Labour Party and present their 'wish list' for workplace health and safety in the Summer of 1996, later records from 2003 showed bitter disappointment at the 'shameful breach of the promises and assurances that were given'.[559] The Hazards Campaign correspondence further noted that:

> In recent years many people have been killed, maimed or left permanently disabled as a direct result of this government's enthusiasm for casual working and short term employment contracts. The flexible job market may have provided the government publicity machine with deceptively optimistic employment statistics, but only by gambling with the risks to the safety and health of people working in this effectively deregulated

[556] 'Legislating the Criminal Code: Involuntary Manslaughter item 11 of the 6th Programme of Law Reform Criminal Law', *Gov.uk*, https://www.gov.uk/government/publications/legislating-the-criminal-code-involuntary-manslaughter-item-11-of-the-6th-programme-of-law-reform-criminal-law, 1996, accessed 16 June 2023.
[557] S. Ewen and A. Andrews, 'The Media, Affect, and Community in a Decade of Disasters: Reporting the 1985 Bradford City Stadium Fire'. *Contemporary British History*, 35:2 (February 2021), pp. 258-283; P. Almond, 'Public Perceptions of Work-Related Fatality Cases', *The British Journal of Criminology* 48, no. 4 (April 2008), pp. 448-467.
[558] Correspondence regarding draft *Hazards* Campaign Charter, No date, University of Strathclyde Archives and Special Collections, OEDA/F/7/1 (2 of 4).
[559] Ibid.

> employment sector. These deaths and injuries were not accidental, they were inevitable.[560]

On one hand, Simon's death had many similarities with other industrial fatalities and elements of the story could be largely interchangeable with many other accounts of preventable deaths at work. But on the other hand, his case is unique because the *Simon Jones Memorial Campaign* refused to allow him to be forgotten, or the lack of accountability to go unchallenged. After initially refusing to prosecute due to a lack of evidence, the Crown Prosecution Service did eventually bring charges against Euromin and its General Manager, James Martell. Ultimately, the company was given a financial penalty, but no one was found personally culpable for Simon's death. This chapter will examine the circumstances surrounding Simon's death and go on to explore the campaign set up in his memory and the Old Bailey trial. This is then linked to the contemporaneous debate about corporate killing laws, using a variety of sources including trial transcripts, Hansard, and oral history interviews.

The Incident

Simon Jones was working in the hold of a cargo ship, helping to unload bags of aggregate by attaching them to lifting hooks on a grab attachment fitted to an excavator that was being operated from the land. He had been on site for only two hours when the grab attachment closed around his head and killed him instantly. He had been sent by an employment agency, Personnel Selection, to work on a casual temporary basis in a labouring role at Shoreham Docks.

Simon was taking a one-year break from university and was claiming Jobseeker's Allowance under Labour's New Deal. Tony 'Blair evoke[d] "a new contract between citizen and state". This contract requires the enabling state to accept responsibility for providing suitable opportunities for all its citizens. It requires citizens in turn to accept a duty of utilising these opportunities'.[561] This meant that Simon was compelled to accept any work he was offered or risk losing his jobseeker's allowance benefit. The trial text from the court case against Euromin and the UK General Manager, James Martell, shows that Martell had requested two workers from employment agency, Personnel Selection at short notice, on 23

[560] Ibid.
[561] M. Bevir, *New Labour: A Critique* (Abingdon, 2005), p. 90.

April, for the following day.[562] The agency was only able to supply one of the two requested workers, and this was Simon, who had two days' prior experience as a labourer on a different dock. The main reason that Euromin relied heavily on casual labour at short notice was that it was difficult to schedule and predict the arrival of cargo ships into the dock. There were many variable factors that could delay a cargo ship or enable it to arrive earlier than scheduled, and rather than have skilled men standing around waiting, Euromin relied on agencies for labourers at short notice, as required.

Evidence given by permanent Euromin employees during the trial at the Old Bailey revealed that it was normal for them to be short-handed and not have sufficient skills to unload ships.[563] There would be a significant cost to the business if they retained permanently employed stevedores who might spend much of their time without any work to do so the business was run on a skilled skeleton crew, supplemented by casual labour. The UK subsidiary of Euromin was structured with James Martell as General Manager, and a small number (in single figures) of permanent employees based at Shoreham Docks. The trial transcript stated that:

> On the day Simon was killed the staff available to unload the ship were: Jody Taylor – a 17-year-old casual worker employed to unload bags on the quayside; Sean Currey – a casual worker employed alongside Simon (another casual worker) to unload bags in the hold; Russell Harris – the only directly employed member of staff driving the excavator; Two stand-in staff from the ship's crew who spoke no English.[564]

The work being given to casual, unskilled, and inexperienced labourers by Euromin was within a dangerous industry in which training and experience were essential to the safety of those involved. There were heavy bags of material being moved by industrial lifting equipment. The person operating the lifting equipment (an excavator) was not able to see into the ship's hold, and therefore relied on a skilled banksman to watch the movements and provide hand signals. 'On this day the usual banksman was working elsewhere on the site and due to shortage of

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[562] 'The trial of Euromin and James Martell for the manslaughter of Simon Jones', *Simon Jones Memorial Campaign*, https://simonjones.org.uk/wp-content/uploads/2022/10/Trial-text.pdf, 2001, accessed 17 June 2023. (These texts were taken from detailed notes taken during the trial but are not a formal transcript).
[563] Ibid, p. 27.
[564] Ibid, p. 10.

staff a Polish crewman, who spoke no English was used to do this'.[565] Lifting and slinging is a skilled task. Understanding the equipment and the load is vital for safe lifting operations in any environment, but in the ship's hold on the day of Simon's death, there were the additional challenges of the movements of the ship on the water, and the reliance on the banksman to communicate with the operator of the excavator.

The equipment that killed Simon was a grab attachment on an excavator that was being used to lift the bags of aggregate from the hold. This attachment was not being used for its intended purpose and had been modified by having hooks welded to the inside of the grab. The reason for this was to save the time it would take to change over the attachments required for different tasks. This is evidence that the Euromin operation at Shoreham docks was being run with a crew who had been conditioned to work around the perpetual manning constraints. The excerpt below is from an exchange between the trial prosecution (P) and Euromin employee (a banksman of 17 years' experience), Trevor Ford (TF).[566]

> P – Did you know that the correct lifting hook was available at Euromin?
>
> TF – Yes.
>
> P – Do you know why it was not used?
>
> TF – No.
>
> P – Who decided on the use of the hook or the grab?
>
> TF – It's the machine driver's responsibility. He uses whatever tool he needs for the job.
>
> P – Have you ever seen the change over of attachments?
>
> TF – Yes.
>
> P – How long does it take?
>
> TF – 30 to 40 minutes.
>
> P – Was there enough time and enough people there that morning to effect the changeover?
>
> TF – I suppose it could have been done.

This illustrates a culture in which the permanent workers knew they should use the correct attachment but had accepted the adapted grab attachment because it saved time (30-40 minutes per changeover). Instead of changing the

[565] Ibid, p. 6.
[566] Ibid, p. 27.

attachment to the correct hook for the lifting of bags of aggregate, there was an acceptance that the incorrect grab could be used.

According to Anne Jones, Simon's mother, James Martell, the General Manager, was well aware of this issue. In evidence during the trial, the crane driver said that:

> He had at one point changed the grab for the lifting hook of his own erm, initiative because he realised that for what they were unloading that the grab really wasn't suitable and that they needed the lifting hook. Now he did that of his own initiative and Martell came along and said 'who told you you could do that' and made him change it back again. And this came out in court. He made him change it back again to the grab that wasn't suitable. Just so he could exert his authority.[567]

This style of management is consistent with Westrum's 'pathological' safety culture, the characteristics of which include messengers being 'shot' and new ideas being crushed.[568]

Legal provision covering this operation included the Health and Safety at Work Etc. Act 1974, specifically section 2 (2)a, 'the provision and maintenance of plant and systems of work that are, so far as is reasonably practicable, safe and without risks to health'; and 2(2)c, 'the provision of such information, instruction, training and supervision as is necessary to ensure, so far as is reasonably practicable, the health and safety at work of his employees'.[569] There is further, more specific provision relating to dock work in the Docks Regulations 1988: Section 13 (1) a-e requires lifting equipment to be 'of good design and construction', properly installed, assembled, maintained, inspected etc. and section 13 (4), 'Lifting plant shall not be used other than in a safe and proper manner'.[570] In addition to the above, The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER) came into force in the year of Simon's death.[571] The LOLER Regulations consolidated and revoked a large number of historical statutory instruments

[567] Interview with Anne Jones, 15 June 2023.
[568] R. Westrum, 'Cultures with Requisite Imagination', *Verification and Validation of Complex Systems: Human Factors Issues*, (New York, 1993), p. 402.
[569] Health and Safety at Work etc. Act 1974, Section 2(2) https://www.legislation.gov.uk/ukpga/1974/37/section/2 accessed 16 June 2023.
[570] The Docks Regulations 1988, Section 13 https://www.legislation.gov.uk/uksi/1988/1655/regulation/13/made accessed 17 June 2023.
[571] The Lifting Operations and Lifting Equipment Regulations 1998 https://www.legislation.gov.uk/uksi/1998/2307/contents/made accessed 17 June 2023.

relating to lifting equipment and lifting operations.[572] Under either the lifting section of the Docks Regulations or the new LOLER Regulations, the employers' duties were clear. In both statutory instruments there was an unequivocal legal requirement for lifting equipment to be safe, fit for purpose, and inspected by a competent person. The HSWA required Euromin to provide sufficient training, instruction, and supervision to ensure the competence of its employees and the safety of anyone who might be affected by the operations. Competence was (and still is) defined by the HSE in numerous guidance documents as a combination of skills, knowledge, and experience.[573] Simon was working in the hold of the ship with no experience and no training, whilst an unsuitable moving crane grab was being operated close to his head with very little clearance. The operator of the crane could not see into the ship's hold and was entirely reliant on hand signals from a banksman.

Whilst Euromin in the UK was part of a large international corporation, it was in fact run operationally more like a small business with James Martell in charge as General Manager. During the trial, the prosecution's opening statement claimed that 'Mr Martell was not only the general manager but was solely in charge of the site and the business. As such he was a key player and should be held solely accountable'.[574] Martell was asked who his deputy was, to which he replied, 'there isn't one'.[575] The prosecution also called Martell the 'controlling mind' of the organisation, meaning that his actions were the actions of the company. These actions being:

> Martell used untrained staff in the hold. He failed to prioritise the position of banksman allowing the wrong man to be used. He made no risk assessment of the system he had put in place. He gave no instructions not to shorten the chains. He failed to train Russell Harris in the safety aspects of the Liebherr 984. He failed to train his other staff. He employed no supervisor. He engaged insufficient staff for safety.[576]

[572] See The Lifting Operations and Lifting Equipment Regulations 1998 Schedule 2 for the full list of revoked and replaced statutory instruments.
[573] 'Adequate training should ensure that those who use the equipment are competent to use it safely (they have the necessary skills, knowledge and experience), and are physically suited to the task'. INDG290 (rev1) 2012.
[574] The trial of Euromin and James Martell for the manslaughter of Simon Jones (November 2001, Old Bailey), p. 5.
[575] Ibid, p. 10.
[576] Ibid, p. 10.

This list of failings can be placed into James Reason's Swiss Cheese model to demonstrate the complete absence of layers of protection. It was not that the layers were there, and that latent weaknesses in the system were breached. In this case, no efforts had been made to put the layers of protection in place and this is illustrated in figure 6.1 below.

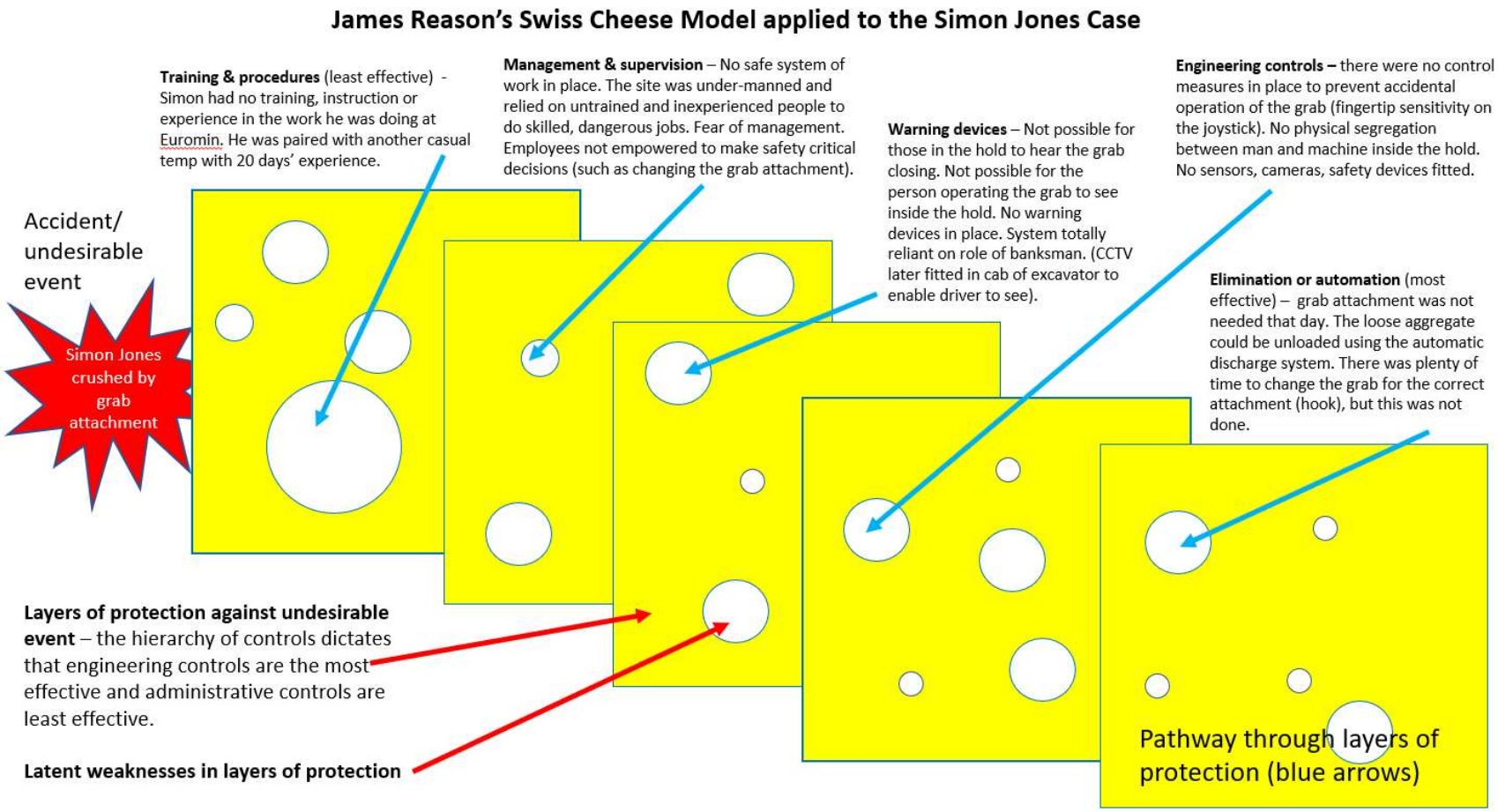

Figure 6.1 – James Reason's Swiss Cheese model applied to the Simon Jones Case.

The absence of layers of protection is also clear when the hierarchy of controls is applied: [577]

Elimination - The grab attachment need not have been used. The trial transcript shows there was sufficient time to change the attachment.

Substitution – as above. Most of the aggregate was loose and could be unloaded using the automatic discharge system, but this method was not suitable for the bagged aggregate. There was a better attachment that was designed for this purpose and would have been much safer for unloading the bags. The attachment should have been changed over but the crane driver had been forbidden from doing so by James Martell.

Engineering controls – There was nothing to stop the accidental operation of the grab mechanism and there were no safety devices or warning devices in use that might have protected Simon or prevented what happened.

Administrative controls – There was no training, no risk assessment, no procedure, no supervision.

Personal protective equipment – This is the last line of defence. Simon had been given (and was wearing) a high visibility vest, but he could not be seen by the person operating the excavator. He was not given a hard hat.

Casual Labour and Safety on the Docks

There is a long history surrounding casual labour on docks and attempts by workers to organise. Dock working was instrumental in the creation of unskilled trade unions and later industrial conflict on the docks was formative for the early labour party. Prior to the Second World War the work on docks was largely casual in nature, but the War 'prompted the government to mandate shipping companies break the chains with the past. This was largely instigated as a means of producing the stability necessary to bolster the war effort'.[578] Schemes were set up to regularise employment on docks, and in 1947 these schemes were adapted

[577] Various versions of the hierarchy of controls exist, but the general principle is always the same. Elimination or substitution should be explored, followed by the less effective measures including engineering controls, warning devices, procedures, and training. Personal protective equipment should be the last line of defence and should not be used as the only control measure.

[578] B. Marren, 'The Liverpool Dock Strike, 1995–98: A Resurgence of Solidarity In The Age Of Globalisation', *Labor History*, 57:4 (May 2016), p. 467.

for peacetime purposes under the National Dock Labour Scheme 1947.[579] These schemes regulated labour on docks by mandating the use of lists of registered workers. The Order stated that 'the objects of the scheme are to ensure greater regularity of employment for dock workers and to secure that an adequate number of dock workers is available for the efficient performance of dock work'.[580] It is significant that one of the primary purposes of the scheme was to ensure an adequate number of dock workers would be available. As we know, Simon was called upon at short notice by Euromin because they needed labour for unloading of aggregate. Under the National Dock Labour scheme all registered docks were compelled to use labour from lists of registered dock workers, who would be trained or experienced and skilled in this work. The abolition of the scheme enabled a return to the use of casual labour, thus enabling dock employers to call upon unskilled and inexperienced workers to fill in on an ad hoc basis (which was exactly what happened in Simon's case). The scheme was in place until 1989 when it was abolished under the Thatcher government. There were arguments both for and against its continuation, with critics, including Nicholas Bennet Conservative MP representing the constituency of Pembrokeshire from 1987-1992, asserting that it reduced the competitiveness of UK docks and stifled opportunities for regeneration. Bennet called for the scheme to be dismantled without delay rather than gradually allowed to 'wither' as the dock workers in the scheme retired:

> In Port Talbot in south Wales—and south Wales has the second lowest wage rates in the United Kingdom—the gross wage of a dock worker is £472 a week. That is almost £300 a week more than the average wage in Port Talbot. People must be queueing all the way to Swansea to get a job in the Port Talbot docks. However, the number of people wanting to send their ships there is another matter.[581]

Speaking in the House of Commons, Norman Fowler (Secretary of State for Employment 1987-1990; and Chairman of the Conservative Party 1992-1994) insisted that casualisation would not return when the scheme was brought to an end:

> Dock work is now highly skilled, specialist work that often requires the use often [sic] of sophisticated machinery. It requires a permanent and well-

[579] The Dock Workers (Regulation of Employment) Order, 1947, https://www.legislation.gov.uk/uksro/1947/1189/contents/made accessed 16 June 2023.
[580] Ibid, 1(1).
[581] HC Deb, 10 March 1988, Volume 129: column. 592.

> trained work force. The days when large numbers of unskilled labourers assembled, waiting to see if there was work for them, have gone for good – the employers in the present scheme ports have given an assurance that after abolition there will be no return to casual employment.[582]

The abolition of the scheme in 1989 'did indeed bring back casualism on Britain's docks'.[583] Arthur McIvor described the abolition of the Dock Labour Scheme in 1989 as a 'hugely symbolic defeat' which marked a shift towards deregulation and the restoration of casual practices.[584] This was nine years before Simon's fatal accident.

During the mid-1990s there was a long-running dispute at the Liverpool Docks that was also centred around the issue of casualisation. The 1995-1998 Liverpool Dockers' strike took place in the period between the abolition of the Dock Labour Scheme and Simon Jones' death. It is worth noting that this was the climate in which Simon's accident took place:

> The overriding theme on Liverpool's docks in the post-war era was industrial conflict. The most pressing concern of Merseyside's dockers was finding freedom from casualism. Due to the erratic, unpredictable nature of marine transport, shipping companies saw casualism as the most profitable operating system available. The uncertainty of underemployment was an omnipresent aspect of dockers' daily lives.[585]

Again, this points to the shipping companies and dock operators using casual labour to get around the problem of the unpredictability of scheduling in marine transport. The Dockers' Charter, a pamphlet published regularly during the Liverpool strike, stated that 'Everywhere now there are employers introducing casual labour and individual contracts. They want to cut their costs and have flexible labour; they want workers at their beck and call to be brought to work or discarded at their will'.[586]

Simon was himself involved in the Liverpool dockers' protests against casualisation. His mother remembers him attending demonstrations and taking direct action such as climbing up gantries during protests. Anne Jones said that

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[582] HC Deb, 17 April 1989 vol 151 cc43-115 column 45.
[583] B. Marren, 'The Liverpool Dock Strike, 1995–98: a Resurgence of Solidarity in The Age of Globalisation', *Labor History*, 57:4 (May 2016), p. 468.
[584] A. McIvor, *Working Lives: Work in Britain Since 1945* (London, 2013), p. 234.
[585] B. Marren, 'The Liverpool Dock Strike, 1995–98: a Resurgence of Solidarity in The Age of Globalisation', *Labor History,* 57:4 (May 2016), p. 466.
[586] 'Dockers and Casualisation (February 1996)', *Libcom*, https://libcom.org/library/dockworkers-dispute-casualisation, 2005, accessed 24 March 2021.

‘he was always there to stand up for the underdog. He had, before he was killed, he had joined protests for the Liverpool dockers’.[587] Anne also noted that ‘the Liverpool dockers were furious when they heard what had happened to him. Because they understood the situation and knew how dangerous it was and how badly it had been done and that it should never, ever had happened’.[588]

In addition to the abolition of the Dock Labour Scheme, deregulation under Thatcher included a concerted effort to scale back the role of the Health and Safety Executive.[589] UK workplace fatalities and serious injuries rose significantly during the Thatcher administration (manufacturing +30%, chemical Industry +35%, construction industry +41%).[590] Specific figures on fatalities in dock work are problematic. Whilst the UK still maintained a fatal injury rate that was favourable compared to similar developed nations, the effects of deregulation on fatal injury rates was significant. In terms of dock work and dock work specifically, Rory O’Neill, who is the editor of *Hazards* magazine and a Professor of Law, wrote in 2011 that:

> To be in line with the 2010/11 national fatality rate of 0.6 deaths per 100,000 workers, docks should experience no more than one death a year. In recent months, the industry has had a fatality rate of around one a month. Depending on which employment figure you use, the last year’s death total means docks are running at a fatality rate of at least five times and possibly over 20 times the UK average.[591]

The difficulty in tracking shipyard and dock related deaths stems from the Standard Industrial Classification (SIC) codes by which accidents are assigned to specific industry sectors. Deaths in shipyards and docks would typically be listed under the ‘service’ code. O’Neill noted, for example, in the 2011 figures, the ‘only worker death identifiable as dock-related is that of Ian Campbell at Tilbury Docks, listed as a “service” sector death occurring in “other supporting water transport activities”’.[592] Other deaths in docks were listed under manufacturing codes, therefore masking the true extent of dock-related deaths, and making statistical analysis incredibly difficult. To further complicate matters, some deaths

[587] Interview with Anne Jones, 15 June 2023.
[588] Ibid.
[589] J. Wooding, ‘Dire States: Health and Safety in the Reagan-Thatcher Era, *New Solutions: A Journal of Environmental and Occupational Health Policy,* 1:2 (August 1991), p. 48.
[590] Ibid, p. 42.
[591] R. O’Neill, ‘Safety in the Dock’, *Hazards,* issue 117 January - March 2012, https://www.hazards.org/deadlybusiness/docks.htm, 2012, accessed 17 June 2023.
[592] Ibid.

would fall under the remit of the Maritime and Coastguard Agency. In 2011 the HSE had recently classified docks as being low risk and not requiring proactive inspection activity. According to O'Neill:

> HSE's inability to recognise deaths on the docks is not just a statistical oddity. If HSE cannot even identify dock-related fatalities in its own published figures, this casts serious doubt on the rationale underpinning its current hands-off approach to dock safety.[593]

O'Neill further highlighted the HSE's own difficulty in ascertaining the exact number of fatalities linked to dock work. According to his correspondence with the HSE, the regulator itself conceded that 'obtaining statistics on injury rates in ports is problematic because of difficulties "coding" jobs, but believes the rate is "above the national all-industry average."'[594]

Corporations, Crime and Accountability

A persistent theme in the examination of modern industrial fatalities is the relationship between the corporation, its quest for profit, and problems with the regulatory framework. Private businesses need to generate profit to be viable and provide livelihoods for their workers, but there is an ever-present trade-off between the pursuit of profit and the harm this causes. There is potential for environmental harm, financial harm, adverse health effects, exploitation, and injury from any business activity. These harms are governed by a range of regulations and enforcement, but also by the self-regulation and organisational culture of the business itself. Criminologist Steven Bittle described industrial deaths as 'tragic reminders of the devastating effects of corporate wrongdoing'.[595] And although a significant number of these harms contain *criminal* negligence, 'they are rarely treated as such, effectively ignored by those in the position of authority, dealt with outside of the formal criminal justice system and defined away as mere accidents or the necessary by-product' [of capitalism].[596] This fits with the statement made by the Jones' family solicitor, whilst seeking judicial review 'Louise Christian, believes the problem is not mainly one of evidence, but

[593] Ibid.
[594] Ibid.
[595] S. Bittle, *Still Dying for a Living: Corporate Criminal Liability after the Westray Mine Disaster* (Vancouver, 2012), p. 39.
[596] Ibid, p. 39.

of political will. 'The authorities don't like prosecuting senior business directors,' she says'.[597]

Bridget Hutter and Sally Lloyd-Bostock's research on regulation and risk highlights the difficult balancing act and power relations at play in the regulation of business activity.[598] They describe regulation as 'typically unsettled, fluid, and continually debated and negotiated, defined by concurrent as well as previous risk events and crises'.[599] The period immediately after a disaster is a time of investigation, blame, inquiries and inquests. It is during this time that various stakeholders (with often competing interests) will vie for control of the narrative of events and their preferred outcomes.[600] According to Hutter and Lloyd-Bostock, 'Groups active here typically include government and its representatives, regulators, professional groups, victims, insurers, business organisations, the media, and wider publics'.[601] In the case of the Piper Alpha disaster and other large-scale, multiple fatality incidents referred to in this thesis, there were public inquiries accompanied by extensive media interest. Instances of a single workplace fatality rarely draw such intense scrutiny or precipitate substantive change, but this did happen in the case of Simon Jones. The remainder of this chapter is largely concerned with the campaign for corporate accountability in cases of workplace fatalities.

The Simon Jones Memorial Campaign

Simon's friends and family campaigned extensively after his death, initially, for the Crown Prosecution Service to prosecute Euromin, then later more broadly for changes to the corporate killing laws. Euromin was eventually found guilty of two health and safety offences in 2001 and fined £50,000 plus £20,000 costs. James Martell, the UK general manager of Euromin, was tried for gross negligence manslaughter, but was not found to be personally culpable, and by extension, there was no 'controlling mind' responsible under the contemporary provision in law at the time of the trial.[602] The legal significance of the term 'controlling mind'

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[597] S. Milne 'Work Death Action Sought', *The Guardian*, 23 February 1999, p. 10.
[598] B. Hutter and S. Lloyd-Bostock, *Regulatory Crisis: Negotiating the Consequences of Risk, disasters, and Crises* (Cambridge, 2017).
[599] Ibid, p. 33.
[600] Ibid, p. 128.
[601] Ibid, p. 128.
[602] L. Christian, 'No Conviction for Corporate Manslaughter', *Construction News*, https://www.constructionnews.co.uk/archive/no-conviction-for-corporate-manslaughter-20-12-2001/, 20 December 2001, accessed 27 January 2021.

was that ‘a company [could not] be guilty of corporate manslaughter unless in effect a senior officer [was] found guilty of corporate manslaughter as well’, although as Alexandra Jacobs noted, the legal landscape regarding corporate killing, gross negligence manslaughter, reckless endangerment and duty of care was (at the time of the Euromin case) riddled with ‘circular arguments’ and contradictory case law.[603] At the time of this case, in 2001, there was no specific legal provision for corporate manslaughter so the reliance for successful prosecution was on gross negligence and involuntary manslaughter.

The difficulty in finding James Martell guilty of manslaughter hinged on the fact that he was not present on site on the day of the incident, and claimed, during the trial, to not have been privy to some key decisions that were taken. These included the shortening of the chains on the grab, which made the grab lower and closer to Simon during operation, and the use of an inexperienced Polish banksman who did not speak English. The immediate cause of Simon’s death was the inadvertent operation and closing of the crane grab but underlying and root causes pointed to the culture of the operation at Shoreham Docks and the use of unskilled, casual labour. ‘Sentencing, Judge David Stokes QC commented: "The excuses that the company gave were lamentably weak about why they did not carry out the assessment. The failure to do that was, in my judgement, absolutely deplorable."’[604] Commentary at the time of the verdicts noted that ‘This case [has] reinforced fears that it may be almost impossible to bring successful prosecutions in similar cases’, and there were ‘renewed calls for the government to prioritise legislation in this area’.[605]

Comedian Mark Thomas performed at a fundraiser for the Simon Jones Campaign, and an episode of his Channel 4 program, *The Mark Thomas Comedy Product*, was dedicated to the subject of corporate killing.[606] Thomas and his fellow campaigners argued that corporate killing laws were not fit for purpose and that the New Labour government had reneged on a manifesto pledge to reform them. The crux of the problem was a weakness in the legislation that arose from

[603] A. Jacobs, *Will the New Offence of Corporate Manslaughter Motivate Companies to Prioritise Safety over Profit?* (PhD, the University of Birmingham, 2007), p. 42.
[604] Anonymous, ‘Outrage at verdict in Simon Jones case’, *The Safety and Health Practitioner*, (January 2002), p. 10.
[605] Ibid, p. 10.
[606] ‘Mark Thomas Comedy Product Series 6 Episode 3 Corporate Killing’, *YouTube*, https://www.youtube.com/watch?v=XrBI67xS6sY, accessed 17 June 2023.

a lack of 'directors' duties'.[607] Whichever version of the legislation, and whichever mechanism was being used to prosecute health and safety offences, the biggest challenge was (and still is) the holding of individuals to account. The veil of incorporation ensures that individuals are well shielded from the consequences of negligence resulting in workers being killed.

Whilst Simon Jones' family and friends were organised and relentless, the available legal mechanisms simply did not provide accountability. Simon himself had been a founding member and regular contributor of a militant anti-capitalist newsletter called *SchNEWS*. The newsletter 'grew out of opposition to Michael Howard's Criminal Justice Bill, a catch-all attack on loads of groups all at once - travellers, young people going to free parties, squatters, anti-road protesters, animal rights activists'; they 'were involved in stopping roads being built and other campaigns across the country so when they killed one of their own (Simon) [they] could hardly stand by and do nothing'.[608]

In their first campaign action, they occupied the Shoreham Docks, causing it to shut for the day and send all the casual labourers home on full pay.[609] They also occupied the offices of the employment agency, Personnel Selection, and wrote a letter to all MPs, drawing their attention to Simon's case and asking for their support. They later shut down Southwark Bridge (adjacent to the headquarters of the Health and Safety Executive), in an effort to secure justice through direct action.

Simon and his group of friends had supported the Liverpool dockers when they were on strike, and a representative from Liverpool joined the first protest at Shoreham Docks. Bob Ritchie of the Liverpool dockers, who took part in the protest, says, 'We went on strike for two years to prevent deaths like this, which are inevitable with an untrained, casual workforce. Before casualisation, this sort

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[607] Ibid.
[608] R. Purssell and B. Montague, 'SchNEWS: How Road Protesters, Ravers and GM Activists Fought Back with Direct Action Tabloid', *Ecologist*, https://theecologist.org/2011/jul/29/schnews-how-road-protesters-ravers-and-gm-activists-fought-back-direct-action-tabloid, 2011, accessed 14 February 2021.
[609] C. Chalmers, 'Big Issue 6 September 1998: Life is Cheap', *Simon Jones Memorial Campaign*, https://simonjones.org.uk/index.php/documents/https-simonjones-org-uk-index-php-documents-https-simonjones-org-uk-index-php-documents-big-issue-article-september-1998-preview_id146preview_nonce073972f4ac_thumbnail_id-1previewtrue/6,1998, accessed 1 October 2023.

of thing would never have happened. If these companies are allowed to get away with employing casual staff to do skilled jobs the death toll will just keep rising'.[610]

George Galloway MP raised Simon's case in Parliament, and on the same day Simon's friends and family stormed and occupied the Department for Trade and Industry building. Galloway's speech in Parliament highlighted the vulnerability of casual workers and called for legal reform on corporate accountability:

> We warned then that casualisation kills. Simon Jones is just one of the mute witnesses to that truth. Simon was taking a year off from Sussex university when he was killed. He died, almost decapitated by the grab of a crane, only two hours after starting work, and after only a two-minute briefing on what the job entailed. That two minutes was meant to equip him with the skills of a stevedore, one of Britain's five most dangerous occupations.[611]

Simon's case perfectly illustrated the elements of corporate greed and failure of the system to hold anybody to account for an entirely foreseeable and preventable death; elements that were also present in so many other cases. But his friends and family were able to mobilise in an incredibly effective way, because they were already experienced campaigners and proponents of direct action. Galloway's speech highlighted:

> A sense of horror at some of the casualties that have been inflicted by careless or negligent employers on the battlefield which so much of the British industrial landscape has become. Almost 20 years of attrition against trade unions and the rights of workers to refuse hazardous employment conditions, and deregulation posing as a bonfire of red tape, have, in reality, represented the burning down of standards that responsible government and representative trade unionism took the best part of a century to construct.[612]

George Galloway is and was a radical left-wing anti-capitalist. Describing himself in a 2012 interview, he said, 'I am a revolutionary. I am a Socialist who doesn't like Capitalism and who likes Imperialism less'.[613] This cause was one that naturally would have appealed to Galloway's anti-capitalist sentiments and it's

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[610] 'Shoreham Dock Shut Down in Protest at Death of Simon Jones', *Simon Jones Memorial Campaign*. file:///C:/Users/vca/Downloads/euromin-press-release-pdf%20(1).pdf, 1998, accessed 16 September 2023.
[611] HC Deb, 3 March 1999, vol 326, column 1045.
[612] HC Deb 3 March 1999, Volume 326, column 1047.

fair to say that Simon Jones' friends were similarly politically inclined, as evidenced by *Schnews* and Simon's involvement in direct action when he was alive. The Simon Jones Campaign successfully harnessed the voices and support of several prominent anti-capitalists, Galloway included.

Responding on behalf of the government, Alan Meale, Labour MP for Mansfield 1987-2017, pointed to the UK's workplace fatality rates being the lowest in the European Union and the significant improvements of the preceding 25 years (since the introduction of the HSWA). He further added that:

> Employees and the public rightly expect high standards of health and safety protection. Accidents at work and occupational ill health are neither inevitable nor acceptable. A healthy and well-protected work force is not only right, it is good for business and good for society. I want and expect industry to regard decent health and safety standards as the gateway to their prosperity.[614]

Galloway's speech in March 1999 called for the Crown Prosecution Service (CPS) to hold Euromin and Personnel Selection to account for Simon Jones' death, but on 31 March 1999 the CPS refused to prosecute. The Simon Jones Memorial Campaign continued to protest and raise the profile of the issue until judicial review was granted in March 2000.[615] *The Guardian* reported that 'The judgment is the first successful judicial review of a decision not to prosecute for manslaughter over a workplace death and was hailed as a breakthrough in the campaign to hold companies and their directors to account for avoidable injuries at work'.[616] The successful judicial review was noted elsewhere, including the *BBC News*, but without explicit reference to any special significance in terms of holding companies to account.[617]

The trial eventually took place at the Old Bailey in November 2001, with Euromin and James Martell both found not guilty of manslaughter. Euromin was however fined £50,000 for breaches of Health and Safety legislation. This paradoxical outcome demonstrated the weakness of the regulatory framework. Euromin and James Martell failed to fulfil their statutory duties under the Health and Safety at

[614] HC Deb 3 Mar 1999, Volume 326, column 1050.
[615] S. Milne, 'CPS Told to Think Again on Dockside Death', *The Guardian*, 24 March 2000, p. 7.
[616] Ibid.
[617] 'Company Fined over Student's Death', *BBC News*, http://news.bbc.co.uk/1/hi/england/1683080.stm, 2001, Accessed 29 September 2023.

Work etc. Act, and as a direct result, a man died. Yet the only consequence was a company fine.

The Legal Landscape

Tombs and Whyte summarised the difficulties when talking about corporate crimes being rooted in their framing in 'anaesthetising language' such as 'scandal' or 'accident' rather than criminal activity, murder, or grievous bodily harm.[618] Further, that these crimes tend to be 'dealt with by specialist agencies not generally recognised as part of the criminal justice system'.[619]

James Martell, the General Manager of Euromin's UK operations, was reported to have laughed out loud when he was told he could face prosecution for Simon's death.[620] Galloway stated that:

> In a way, Martell was right to laugh, because the chances of his ever being properly held to account were and are laughably small. Life is cheap on the British waterfront and in many of the privatised and deregulated sweatshops of which the previous Government boasted. That is the true legacy of the Thatcher era.[621]

At the time, the average fine following a fatal industrial accident was £2000. This meant it was often theoretically cheaper for employers to pay the fine for killing a worker, than to take the necessary steps to prevent the death from occurring.[622] However, Galloway argued that larger fines in themselves, would not be a sufficient deterrent, because some businesses would put themselves into liquidation rather than pay a large fine. Others would simply pay the fine out of large profits and move on. Galloway's argument was that only the threat of imprisonment for directors of negligent companies would work. He emphasised that, 'people are not fined for committing manslaughter outside the workplace; they go to prison, sometimes for several years', and that the 'prosecuting authorities are more lenient towards those engaged in business'.[623]

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[618] S. Tombs and D. Whyte, *The Corporate Criminal: Why Corporations must be Abolished* (Abingdon, 2015), p. 92.
[619] Ibid, p. 92.
[620] 'Simon Jones' Blood is on Yours Hands', *The Argus,* https://www.theargus.co.uk/news/5168275.simon-jones-blood-is-on-your-hands/, 4 March 1999, accessed 29 September 2023.
[621] Ibid.
[622] Ibid
[623] Ibid.

Galloway's point was an important one. Manslaughter was being treated differently in law if it was perpetrated by a business (or an individual within the business), than manslaughter perpetrated by a private individual. This implies an acceptance that workers and members of the public *will die* at work, or when using premises and transport operated by private business. The principle of Duty of Care as set out in section 2 (1) of the Health and Safety at Work etc. Act 1974 explicitly states that 'It shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare at work of all his employees'.[624] Further, in section 3(1):

> It shall be the duty of every employer to conduct his undertaking in such a way as to ensure, so far as is reasonably practicable, that persons not in his employment who may be affected thereby are not thereby exposed to risks to their health or safety.[625]

This points to a mismatch between the provisions set out in law, and the reality in which hundreds of entirely preventable deaths were occurring every year, with derisory fines being issued and nobody being held to account. This was largely due to the legal principle of the veil of incorporation, which means the company and the individual are different legal entities. This created a paradoxical situation whereby it was virtually impossible to find the company itself culpable, and it was necessary, but incredibly difficult, to pinpoint a 'controlling mind' within an organisation in order to successfully prosecute.[626]

Corporate Killing Campaigners

In 2000, the Blair government issued a consultation paper proposing reforms to the law to implement the Law Commission's 1996 recommendations.[627] Home Secretary John Reid introduced the Corporate Manslaughter and Corporate Homicide Bill to Parliament in July 2006. The timing of Simon Jones' death coincided with the development and introduction of this legislation, which partly explains why the campaign in his name became so involved in its introduction.

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[624] Health and Safety at Work etc. Act 1974 2 (1).
[625] Ibid 3 (1).
[626] A. Jacobs, *Will the New Offence of Corporate Manslaughter Motivate Companies to Prioritise Safety Over Profit?* (PhD, University of Birmingham, 2007), p. 17.
[627] 'Legislating the Criminal Code: Involuntary Manslaughter item 11 of the 6th Programme of Law Reform Criminal Law', *Gov.uk*, https://www.gov.uk/government/publications/legislating-the-criminal-code-involuntary-manslaughter-item-11-of-the-6th-programme-of-law-reform-criminal-law, 1996, accessed 16 June 2023.

The focus of the Simon Jones Campaign became the lack of corporate accountability and the need for revised and updated corporate killing laws. A network of groups had developed who were campaigning and lobbying for safer and healthier workplaces. Several *Hazards* groups around the country had been set up around 1988 and were growing and developing throughout the 1990s. They were established by a collection of academics and trade unions with an interest in improving workplace health and safety. This movement emerged prior to the Simon Jones case and the Simon Jones Memorial Campaign but the two movements became linked, not least by Simon's mother's activism and prominent role.

The remit of the *Hazards* movement included campaigning for improved health and safety, and the reduction of workplace accidents and injuries. Hilda Palmer has worked for the Greater Manchester Hazards Centre since it was established in the late 1980s and described the movement:

> The Hazards campaign, which we're part of, and involved organisations all over the country, funded in different ways by their local authorities, but essentially working on helping workers and safety reps solve health and safety problems at work and there were lots of them all over the country.[628]

Palmer, a biologist, found her way into the movement through women's networks whilst studying for her MSc at Salford University. Palmer's initial interest, and that of many of her contemporaries (such as Alan Dalton, the prominent asbestos campaigner), was more focussed on ill-health caused by exposures to dusts and chemicals at work. However, over time the scope of the *Hazards* campaign broadened, and *Hazards* became involved in lobbying for stronger corporate killing laws:

> We lobbied very hard, this legislation was supposed to fill the gaps and fill the problems in the previous legislation which was all about the 'controlling mind' and it was all about how hard it was to find that smoking gun you know, from an incident that happened a long way down the management line.[629]

[628] Interview with Hilda Palmer, conducted by Victoria Hill, 5 May 2021.
[629] Ibid.

Palmer expressed similar disappointment to other campaigners about the removal of the directors' duties provisions from the draft legislation:

> If individual directors could be held responsible under this act, then they would have faced prison. And prison is a bigger motivator than a fine, which your company will pay and the only penalty for corporate manslaughter is a fine.[630]

In 1999 another organisation was set up by Law graduate and journalist, David Bergman; this was a non-profit called the Centre for Corporate Accountability. The CCA (which closed down in 2009 due to a lack of funding) had a narrower remit than the *Hazards* campaign, focussing specifically on workplace deaths and serious injuries. David Bergman spent time in Bhopal after the large 1984 chemical disaster there and this period coincided with a spate of other high profile man-made disasters which raised issues of corporate accountability:

> Right after you know, the Herald of Free Enterprise, the Zeebrugge disaster, and that whole thing about you know the difficulty of prosecuting companies and individuals for manslaughter, there was a big kind of, there was a feeling amongst myself and others that the law of manslaughter that applied to corporations was clearly inadequate. Not just to corporations but also to directors. We felt that senior officers and companies were kind of immune from manslaughter prosecution.[631]

David Bergman was also critical of the Robens Philosophy, because 'criminal law clearly wasn't part of being used in enforcement mechanism, [it was a while ago]. It's a self-regulatory system and erm, that was clearly problematic'.[632] This period of man-made disasters reignited criticism of the HSWA and focussed minds on corporate accountability.

Ewan and Andrews also highlighted the 'decade of disasters' that is often cited as a turning point, particularly in public expectations of corporate accountability: 'Together these tragedies called into question the contradiction between a government committed to deregulating the free market and its statutory obligation

[630] Ibid.
[631] Interview with David Bergman, founder of the Centre for Corporate Accountability, conducted by Victoria Hill, 9 April 2021.
[632] Interview with David Bergman, 9 April 2021.

to protect public safety where private and commercial organisations failed to do so'.[633]

The issue of directors' duties was integral to the campaign for legal reform and would have improved accountability because, according to Bergman, 'there was a philosophy not to prosecute directors and senior officers'.[634] The CCA supported families that had been affected by workplace deaths and injuries, assisted with seeking prosecutions, and undertook policy work to advocate for improvements to regulation and legislation. Simon Jones' mother, Anne, became involved with the CCA after his death and was on the Board of Directors until it closed down.

The BBC reported in April 2000 on proposed changes to legislation:

> Labour MP Andrew Dismore is proposing a law of corporate killing - where the conduct of a firm's senior management falls below reasonable expectations and results in a person's death - in his Corporate Homicide Bill. At the moment, only individuals within companies can be prosecuted which means many large companies often escape liability. The bill would close a loophole which has meant only two firms have ever been successfully prosecuted under existing law. It would have increased the chance of convictions after the Hillsborough soccer disaster, Piper Alpha oil rig fire, Clapham rail crash and Zeebrugge ferry sinking, Mr Dismore said.[635]

If the debate, chronology and outcome of the corporate killing campaign appears to be convoluted and confusing it's because it is. Jacobs set out in her PhD thesis the contradictions and complexities of the pre-2008 provisions.[637] The movement and campaign for a revised corporate killing law spanned twenty years, from the late 1980s to 2008 when the new legislation was passed. The crux, for the campaigners like Palmer, Bergman and Ann Jones was the need for specific provision for directors' duties which would have weakened the protection of the veil of incorporation in cases of gross negligence manslaughter. As the draft legislation progressed through various revisions this provision was removed.

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[633] S. Ewen, and A. Andrews, 'The Media, Affect, and Community in a Decade of Disasters: Reporting the 1985 Bradford City Stadium Fire'. *Contemporary British History*, 35:2 (February 2021), p. 260.
[634] Interview with David Bergman, 9 April 2021.
[635] 'Corporate killing Charge Proposed', *BBC News*, http://news.bbc.co.uk/1/hi/uk_politics/718393.stm, 2000, accessed 25 June 2021.
[637] A. Jacobs, *Will the New Offence of Corporate Manslaughter Motivate Companies to Prioritise Safety Over Profit?* (PhD, the University of Birmingham, 2007).

Jacobs concluded that the new legislation would not solve the difficulties in holding corporations or individuals to account:

> The solution to the current ineffectiveness of the manslaughter law will lie not in the reform of the crime of manslaughter, but through the promotion of better practice in procurement and contractual arrangements, and by enforcing a tougher regulatory regime of health and safety under the HSWA.[638]

Jacobs was not wrong. As Tombs and Whyte noted, 'in the first five years of its existence, the Act [has] generated just three convictions, all in fact small companies that could have been successfully prosecuted under the old common law offence of manslaughter'.[639]

Conclusion

As far as Simon's friends were concerned, he 'was killed by the money grabbing system he hated'.[640] This was a single workplace fatality at a time when around 300 were being recorded in the UK annually. Simon's case was not well known in the same way that Piper Alpha or the Herald of Free Enterprise disasters were part of the contemporary public discourse. The circumstances of his death at work were not particularly remarkable but for the fact that his family and friends were so successful in highlighting his case and campaigning for legal reform. His case is still referenced and discussed by people like David Bergman and Hilda Palmer (who have spent their entire working lives looking at workplace death and injury) because of its historical importance.

When applying James Reason's Swiss Cheese model to the circumstances of the case, it is clear that multiple failings contributed to Simon's death. There was under-staffing, lack of training, the use of casual labour for a skilled and dangerous task, and a culture of getting by with inadequate equipment and skills on site.

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[638] Ibid, p. 306.
[639] S. Tombs and D. Whyte. *The Corporate Criminal: Why Corporations must be Abolished* (Abingdon, 2015), p. 98.
[640] C. Chalmers, 'Big Issue 6 September 1998: Life is Cheap', *Simon Jones Memorial Campaign*, https://simonjones.org.uk/index.php/documents/https-simonjones-org-uk-index-php-documents-https-simonjones-org-uk-index-php-documents-big-issue-article-september-1998-preview_id146preview_nonce073972f4ac_thumbnail_id-1previewtrue/6,1998, accessed 1 October 2023.

The company was found guilty of Health and Safety offences so there is no doubt that they were negligent. Yet the relatively small fine and the lack of individual accountability in this case was indicative of the inadequacy of the law and illustrated how difficult it was to successfully prosecute a company for manslaughter. However, it was the first successful reversal of a CPS decision not to prosecute a company and it demonstrated that companies *could* be prosecuted for workplace deaths. David Bergman described the significance of the case: 'I think it was very important because it showed that individual workplace fatalities could result in manslaughter prosecution'.[641]

The timing of the case meant it fed into the wider movement for legal reform in corporate killing, the need for which was being highlighted by both grass roots campaigns and Parliament. Simon's friendship group, and their activism, meant they were perfectly placed to protest and campaign for justice on his behalf. However, despite the introduction of the new Corporate Manslaughter and Corporate Homicide Act in 2008, it is unlikely that the same case would have a different outcome in today's legal landscape. Attempts to prosecute under the new legislation have been few and far between and have rarely resulted in successful conviction.

Anne Jones believes that the removal of the directors' duties provision in the Corporate Manslaughter and Corporate Homicide Act was a decision that stemmed from the lawmakers' own lives. Earlier drafts of the bill contained directors' duties, but this section was removed, and Anne Jones believes, 'it's because an awful lot of people in government are directors'.[642]

Simon's death was the result of negligence, and the facts of the case were so egregious that they remain shocking and difficult to believe. The *Simon Jones Memorial Campaign* was, for want of a better phrase, in the right place at the right time, because corporate killing was already in the political spotlight due to other recent events (including Piper Alpha). This case study illustrated the patchwork of campaign groups with similar and overlapping interests that collectively lobbied and took direct action to try to force government to legislate more effectively for corporate accountability. But the crux of the legal conundrum is this: James

[641] Interview with David Bergman, 9 April 2021.
[642] Interview with Anne Jones, 15 June 2023.

Martell, the General Manager of Euromin, who employed Simon Jones, was prosecuted under existing legislation – gross negligence manslaughter – and found not guilty. This illustrated that even in the most seemingly clear-cut cases of employer negligence, that the perpetrators of this particular white-collar crime were immensely difficult to hold to account. One of the provisions that many of the contemporary campaign groups fought for was a Directors' Duties clause which would have ensured that negligent employers could not claim ignorance (as Martell did). But this provision did not make it into the final draft of the Bill.

Chapter Seven - ICL Stockline

The ICL plastics factory in Grovepark Mills in Glasgow produced plastics, acrylics, polystyrene, and similar products. It exploded on 11 May 2004, killing 9 people and injuring a further 40. An underground pipe carrying liquefied petroleum gas (LPG) had corroded and had leaked flammable vapours into the basement, leading to an explosion, which caused the whole building to collapse. It was the worst industrial disaster in Scotland since Piper Alpha. The main building was originally built in 1857 as a weaving mill, which later changed hands over the years and had been in operation as a plastics factory since 1961 when Industrial Copolymers Ltd. Plastics (ICL Plastics) was founded on the site by a chemist called Campbell Downie and his colleague, Ron Cunningham. The company was made up of several divisions, referred to collectively in the inquest report as the ICL Group, with the site of the explosion known locally as 'Stockline', due to signage around the factory. The company was prosecuted for the disaster under the Health and Safety at Work etc. Act, and on 28 August 2007, ICL Tech and ICL Plastics were each fined £200,000. [643]

This chapter relates to and builds upon the theme of corporate accountability explored in the previous chapter.

The public inquiry was unique in its nature, in that it was the first time the Scottish procurator fiscal launched a joint investigation with police and the HSE.[645] (It would normally have fallen to the police or HSE to collect the evidence and prepare a file for the procurator fiscal.) The process of collecting evidence from the rubble of the collapsed building was undertaken by the police, who painstakingly recovered and logged documents that had been strewn all over the site in the explosion and building collapse. These documents were sent to the Health and Safety Laboratory in Buxton for examination and formed crucial evidence for the inquiry and trial.[646]

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[643] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 7.

[645] 'Investigation into Blast "Unique"', *BBC News*, http://news.bbc.co.uk/1/hi/scotland/glasgow_and_west/6951814.stm, 2007, accessed 24 January 2022.

[646] Ibid.

The incident was described by the public inquiry as an avoidable tragedy at a company with an 'irresponsible attitude in connection with fire matters'.[647] The HSE had expressed significant concerns about fire safety and LPG safety at the site; concerns that were repeatedly brought to the attention of the management at ICL over a period of two decades. LPG is a highly flammable substance with the potential to create vapour clouds, fires, explosions, and a specific type of explosion called a boiling liquid expanding vapour explosion (BLEVE).

This case is of particular interest to research for this thesis because ICL displayed not only negligence, but also obstruction and deception in matters of safety. This prompts us to explore theories of corporate ethics, such as Robert Whittingham's theory that corporate ethical behaviour 'will be practised only so long as it is well publicised and results in increased profitability and competitiveness'.[648] Whittingham did however state that appropriate checks and balances could provide the necessary accountability 'that corporate self-interest will mostly coincide with society's interests'.[649] Campaigners such as the *Hazards* movement, the *Centre for Corporate Accountability (CCA)*, or *Families Against Corporate Killers (FACK)* would wholly agree with Whittingham's statements but argued throughout the period in question (1974-2014) that the checks and balances were not sufficient, and that corporate bodies were able to act with impunity.

ICL as a company opposed any form of trade union activity and this should be viewed in the context of the period when trade unionism had been diminished by Thatcher's Government and deregulation. According to Arthur McIvor, without the protection of unions, 'workers would have been (and would continue to be) subjected without redress to the vicious vagaries of the free unregulated market. In the UK, most working lives were spent within an exploitative, profit-oriented system, in which labour cost the workers more than their time and exertion'.[650] In the case of ICL Stockline it cost nine employees their lives.

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[647] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 55.

[648] R. Whittingham, *Preventing Corporate Accidents: An Ethical Approach* (Oxford, 2008), p. 62.
[649] Ibid, p. 63.
[650] A. McIvor, *Working Lives: Work in Britain Since 1945*, (London, 2013), p. 239.

The HSE had made multiple visits and interventions with specific focus on the LPG installation but failed to effectively fulfil their regulatory function through advice or enforcement. The HSE released a public statement in 2009 apologising to the victims and their families for this failure:

> Geoffrey Podger, Chief Executive of HSE, said that it was matter of regret that HSE's own interventions were not more successful. He accepted that HSE supervision of the site had been deficient in several respects.[651]

Corrective actions that would have prevented the explosion were explicitly advised by the regulator, and were entirely achievable, but would have been disruptive and potentially costly to the business. ICL used various tactics to evade the HSE's stipulations, and to avoid taking actions that would have brought the LPG installation into compliance (and a safe condition). At the time of the explosion there were just 68 HSE inspectors covering 81,000 workplaces in Scotland.[652] This case study considers the HSE's many interventions and communications with ICL prior to the explosion and highlights a weak and ineffective system of regulation, that failed to take substantive action to bring ICL into line. Measures that were available to the HSE (such as serving improvement or prohibition notices), were not deployed in response to later breaches, and the case file for ICL was transferred between different inspectors several times over the years, enabling ICL to use tactics to mislead and stall on long-standing issues. Workers at the site had also tried to blow the whistle on unsafe practices, by making reports directly to the HSE, but these attempts were unsuccessful and, in some cases, led to reprisals for the employees. Families affected by the tragedy 'called on the Health and Safety Executive to accept that "soft touch regulation" does not work'. [653]

This raises questions about the legitimacy of the HSE as the 'natural protector' of workers. The concepts of symbolic domination and symbolic violence, which

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[651] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004*, p. 99.
[652] C. Cooper, A. Coulson, P. Taylor, 'Accounting for human rights: Doxic health and safety practices – The accounting lesson from ICL', *Critical Perspectives on Accounting*, 22:8 (November 2011), p. 747.
[653] 'Factory Blast "Avoidable"', *BBC News*, BBC NEWS | Scotland | Glasgow, Lanarkshire and West | Fatal factory blast 'avoidable', 2009, accessed 17 September 2021.

feature heavily in the work of Pierre Bourdieu, are important in the context of the industrial fatality.[654] Academics Cooper, Coulson and Taylor used this framework to argue that far from being the protector of the workers, the HSE belongs to (and was created by) the power structures in which we all operate, within which there is an acceptance and submission to the established order in which 'we unconsciously "accept" worker exploitation alongside disagreeing with laws which cost companies money and are described as a restraint of trade (like health and safety legislation)'.[655] They illustrated this principle in detail in an article about the ICL Stockline case:

> If a worker knows that unsafe working practices are taking place, their natural protector is the HSE. Therefore, in the case of the creation of the Health and Safety Executive, despite what might happen in practice, the State can claim that it has acted in the public interest by the creation of this body (and in some senses absolve its own responsibility for health and safety at work); it can also withdraw its symbolic capital, close the HSE and set up an entirely new body if the HSE fails to serve the interests of the most powerful.[656]

The ICL case was explored in detail by a group of academics (including Cooper, Coulson, and Taylor) who published an extensive report into the disaster in 2007, three years after the disaster. This independent inquiry was undertaken by a group of academics and experts with multi-disciplinary specialist knowledge of occupational health and safety, finance, employment rights, architecture, corporate accountability and industrial relations, alongside activists and safety campaigners. This was a project wholly in keeping with the spirit of Bourdieu's *collective intellectual*.[657] It is not stated in the report and is not clear who commissioned this academic inquiry. According to the authors, 'their intention was not to duplicate or mirror the official investigation but to examine issues and raise questions that might be neglected or under-explored by that investigation'.[658] Their report (which will be referred to in this case study as the alternative inquiry), was published 'at a critical stage in the struggle for an

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[654] P. Bourdieu, *The Weight of The World: Social Suffering in Contemporary Society*, (Cambridge 1999). (First published as 'La Misere du Monde', 1993, translation by P. Ferguson).
[655] C. Cooper, A. Coulson, P. Taylor, 'Accounting for Human Rights: Doxic Health and Safety Practices – The Accounting Lesson from ICL', *Critical Perspectives on Accounting*, 22:8 (November 2011), p. 744.
[656] Ibid, p. 744.
[657] M. Beck et al., *ICL/Stockline Disaster: An Independent Report on Working Conditions prior to the Explosion* (Glasgow 2007), p. 1.
[658] Ibid, p. 1.

independent inquiry and played a part in that struggle – in this sense a successful intervention'.[659] The official inquiry was criticised for having a limited scope that would not look beyond the immediate causes of the explosion.[660] The alternative inquiry had a strong focus on the organisational culture at ICL prior to the disaster and explicitly identified their negligence and mismanagement. It also highlighted the regulatory deficiencies. Good root cause analysis must consider underlying causes and organisational factors, which is exactly what the alternative inquiry sought to do.

The ICL case provides an opportunity for a thorough examination of the dynamics of regulation when faced with an indisputably unsafe installation at a company that was apparently determined to avoid and evade compliance with regulatory interventions. This chapter will set out the circumstances of the explosion followed by analysis of the regulatory activity and organisational culture at the site.

The Explosion

At around noon on the day of the incident there was a sudden explosion and the main building collapsed. The cause of the building collapse was not known until much later, at the inquiry, but was found to have been a build-up of liquefied petroleum gas (LPG) vapours in the basement of the building that had formed an explosive atmosphere. The explosive atmosphere was ignited by an unknown source, which could have been a light switch, or a cigarette lighter. One of the deceased was found in the basement area after the explosion and blood samples showed he had inhaled LPG before he died. The LPG had leaked from underground pipes that passed under the building and were severely corroded, allowing vapours to escape and accumulate in the unventilated space because LPG is heavier than air. The mill building was brick built with a basement, ground floor and three upper storeys containing operational areas including packaging and goods in various storage areas, offices, training rooms, and board rooms.[661] Victims, including a member of the public who was seriously injured, were trapped in the rubble of the collapsed building and local residents from the surrounding

[659] C. Cooper, A. Coulson, 'Accounting Activism and Bourdieu's 'Collective Intellectual' – Reflections on the ICL Case, *Critical Perspectives on Accounting*, 25:3 (May 2014), p. 252.
[660] R. Edwards, 'Limits to Stockline Inquiry 'mean lessons could be lost'; Experts Wanted to give Evidence on Wider Failings', *Sunday Herald*, 27 February 2009, p. 19.
[661] *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004*, p. 37.

area set up a refuge in the community centre for families and walking wounded to gather and wait for news.[662]

There was an LPG bulk storage tank area outside the building and underground pipework that passed underneath the main building to feed an oven in the production process. Figure 7.1 below shows the layout of the tank and the pipework as it was at the time of the explosion. The reasons for the use of LPG rather than mains natural gas are not entirely clear. Only one of the ovens was LPG-fired, despite there being natural gas available and in use at other points in the building, and four other ovens that were electrically powered. The inquiry report detailed the options that were presented to ICL by the HSE, which included the suggested option (in 1988) of converting the LPG-fired equipment to natural gas. The most likely explanation for the continuation of the use of LPG was cost-avoidance.

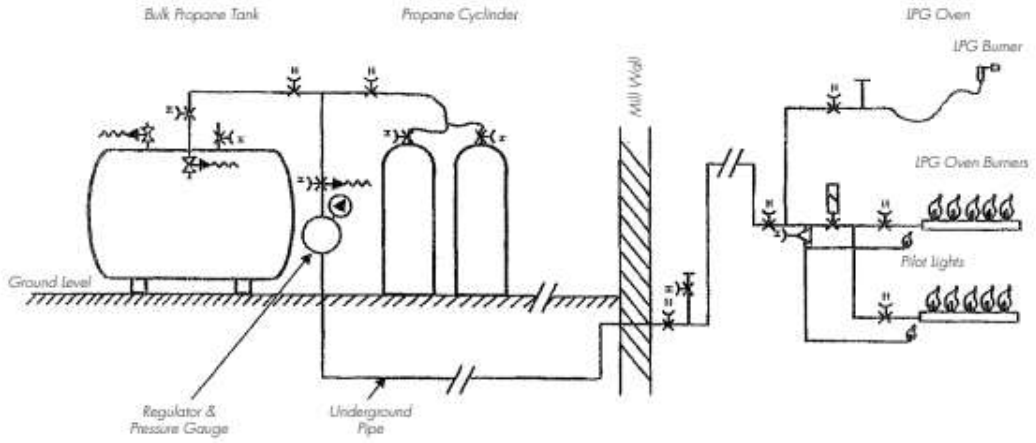

Figure 7.1 – Schematic showing the LPG tank and pipework at ICL Stockline. *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004*, p. 22.

The underground pipework was installed in the 1960s and had not been inspected by anybody (supplier, regulator, third party), since its installation. It was found subsequently to have extensive damage and corrosion and contained a crack on a right-angled bend that extended to 71% of the pipe's circumference.[663]

[662] R. Loxton, 'Stockline disaster 2004: It was surreal. All of a Sudden there was a Loud Bang. I'd never Heard Something so Loud in my Life', *Glasgow Times*, Stockline disaster 2004: 'It was surreal. All of a sudden there was a loud bang. I'd never heard something so loud in my life' | Glasgow Times, 7 May 2014, accessed 8 October 2023.
[663] *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004,* p. 5.

This had allowed LPG vapours to leak out and accumulate in the void in the basement where it would remain until a source of ignition caused it to explode. LPG was delivered into the 2-tonne bulk storage tank in the yard regularly by a delivery vehicle. The LPG installation was a focal point for the HSE in their extensive interactions with ICL from the 1970s onwards, because it was too close to the building, according to industry guidance. This meant there was not sufficient space for ventilation or for separation from combustible materials, and the building itself. Furthermore, guidance strongly advised against the use of buried underground pipework because of the obvious difficulties of inspecting and maintaining it. At the time of the disaster the industry code of practice advised that 'pipework should only be buried when unavoidable. The pipeline route shall be permanently marked or recorded. It must be adequately protected against corrosion and mechanical damage'.[664]

HSE Involvement with ICL

There are extensive records of the Factories Inspectorate and HSE inspectors visiting the site, dating back to 1970. The Factories Inspectorate undertook site inspections, largely focussed on general fire safety, until 1975 when the Health and Safety at Work etc. Act came into force and HSE regulation commenced. The narrative account of the regulation in the inquiry report is far too extensive to repeat in full here but it documented various interactions with inspectors regarding fire safety and welfare advice from the regulators in the early 1970s. After initially being told by the Factories Inspectorate that the ICL factory 'leaves something to be desired', and was 'a high fire risk premises', the company complied with all the recommendations and was later described as having a 'responsible attitude' to fire safety.[665] However, the period from 1970-1975 can be characterised as having been a constant back and forth of inspections, recommendations, non-compliance, and partial compliance to satisfy the inspectors. Figure 7.2 below was created from the narrative account of HSE involvement in the ICL inquiry. It illustrates the timeline of inspections and enforcement from 1970 to the mid-1990s when there was no further mention of

[664] In July 1987, HS(G)34 came into force. It replaced Guidance Note CS5 and HS(G)15 and revoked FIC 286/43(REV). HS (G)34 was a booklet on the bulk storage of LPG at fixed installations. It was on sale to the public. Its target audience was users, suppliers and field inspectors. (Excerpt from p. 94 of public inquiry report)

[665] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 52.

the LPG installation. This illustrates a concentration of attention and interventions by the HSE in the mid-1970s, and a much lighter touch approach with fewer visits and more letters from 1980 onwards.

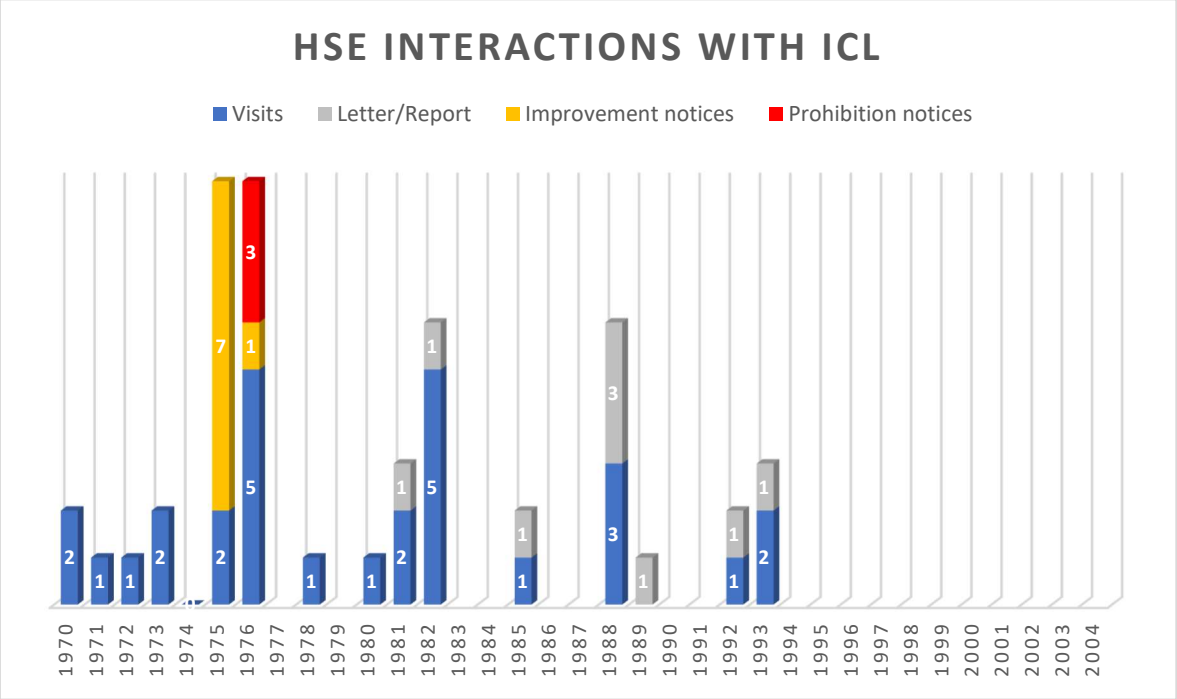

Figure 7.2 – Graph showing HSE interactions with ICL Stockline from 1970 to 2004. Compiled by the author from the chronological account given in the Public Inquiry.

Most of the relevant activity is concentrated in the period during which John Powell was the inspector with responsibility for the site. Mr Powell appears to have been relentless in pursuing ICL with increasingly serious enforcement action because of their repeated failures to act upon his advice. Mr Powell left the post in October 1976, after which the file passed around several inspectors and there was a deterioration in the thoroughness of follow-ups and verifications. A 1975 visit report noted that conditions in the factory were 'seriously concerning', that there were multiple highly flammable materials and products, serious problems with emergency egress, and that all the machinery in the factory required guarding.[666] Mr Powell served ICL with seven improvement notices in 1975, and a further three prohibition notices in 1976 when the requirements of the improvement notices were found not to have been met. He went on to

[666] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 53.

recommend prosecution for these breaches of fire safety and in his letter to the Procurator Fiscal in Glasgow, described chairman and director, Campbell Downie, as 'having an irresponsible attitude in connection with fire matters'.[667] The threat of prosecution and closure had the desired effect, and two of ICL's directors (Mr Woodford and Mr McColl) took action to appease the regulator and comply with the notices. The inquiry into the disaster noted that Campbell Downie used their actions in this instance to try to demonstrate that responsibility for matters of health and safety was accepted by directors of the subsidiary companies as early as the mid-1970s; presumably to distance himself from events as far as possible. After this intense period of enforcement activity in 1975-76, no further formal enforcement action was taken against ICL, although it was considered and recommended. What this demonstrates though, is that ICL took the necessary actions when they were served with enforcement action and threatened with prosecution. This stricter approach to regulating ICL was clearly what was required to provide the necessary checks and balances to keep ICL in line.

From 1975 onwards, when the HSE became the regulatory body, inspectors repeatedly expressed concerns about the siting of the LPG installation, which did not comply with separation distances stipulated in HSE Guidance HSG34.[668] The earliest specific reference to the tanks was in a report from September 1976 in which the inspector noted that: 'a plinth has been built for the LPG storage tank and it is hoped to re-site this tank in the next few weeks', indicating that the position of the tank was already known to be unsatisfactory.[669] Put simply, the LPG tank was too close to the building, which posed a significant fire and explosion risk. The public inquiry into the explosion detailed the extensive exchanges between the HSE and ICL regarding the LPG tank; 'a problem on which Mr Stott [Managing Director] had successfully stalled for so long'.[670] One example of this was the 1982 recommendation for a drench system to be installed (as a mitigation against fire and explosion around the LPG tank) which was

[667] Ibid, p 55.
[668] C. Cooper, A. Coulson, P. Taylor, 'Accounting for Human Rights: Doxic Health and Safety Practices – The Accounting Lesson from ICL', *Critical Perspectives on Accounting*, 22:8 (November 2011), p. 749
[669] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 56.
[670] Ibid, p. 63.

revisited on numerous occasions but was never acted upon. The consistent *modus operandi* of the ICL business seemed to be the tactic of partially addressing HSE improvement notices and recommendations, whilst also promising that further, and more substantial remedial action would be taken imminently. By doing this, ICL seemed to manage to stall and evade action, literally, for decades. The example above from September 1976 is a typical entry in the inspectors' notes, in that a remedial action has been promised by ICL, and the HSE then failed subsequently to follow up to verify completion of the promised action. This was compounded by the HSE's file for ICL changing hands many times over the years, which allowed some of the previous verbal agreements and even written communications to be reinterpreted in ICL's favour.

There was a brief period around 1980 where it appeared that a positive relationship was developing between ICL and the HSE. ICL invited the HSE to site to talk to employees and safety representatives about health and safety in general, and the woodworking regulations. The HSE noted that they considered there to have been a marked improvement and that the company's attitude to safety was now 'very good'.[671] This 'improvement' was short lived, and ICL's management seemed to be skilled in saying enough to appease HSE inspectors whilst not actually taking any substantive action.

There was a pivotal visit on 9 August 1988 by John Ives and Alan Tyldesley. John Ives was an experienced HSE inspector with 34 years in the HSE, who had been visiting ICL since 1981 and had been recently passed the site's file by another inspector who had relocated away from the area. Alan Tyldesley was a specialist fire and explosion inspector who had been recently recruited by the HSE. The August 1988 visit was specifically logged as an inspection 'to see the unsatisfactory LPG installation'.[672] It was after this visit that the specific written recommendation was made to excavate the pipework to ascertain its condition.

Ineffective Regulation

The Health and Safety Executive and the Health and Safety Commission were established as part of the Health and Safety at Work etc. Act 1974. In 2008 the two branches merged and the HSE retained the full remit of both branches. The role of the HSE, as set out in sections 10-14 of HSWA is to make such

[671] Ibid, p. 57.
[672] Ibid, p. 63.

arrangements as it deems necessary to support the general purposes of the Act.[673] This includes encouraging duty holders to fulfil their responsibilities, carrying out research and publication of information, and acting as the enforcement body for the provisions of the legislation. Sections 18-26 of the Act detail the arrangements for enforcement and the powers of inspectors. This description of the main objectives of enforcement is taken from the public inquiry:

> Enforcement has three main objectives: 1) to seek to compel duty holders to take immediate action to deal with the identified risk; 2) to promote sustained compliance with the law; 3) to look to ensure that duty holders who breach health and safety requirements, and directors or managers who fail in their responsibilities, are held to account for their actions.[674]

The narrative account and timeline of HSE intervention at ICL outlined in the previous section illustrates some quite effective regulation in the 1970s when enforcement action was taken. But when considering the history of HSE interventions at ICL over time, in the context of the three main objectives of enforcement, it's clear that in the second and third objectives, the process failed to remain effective. Objective one, to seek to compel duty holders to take action to address identified risks: the inspectors certainly identified risks through their inspection visits and provided explicit advice on the corrective actions that ICL needed to take. However, for several reasons, the process seemed to stall at the point of fulfilling objective one. Subsequent visits repeatedly revealed a lack of action, or partial compliance but enforcement was never escalated to compel ICL to correct the issues fully after the 1975/6 interventions. The escalation to prohibition notices and threat of prosecution in the 1970s was very effective, because ICL then moved to take all of the required actions under threat of closure. But this effective use of the regulatory mechanisms was not repeated when later breaches went un-corrected. The HSE did not achieve sustained compliance at ICL, and they failed to hold the company to account when appropriate control measures were not taken. After his visit in 1988, 'Mr Tyldesley noted that co-operation from the occupier without enforcement action seemed unlikely and that his recommendations were intended to form the basis for an Improvement Notice'; he 'explained that his comments on the unlikelihood of co-

673 Health and Safety at Work etc. Act 1974.
674 B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 29.

operation would have been based on the lack of action between 1982 and 1988'.[675] During a follow-up visit in September 1988, Mr Stott (ICL) opened the meeting by announcing that the LPG oven would be transferred to natural gas. HSE inspector Mr Ives made a note to follow up with a letter and carry out a check visit: 'Mr Ives explained that in his view Mr Stott did not have a good track record of delivering and it was necessary to keep pressure on him although he did appear to accept advice'.[676] However, the check visit was later cancelled when negotiations about a new plan were instigated by ICL.

ICL asked their LPG supplier to liaise directly with the HSE to try to agree a safe solution. Mr Colville, who worked for Calor, began to liaise directly (on behalf of ICL), with Mr Ives to agree a suitable solution. Mr Colville and Mr Ives had an established relationship as they often corresponded to help resolve difficult problems with LPG installations.[677] Mr Colville offered a 'compromise' to the HSE in which Calor would replace the large LPG tank with a smaller one and inspect the condition of the underground pipework by carrying out a pressure test and visual inspection of the riser pipe. This, of course, did not meet the spirit or the letter of Mr Tyldesley's recommendation to excavate and fully inspect the underground pipework. The difficulty faced by the HSE (and Mr Ives in particular) was that Calor had written most of the guidance on LPG safety and were therefore in a strong position to argue that they were offering a good alternative option and 'Mr Ives did not feel competent to decide if that was a reasonable compromise' so he deferred to the opinion of his expert, Mr Tyldesley.[678] During the public inquiry it emerged that whilst Mr Tyldesley had approved this compromise that was offered by Calor, that in fact there was ambiguity and misunderstanding involved in this decision.

> He took for granted that Mr Coville's proposal would involve some form of investigation below the surface of the ground since without this it was impossible to determine the composition and state of the pipe or what corrosion protection it had. Mr Tyldesley now considered that the letter from Mr Coville was ambiguous, but at the time he thought that Calor were competent.[679]

[675] Ibid, p. 67.
[676] Ibid, p. 68.
[677] Ibid, p. 69.
[678] Ibid, p. 71.
[679] Ibid, p. 71.

Another view on this exchange, and the outcome, was put forward by Cooper, Coulson, and Taylor:

> Ives seemed concerned that ICL should be able to continue using LPG. The actors' strategy ensured that the needs of capital were privileged over health and safety at work. The HSE's symbolic power derives from its claim to act to protect the health and safety of workers and yet it seems that they are able to compromise on this.[680]

ICL instructed Calor to act on their behalf with regards to the communications with the HSE about the LPG installation. It is a mystery as to why ICL clung onto the LPG tank for a single LPG fired oven, when it was the focus of so much negative attention from the HSE and a conversion to natural gas would have been entirely feasible for the one oven in question.

The narrative account of the HSE's involvement with the site in the inquiry report is over 25 pages long. It is a convoluted and complicated story, with many instances in which the HSE erred in one way or another, usually by failing to follow up on promised action. (It should be noted that other regulatory agencies including the Scottish Environmental Protection Agency and the Local Authority, both of which potentially had regulatory obligations regarding the facility, also failed to act). ICL appears to have learnt that there were no consequences whatsoever when they did not act, and that simply being polite and *appearing* to engage with the process, was enough to satisfy the HSE. It is important here to remember that Robens (and the system he designed) advocated self-regulation with 'the principal responsibility for achieving protection [is] to be left to those who create and work with the risks, namely, employers and employees'.[681] Tombs and Whyte noted that this approach leads to the balance of power in workplaces being 'intimately related to the level and strength of the workers' organisation, not least because subsidiary legislation grants formal roles to trade union representatives in the organisation of health and safety'.[682] The next section sets out the cultural factors at play at ICL Stockline, including the ways in which the owners and management at ICL maintained the balance of power.

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[680] C. Cooper, A. Coulson, P. Taylor., 'Accounting for Human Rights: Doxic Health and Safety Practices – The accounting lesson from ICL', *Critical Perspectives on Accounting*, 22:8 (November 2011), p. 750.
[681] S. Tombs and D. Whyte, *Safety Crimes*, (Cullompton, 2007), p. 146.
[682] Ibid. p. 147.

Organisational Culture at ICL

The alternative inquiry used several approaches to evidence-gathering, one of which was oral history through semi-structured interviews with ICL employees and family members of the deceased. It is a rich source of information about working life at ICL, filled with first-person accounts of interactions with management. This inquiry cited the work of Carson, and Woolfson and Beck, on the dynamics of employer and worker relations, the imbalance of power, and the weaknesses in legislation and regulation to protect workers. These themes are all important factors to be considered in any case of industrial fatality. Matthias Beck was also one of the co-authors of the report. Worker testimony of the conditions and culture at ICL reveals a vehemently anti-union environment in which 'Stockline workers frequently flagged a range of major problems within their workplace and their voices were apparently often ignored by employers, regulators and enforcers'.[683] This is also reminiscent of the culture on Piper Alpha and is a feature of Westrum's pathological safety culture.

In May 2004, at the time of the explosion, Campbell Downie was semi-retired chairman and non-executive director of ICL Plastics. There were several subsidiaries that changed over time as the company developed, but Mr Downie remained in charge up until the mid-1980s, after which he continued to provide 'financial and strategic guidance to ICL Plastics'.[684] However, Downie and his family maintained significant control, and Campbell Downie was said to have visited the site and walked through the workshops on a daily basis, right up to the date of the disaster. Other members of the Downie family also worked on the site in various management positions.

The management style was described as 'highly autocratic' and characterised by 'workforce management that permitted no employee voice, let alone consultation'.[685]

> The anti-trade union stance taken by management at ICL/Stockline should also have made the HSE vigilant about the firm's health and safety management, not least since HSE research confirms the academic

[683] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow, 11 May 2004* (Edinburgh, 2008), p. 40.
[684] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004* (Edinburgh, 2007), p. 33.
[685] M. Beck et al., *The ICL/Stockline Disaster: An Independent Report on Working Conditions prior to the Explosion*, (Glasgow 2007), p. 62.

> consensus that trade union organised workplaces are at least 50% safer than non-organised workplaces.[686]

Workers described being financially penalised by having their bonus taken away, or having all holiday requests denied without justification, if they 'caused trouble', and one described how 'you were basically scared to complain because you got bullied'.[687] Testimony from those who were employed at ICL also reveals how some employees had tried to get information about the chemicals they were being exposed to, or raised other concerns regarding general health and safety on the site, only to be repeatedly fobbed off by management. Some workers also contacted the HSE to try to report their concerns, and on one occasion an HSE inspector who attended the site identified a whistle-blower in front of management.[688] This employee claimed to have then been subjected to a campaign of bullying tactics in reprisal for having contacted the HSE. Other employees remembered being told that anybody who tried to start a union on the site 'would not be there for long'.[689] The overall picture that is painted is also one of a company that was very penny-pinching and production-focussed, to the detriment of employee wellbeing. Examples of this include an oven that was constructed 'from an old bin lorry', and a complete lack of provision of any personal protective equipment up until a couple of years before the disaster.[690]

Frank Stott had been Managing Director of ICL Tech and was responsible for health and safety during the 1980s when the LPG installation and underground pipework was receiving significant attention from the HSE. The inquiry found that 'it is apparent from the evidence that he pursued a policy of non-co-operation with HSE on safety questions affecting the tank installation. At times he actively misled the inspectorate and responded disingenuously to HSE's concerns about the bulk tank. Mr Frank Stott died before the explosion'.[691]

Under the Health and Safety at Work etc. Act 1974, ICL (as an employer) had obligations to ensure 'so far as reasonably practicable' that workers (and others who may have been affected by the operations), would not be harmed.[692]

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[686] Ibid, p. 119.
[687] Ibid, p. 67.
[688] Ibid, p. 123.
[689] Ibid, p. 67.
[690] Ibid, p. 128.
[691] B. Gill, *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004*, p. 86.
[692] Health and Safety at Work etc. Act 1974.

Evidence presented in both the official public inquiry and the alternative inquiry shows that ICL failed to act on regulatory interventions, including improvement notices. There was a history of bodged, cost-saving measures, including the use of non-qualified handymen to carry out work on gas pipes, and the conversion of an old bin lorry into an industrial oven. The basement of the mill building was filled with acrow props (designed for use as temporary steel supports) holding up the ground floor of the building, which was showing considerable signs of structural weakness. Training and personal protective equipment was not provided, and the company was hostile to any suggestion of union activity or even informal consultation. Each of these points mentioned above would constitute a breach of ICL's duties under health and safety law, and any of them could have been cause for formal enforcement action should inspectors have deemed it necessary.

The ICL group of companies was 'cash rich' and thriving in the years leading up to the disaster.[693] Independent analysis of the companies' financial returns to Companies House demonstrates that there is no evidence to support a view that ICL could not afford to take the necessary steps to improve the LPG installation, or other Health and Safety issues that were apparent. This means that the strategy of avoiding making these improvements can only have been due to a collective managerial antipathy or apathy towards the matter. The independent inquiry concluded that:

> The evidence we have strongly indicates a systematic absence of legally compliant formal health and safety procedures at ICL/Stockline which cumulatively exposed the workforce to a wide range of serious risks to their health and severely compromised safe working practices at the plant.[694]

This systematic absence was allowed to continue unchecked despite many HSE inspections and interventions. ICL repeatedly failed to act upon verbal and written recommendations, but there were no consequences to the company for behaving in this way. Even in the early 2000s, when employees contacted the HSE to report violations and ask for help, the regulator failed to take meaningful action.

When examining the wider subject of industrial fatalities in the context of corporate culture, there is always an awareness of the trade-off between profit

[693] M. Beck et al, *The ICL/Stockline Disaster: An Independent Report on Working Conditions prior to the Explosion,* (Glasgow 2007), p. 54.
[694] Ibid, p. 116.

and people. All businesses operate to make money and must do so if they are to be able to continue to operate and provide employment. With this in mind, the difference between a safe workplace and an unsafe one is often determined by the corporate culture. The corporate culture, or 'the corporate personality' was framed in psychiatric terms by professor of Law, Joel Bakan, in his book, *The Corporation*.[695] Using a psychodiagnostics checklist, Bakan concluded that 'the essence of corporate personality is sociopathic (also called psychopathic) in nature'.[696] The checklist (devised by Robert Hare) 'includes such characteristics as manipulative, grandiose, lack of empathy, asocial tendencies, inability to feel remorse and refusal to accept responsibility for one's own actions'.[697] Given the evidence from the two inquiries, the corporate personality of ICL prior to the explosion could be seen to fit into this sociopathic model.

However, Robert Whittingham maintained that 'with checks and balances such as regulation', companies could be made 'sufficiently accountable that corporate interest will mostly coincide with society's interest'.[698] If we accept that corporations *require* these checks and balances to operate ethically, and in the interests of their employees (and wider society), then the shortcomings of the regulator become even more significant in this case. ICL had demonstrated that they would evade the HSE inspectors' advice and recommendations unless compelled to act by means of enforcement. The HSE's internal communications revealed that they were fully aware that ICL's senior leadership would not take the required remedial actions unless legally forced to do so. Yet despite the identification of a breach of the industry guidance for LPG installations and the recommendations of a specially commissioned fire and explosion expert, the company failed to dig up the underground pipework and the HSE failed to serve enforcement action.

Foreseeability

The foreseeability of a serious accident at ICL Stockline is not in doubt. Every HSE visit resulted in the inspectors finding concerning breaches of legislation or guidance. There were serious breaches of fire safety, dangerous machinery, chemical management, and LPG safety. The LPG bulk storage area was revisited

[695] J. Bakan, *The Corporation: The Pathological Pursuit of Profit and Power* (New York, 2005).
[696] Ibid, p. 63.
[697] Ibid, p. 63.
[698] Ibid, p. 63.

by inspectors many times up until the mid-1990s, with concerns being raised repeatedly about the poor separation distances, storage of combustible materials in the vicinity, and the underground pipework. There was and is extensive guidance for safe handling and storage of LPG because of the high severity potential if LPG safety is compromised. Any LPG bulk storage installation should be considered a fire and explosion hazard, but especially so if the installation does not meet the specifications set out in the quasi-legal safety guidance. The 1988 visit by expert Alan Tyldesley led to a report with follow up recommendations including:

> Recommendation 11: "Part of the underground pipework carrying LPG vapour into the building should be excavated. The state of the pipework and any corrosion protective coating should be examined by a competent person and any recommendations made as a result of this inspection should be carried out. A pressure test of the pipe work should also be carried out.[699]

Mr Tyldesley also made it clear, based on the lack of action taken by ICL between 1982 and 1988, that 'cooperation from the occupier without enforcement action seemed unlikely'.[700] His recommendations were intended to be used as the basis of an improvement notice, but this was never served by the HSE and the recommended excavation did not take place. It was entirely foreseeable that underground pipework that had never been inspected or maintained would suffer corrosion and leakage. It was equally foreseeable that any LPG vapour would collect in nearby underground voids, because it is heavier than air and so naturally sinks if unable to disperse through ventilation. In his sentencing remarks, which considered relevant case law and the company's guilty pleas, Lord Brodie said the following:

> This is not a case of failure to heed warnings or where a decision was taken to run a risk in order to save money. The companies apparently have a good safety record prior to May 2004, going back to the 1960s.[701]

This statement is difficult to reconcile with the facts of the case. However, the trial took place prior to the publication of the public inquiry and in the same month of the publication of the alternative inquiry, and it is difficult to reconcile Lord Brodie's

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[699] *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004*, p. 66.
[700] Ibid, p. 67.
[701] Sentencing Statement by Lord Brodie at Glasgow High Court, HMA v ICL Tech Limited and ICL Plastics Limited (Glasgow 2007), *Hazards*, https://www.hazards.org/icldisaster/sentencingstatement.pdf accessed 9 December 2023.

comments with the facts of the case. The public inquiry showed clear evidence of failure to heed warnings, decisions to run risks, and evasion of duties in order to save money.

In sentencing, Lord Brodie quoted the case of R v F. Howe and Son (Engineers), a case from 1998 which established a precedent in the sentencing of health and safety offences. Aggravating factors were established in Howe, which included failure to heed warnings, and the defendant running a risk to save money.[702] His sentencing comments also allude to the fact that a breach of health and safety legislation by an employer may or may not result in death or serious injury, and it could be down to 'chance' whether it did so. 'As was observed in the English case of Howe: "…it is often a matter of chance whether death or serious injury results from even a serious breach. Generally where death is the consequence of a criminal act it is regarded as an aggravating feature of the offence. The penalty should reflect public disquiet at the unnecessary loss of life."' [703] Lord Brodie was on one hand alluding to 'serious breaches', but on the other hand implying that ICL was somehow *unlucky* because their particular breaches led to nine deaths. To take the opposite view, one might consider ICL were fortunate to run their unsafe site at Stockline for so many years *without* killing anyone. The independent inquiry into the disaster made the following statement regarding Scotland's poor record of industrial accidents in the context of the Piper Alpha disaster (examined in Chapter Four) and ICL Stockline:

> Part of the problem are [sic] the concepts and language used. Terms such as 'human error', 'normal accidents' or 'systems failure' suggest that industrial accidents are either as normal and unavoidable occurrences [sic], or attributable to the actions of individual workers. While some of these approaches may have a limited role to play in pinpointing certain causes of accidents, there is a real danger they mask the broader realities of employer driven cost-reduction, corner-cutting, lack of worker representation and consultation and regulatory failures which are all too often the real contributory causes of injury and illness at work.[704]

The second half of this statement certainly rings true in this case. The ICL disaster does not lend itself to James Reason's Swiss Cheese model (which is applied

[702] R v F. Howe and Son (Engineers), Case No: 97/8101/Y3, 6 November 1998, http://www.bailii.org/ew/cases/EWCA/Crim/1998/3531.html, accessed 7 October 2023.

[703] Ibid, p. 3

[704] M. Beck et al, *The ICL/Stockline Disaster: An Independent Report on Working Conditions prior to the Explosion*, (Glasgow 2007), p. 28.

elsewhere in this thesis), largely because there are no layers of protection to examine. Another way of applying safety theory to this case would be with accident causation models, such as root cause analysis and a '5 why' model.[705] A simple three-stage causation model would consist of immediate, underlying, and root cause identification, and could be presented in the following way:

Immediate cause	Source of ignition caused explosion
Underlying cause	LPG vapours leaking from underground pipework into unventilated basement
Root cause	Failures by management to address the dangers of underground LPG pipework

Figure 7.3 – Example of a Causation Model. Compiled by the author.

The application of a simple five why methodology, as illustrated in figure 7.4 below, shows how all lines lead back to cost avoidance.

[705] Five Why root cause analysis was originally developed by Toyota and is a widely adopted iterative process designed to uncover root causes by asking 'why' multiple times; M. Barsalou and B. Starzyńska, 'Inquiry into the Use of Five Whys in Industry'. *Kvalita Inovácia Prosperita*, *27*:1 (March 2023), pp. 62-78.

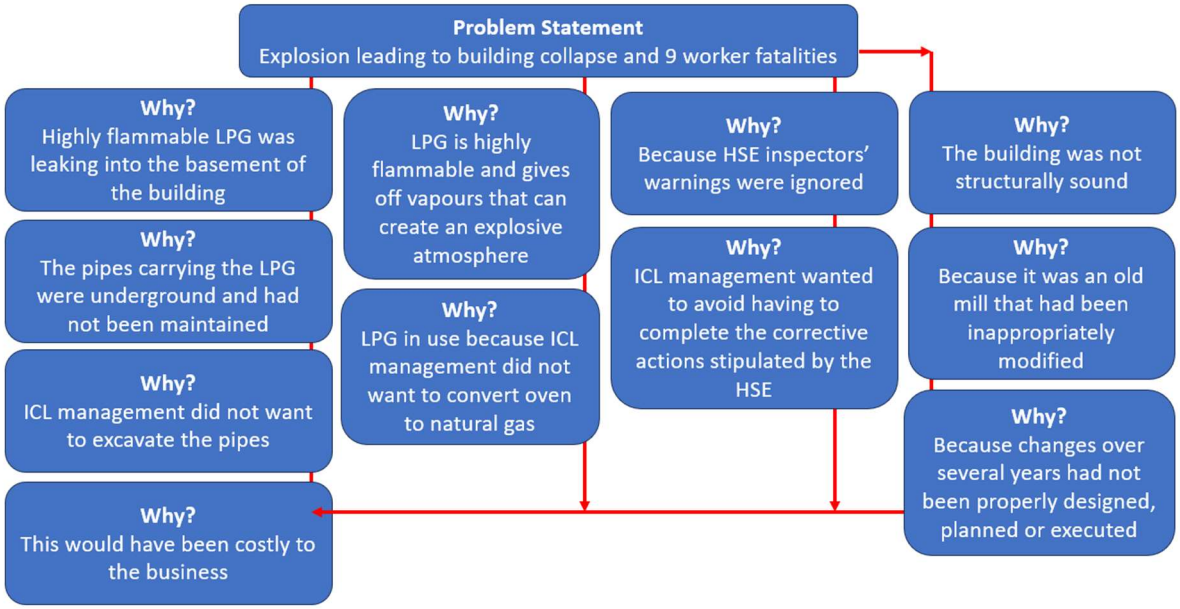

Figure 7.4 – Simple 5 Why Root Cause Analysis of the ICL Stockline Disaster. Compiled by the author.

Conclusion

In 2013 the ICL Group of companies took Johnson Oils (JO) to court in a test case attempt to claw back some of the damages paid to one of the victims who was seriously injured in the explosion. Had ICL been successful, this would have enabled them to go on to recover contributions towards all the victims' damages. ICL's case asserted that JO had been in breach of its duties under the Dangerous Substances and Explosive Atmospheres Regulations 2002.[706] However, Lord Hodge did not find in ICL's favour, and was scathing in his seventy-seven-paragraph judgement against them:

> In relation to the case of failure to give advice, I am not persuaded that Mr Stott who was responsible for health and safety until 2000, would have taken advice and carried out an exploratory excavation of the underground pipe. He was reluctant to spend money on such matters. Mr McColl, who was responsible for health and safety after 2000, achieved a higher standard of safety in the premises. But the evidence does not suggest that he addressed the known dangers of LPG. The pursuers took no steps to monitor, inspect and maintain the underground pipeline after they received a clear warning from the HSE in 1989. Mr McColl also chose to ignore the HSE recommendation to have a trained employee present at the LPG tank during deliveries of LPG. I am not persuaded that the pursuers have

[706] ICL TECH LIMITED v. JOHNSTON OILS LIMITED [6] [2013] CSOH 159. https://www.scotcourts.gov.uk/search-judgments/judgment?id=02988aa6-8980-69d2-b500-ff0000d74aa7 accessed 9 December 2023.

established that, if JO advised them in 1998 or in 2002 to investigate the state of the underground pipe, they would have acted in a way which would have averted the tragedy.[707]

This attempt by ICL to shift some of the blame and financial liability onto their LPG supplier was not successful. 'There was undisputed evidence that [Frank Stott] and Mr Campbell Downie, the chairman and financial manager of the pursuers, did not co-operate with the HSE'.[708] In one of the most damning and poignant pieces of evidence a witness told the trial that during the search of the site after the explosion, investigators 'found a Department of Industry booklet, "Corrosion Protection for Buried Pipelines" on the premises which explained the causes of corrosion and the need for investigation and maintenance'.[709] This is further evidence of the 'guilty knowledge' held by ICL prior to the explosion.[710]

The wealth of evidence relating to this case allows us an unusually vivid insight into the culture of the company and the shortcomings of the HSE as an enforcement body. The company was negligent and deliberately misled HSE inspectors. Employees were not given a voice, and they were targeted or penalised if they tried to raise their concerns about safety failings. The HSE (excluding the period when John Powell was the inspector for ICL) was able to inspect and identify serious issues but failed to use effective enforcement mechanisms to ensure ICL took appropriate actions. The disaster was foreseeable. This is a particularly unequivocal case of neglect and failure with few mitigating factors. If ever a case warranted a charge of corporate manslaughter, then this would be it. ICL put concerted effort into evading the HSE's recommendations, specifically in relation to the LPG pipework, and also more broadly over the years. There were changes of management over the years, but the *modus operandi* of the business in relation to the HSE was the tendency to do as little as possible, and to delay actions for as long as possible; indefinitely when allowed to do so. Lord Gill stipulated that it is the employer who must carry the responsibility as end user, and that 'the user cannot ... rely on the oversight

[707] ICL TECH LIMITED v. JOHNSTON OILS LIMITED [71] [2013] CSOH 159. https://www.scotcourts.gov.uk/search-judgments/judgment?id=02988aa6-8980-69d2-b500-ff0000d74aa7 accessed 9 December 2023.
[708] Ibid. [15].
[709] Ibid. [26].
[710] Guilty knowledge is a legal concept described in legal dictionaries as 'The knowledge of facts or circumstances required for a person to have **mens rea* for a particular crime. Knowledge is usually actual knowledge, but when a person deliberately ignores facts that are obvious, he is sometimes considered to have "constructive" knowledge'.

of the HSE or on the expertise of the supplier to absolve him of that responsibility'.[711] Analysis for the independent inquiry concluded that 'in the face of neoliberalism corporate killing could remain virtually unpunished'.[712] This chapter was the final case study of this thesis and the following chapter considers a thematic overview along with conclusions on the achievements of the research and implications for future academic study.

[711] *The ICL Inquiry Report Explosion at Grovepark Mills, Maryhill, Glasgow 11 May 2004*, p. 134.
[712] C. Cooper, A. Coulson, 'Accounting Activism and Bourdieu's 'Collective Intellectual' – Reflections on the ICL Case, *Critical Perspectives on Accounting*, 25:3 (May 2014), p. 252.

Chapter Eight – Conclusion

One of the challenges of presenting this material was the work of both linking it to broader historical discourse on occupational safety and health whilst also ensuring the topic of the industrial fatality retained its own prominence. As discussed, the modern industrial fatality is a part of labour history, has a significant cultural legacy in monuments and statues dedicated to victims, and belongs within it. But this thesis presents the subject as a stand-alone historical inquiry for the first time whilst also drawing on legal, sociological, and psychological scholarship. This, coupled with the inclusion of industrial safety theory ensured this thesis occupies new academic territory, thus inviting and encouraging further such research in the future.

The research conducted for this thesis provided a focus on an important and previously undeveloped area of recent history and demonstrated why the modern industrial fatality should be considered a distinct phenomenon. Exploring industrial fatalities in a period when modern safety systems, thinking, and culture were emerging alongside complex modern ways of working also allowed for new insights into a transitional period in the British regulatory state.

The originality of this research is twofold. Firstly, by combining industrial safety theory and historical inquiry, this thesis occupies a space loosely covered by labour history and the social sciences, but hitherto not explicitly examined. Secondly, by framing the modern industrial fatality as a distinct phenomenon it introduces a new paradigm that invites further academic scrutiny. There is significant scope for future research both from a labour history point of view and in terms of implications for organisational learning and policy development.

All work-related deaths are tragedies for the victims, their families, their friends, colleagues, and communities. The case studies in this thesis have illustrated, chronologically, how six such events unfolded in different organisations and how society and governments reacted. When selecting case studies for this thesis there were few preconceptions as to potential similarities, differences, or significance to the overall topic. However, having researched each event in detail, read public inquiries and court transcripts, and having spoken to those affected

in many cases, it remains clear that the modern industrial fatality should be considered as distinct from earlier industrial deaths. The subject warrants its own body of historical research to further define its characteristics and meaning. However, conclusions on the phenomenon, based on this research, are as follows:

The modern industrial fatality should be separated from the broader historical literature on occupational health and safety. Whilst it belongs within (or close to) labour history it is its own sub-topic, in the same way that the subtopics of asbestosis, or work-related mental health have their own bodies of literature. The modern industrial fatality is a product of industry that has developed and changed over time, but which remains entirely relevant. It is an ongoing moral, legal and societal conundrum that cuts across the humanities and social sciences and has immediate relevance in the contemporary world.

A modern industrial fatality is different from those that occurred in the nineteenth and early twentieth centuries, before the development of systems thinking and modern safety theory. The concept of the Victorian factory or colliery owner being held criminally accountable for worker deaths is alien because such deaths were largely (but not always) understood to be tragic accidents or simply the consequence of mistakes made by individual workers, described by McIvor as a 'long tradition of blaming the victim'.[713] Post-Second World War societal expectations and standards increasingly influenced the reporting and framing of industrial fatalities as something other than tragic accidents, with a shift towards blame and the expectation of accountability.[714] This shift in expectations was driven by the emergence of theories in the fields of psychology and sociology, challenging the accident prone worker narrative, and around the same time scholars including Turner, Beck and Perrow were providing new theoretical frameworks for understanding industrial accidents.[715]

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[713] A. McIvor. *Working Lives: Work in Britain since 1945* (London, 2013), p. 174.

[714] The Houghton Main and Golborne explosions are the exception in the case studies examined in this thesis in that there were no apparent calls for prosecutions. All the other cases researched for the thesis led to demands for the accountability of the organisations and individuals involved. But only one of the cases led to the prosecution of an individual, which was unsuccessful.

[715] A, McIvor. *Working Lives: Work in Britain since 1945* (London, 2013), p. 175; B. Turner. *Man-made Disasters* (London, 1978); C. Perrow, *Normal Accidents: Living with High Risk Technologies* (Chichester, 1984); U. Beck. *Risk Society: Towards a New Modernity* (London, 1992).

The discipline of law provides excellent context and analysis on the subject of white-collar crime, which is where modern industrial fatalities should be situated, conceptually. The reason for this assertion is that most modern industrial fatalities are foreseeable, preventable, and result from employer negligence. Whilst the case studies in this thesis represent a small sample size, there is a significant body of wider research that supports this view.[716] Thus, the subject matter is both historical and current, but the recent historical aspects of the subject matter are still a neglected area that would benefit from more research. This thesis has provided justification for further academic inquiry in the future.

Another important development in the framing of industrial deaths is the relatively recent understanding of the significance of the language used when describing such events.[717] The word 'accident' has a neutralising effect, suggesting something that could not be foreseen or prevented and should therefore not be viewed as a crime.[718] By calling something an accident there is an implicit assumption that it was not preventable and was no one's fault. When words such as negligence, corporate killing, and manslaughter enter the discourse, the entire framing of such incidents is transformed.

Finally, the technical frameworks that underpin modern occupational safety are an essential element when analysing these events. The development of the safety industry and concepts or tools including the Swiss Cheese model, risk assessment, the hierarchy of controls, systems thinking, human performance, root cause analysis, and legal terms such as reasonably practicable are key to the subject. By recognising the emergence of modern safety theory along with the other points above, there is a strong case for treating the modern industrial fatality as a distinct phenomenon, which this thesis addresses.

The significance of the modern industrial fatality must be presented carefully to ensure maximum impact, both in terms of contributing to academic research and influencing future safety theory and practice. The questions for this research were as follows:

- Why are people still being killed at work in modern Britain?

[716] S. Tombs and D. Whyte, *Safety Crimes* (Cullompton, 2007), pp. 70-80.
[717] C. Vesel, 'Agentive Language in Accident Investigation: Why Language Matters in Learning from Events' in *ACS Chemical Health & Safety,* 27:1 (January 2020), pp. 34-39.
[718] S. Tombs and D. Whyte, *Safety Crimes* (Cullompton, 2007), p. 71.

- What does it mean for society and communities when family members, neighbours, or friends are killed at work?
- Can all workplace deaths be prevented?
- How did the management of safety develop and change the corporate landscape during the period?
- Did legislative changes and fluctuating regulatory approaches significantly influence workplace safety?
- How do these questions interact with conceptual frameworks concerned with imbalances of power?

The remainder of the conclusion shows how these questions have been answered. As noted in the introduction in chapter one, this research did not seek to discover the immediate causes of these tragedies, all of which were subject to inquiries and court cases which set out detailed explanations of what occurred. The causation under scrutiny in this thesis is the underlying or root explanation, embedded in organisational cultures, corporate cultures, and in some cases in the decisions of individuals. The next section summarises the thematic links and conclusions of the thesis, including the role and development of legislation and regulation in the forty-year period from 1974 to 2014, followed by an overview of some of the more problematic or paradoxical elements of the legal system. Finally, this chapter concludes with the implications and directions for future research.

Thematic Links and the *Modern Industrial Fatality* Model

The first case study (chapter three) covered the Houghton Main and Golborne Colliery explosions, which occurred in 1975 and 1979 respectively. These two industrial incidents occurred in the years immediately following the introduction of the Robens Philosophy and the Health and Safety at Work etc. Act 1974 (HSWA) and it was evident in the inquiries that the spirit of the Robens Philosophy and the letter of the HSWA did not strongly influence events before, during, or after. Despite the coal mining industry being in terminal decline in the 1970s and the recent introduction of HSWA, these two explosions, the last fatal firedamp explosions in UK coal mines, illustrated the workings of the two behemoths dominating the industry: the National Coal Board and HM Mines Inspectorate. Coal mining, with its history of terrible and numerous disasters, was heavily regulated and subject to extremely detailed, prescriptive regulations; the very

antithesis of the Robens Philosophy of goal-setting and self-regulation. The industry relied on prescriptive rules, strict hierarchical structures, and systematic adherence to a long-established set of control measures for the safety of the workforce.

On one hand the hazards associated with underground coal mining were so well known and so well understood that these two incidents were eminently foreseeable and could have been prevented with long-embedded existing measures. Conversely, it is arguable that coal mining was so inherently unsafe for humans that no amount of planning or control measures would be sufficient to prevent all such events from happening. Other occupations that come to mind with similar attributes are sea fishing and agriculture. These industries place humans in a position of extreme vulnerability against nature, in the pursuit of natural resources for human consumption. It is for this reason that the Houghton Main and Golborne Colliery explosions do not constitute modern industrial fatalities in the context of this thesis. They don't fit the model of the modern industrial fatality. They happened within the period after the introduction of HSWA but coal mining is not a modern industry and modern systems thinking was not yet part of the discussion on industrial safety. Therefore the Houghton Main and Golborne cases cannot be considered modern. Rather, they should be considered anachronistic and historical in nature, and neither complex nor tightly coupled, therefore also not fitting Perrow's *Normal Accidents* theory (unlike Piper Alpha and Hickson and Welch).[719]

The characteristics of the modern industrial fatality, as defined by this thesis, are:

1. Occurring in a developed and fully industrialised economy, within a modern regulatory framework.
2. Occurring after the emergence and adoption of modern safety theory, from the early 1980s onwards.
3. Occurring in industrial settings where equipment, machinery, and processes have inherently hazardous properties but crucially, hazardous properties that can be managed and controlled.
4. Foreseeable and preventable – an unpreventable natural disaster (such as an earthquake) that destroys a factory, for example, would not fit the model.

The remainder of the case studies in this thesis fit the model as described above. All took place in a developed and industrialised economy (Britain) with a modern

[719] C. Perrow, *Normal Accidents* (Chichester, 1984).

regulatory framework. All occurred after the emergence and adoption of modern safety theory. All occurred in inherently hazardous (but controllable) industrial settings, and all were foreseeable and preventable. Of these four points, the first two can be assumed for any cases in Britain from the 1980s onwards. The second two points are situational and relate to specific workplaces and scenarios.

To expand further on point three and to demonstrate how it relates to each of the cases, the next short section will explain the applicability for each case. First, Piper Alpha, as an oil rig, was inherently hazardous because of the remote location, the handling of huge quantities of hydrocarbons, and the presence of a significant amount of heavy equipment and machinery. Hickson and Welch was handling volatile chemicals in large quantities. Euromin was operating a dock with hazardous materials and heavy plant and machinery. ICL Stockline was operating machinery and industrial ovens, some powered by LPG. As illustrated in the introduction, most industries that have the potential for catastrophic consequences have adopted comprehensive programs of prevention and mitigation, such as the High Reliability Organisation (HRO) systems now used in the nuclear, air travel and space sectors. By accepting that complex structures and processes will inevitably encounter *Normal Accidents* these sectors developed the organisational resilience required to succeed in preventing and/or mitigating such events.[720] HRO is an extreme example of modern safety theory but it illustrates the mindfulness and intentionality with which safety was beginning to be regarded and managed in some industries from the 1980s onwards. The Piper Alpha platform should have been subject to a similar level of comprehensive safety management, given the potential consequences of failure. The reason this was not the case was the regulatory capture of the Department for Energy.[721] The corrective actions after the Disaster included the introduction of The Offshore Installations (Safety Case) Regulations 1992 and responsibility for the regulation of offshore oil and gas in the UK being transferred to the HSE.

Whilst the other industries in the case studies cannot necessarily have been expected to have adopted HRO, both industries certainly had the benefit of a significant body of legislation, guidance, industry knowledge and technology that

[720] C. Perrow, *Normal Accidents: Living with High Risk Technologie*s (Chichester, 1984).
[721] C. Woolfson and M. Beck, eds., *Corporate Social Responsibility Failures in the Oil Industry* (New York, 2005), p. 18.

could have adequately controlled the inherent hazards. Hickson and Welch and ICL Stockline had both suffered previous incidents and the 1974 Flixborough Disaster in the UK and the 1984 Bhopal Disaster in India both provided further warnings and opportunities to learn and improve. In the case of Hickson and Welch, the HSE's inquiry report cited several 'elementary mistakes' that led to the fire in which five people were killed.[722] The volatile nature of the substances being handled and produced at Hickson and Welch ought to have meant that robust controls and redundancies were in place to prevent and mitigate possible adverse chemical reactions.

But the lack of operational control and the weak permit to work system constituted latent weaknesses in the system. Decisions taken by supervisors under pressure were then the active failures that led to the runaway exothermic reaction taking hold during a cleaning exercise. The position and flimsy construction of the control room made the occupants incredibly vulnerable in the event of such a deflagration and as a result, four men died. The fifth victim who was found in the office block toilets overcome by smoke inhalation was incredibly unfortunate. Of the five case studies this incident was the most difficult to condemn because there were clearly some good intentions and sincere attempts to establish and continually improve safe systems of work on site. However, the hazards were well understood and there should not have been enough slack in the system to allow those elementary mistakes to occur. Chemicals and flammable substances can be handled and managed safely with the deployment of sufficient controls, but this did not happen at Hickson and Welch or ICL Stockline.

In the case of Euromin and Simon Jones, not only was the equipment hazardous, but it was also being used in a way that was totally inappropriate at the time of Simon Jones' death. Had the equipment been used according to manufacturers' instructions and with a line of sight and safe systems of work, Simon's death would not have happened. All the hazards that led to fatalities in these cases were well understood and controllable.

Similarly, as set out in point four of the model, all the cases were entirely foreseeable and preventable. Thus, these cases all fit the model of the modern

[722] HSE, *The Fire at Hickson & Welch Ltd*, p. 32.

industrial fatality. Woolfson's quote below, about the Piper Alpha and Deepwater Horizon disasters, is pertinent.

> That each disaster was avoidable is, in retrospect, a truism. That each was foreseeable is equally so, but we repeatedly find that workers in the industry had fears for their safety but lacked confidence to express their concerns without fear of retribution.[723]

Fear of retribution is not one of the explicit characteristics of the model, but it was present in the Piper Alpha and ICL Stockline cases. It is likely that fear of retribution for the raising of safety concerns may feature in a significant proportion of modern industrial fatalities.

Legislation and Regulation

As has been discussed, the purpose of this thesis was not to discover the immediate causes of any of the events being examined. Whatever the mechanism of injury in each particular case, it was the organisational, cultural and societal factors that were under scrutiny. The intention was always to view the fatal event as a product of or outcome of systemic failings rather than being causative in itself. That said, the risk profile of British industry altered significantly over the forty-year period reducing worker exposure to hazardous occupations such as coal mining and to a large extent, manufacturing. What has been illustrated is that in all such hazardous industries, it is imperative that the hazards are well controlled with multiple layers of protection. The hierarchy of controls dictates that elimination must be considered first, then substitution and automation, followed by the weaker controls such as training and personal protective equipment. The more layers and control measures in place, the stronger the defences against potential undesirable events.

At the start of the forty-year period discussed in this thesis these principles (systems thinking, hierarchy of controls, and layers of protection) did not exist in industry or in public discourse. Systems thinking and modern safety theory was just starting to emerge in academia and some hazardous industries in the late 1970s. This makes the Robens philosophy quite astonishing in that it is an approach that could have been inherently compatible with systems thinking. In

[723] C. Woolfson, 'The Oil Industry has yet to Learn Lessons of Piper Alpha', *The Conversation*, https://theconversation.com/the-oil-industry-has-yet-to-learn-lessons-of-piper-alpha-15635#:~:text=Ultimately%2C%20the%20lesson%20of%20corporate%20failure%20is%20that,still%20reluctant%20to%20live%20up%20to%20its%20obligations. 2013, accessed 30 July 2023.

1972 when the committee was established, the principles of systems thinking in industrial safety were virtually non-existent, but the Robens philosophy pivoted the focus away from specific hazards and prescriptive legislation towards a holistic approach to safety. This meant the burden of proof on the employer was no longer solely whether they had complied with a specific clause or requirement, but whether they had sufficiently identified and controlled *all hazards*, as far as reasonably practicable. This fundamental change in the law might have opened the floodgates for an increase in prosecutions of employers who failed to act to protect their employees but for the fact that the HSE was founded on the principle of being an advisory and supportive body rather than an authoritarian regulatory regime. Of course, provision was made in the 1974 Act for enforcement action, but this was intended to be used when advice and support failed to have the desired effect.

Whilst the Robens philosophy had the potential to complement emerging systems thinking and safety theory, it actually carried an undercurrent of assumptions that in fact ran counter to the modernising attitudes in industry. The Robens Report cited 'worker apathy' as the single biggest cause of accidents and 'pinpointed those workers involved in, or close to the scene of, industrial accidents, rather than unhealthy or unsafe working conditions, as the locus of potential improvements in health and safety'.[724] So, whilst there are elements of the conclusion of this thesis that can be stated with emphatic certainty, this cannot be said for the Robens philosophy or the HSWA, the impacts of which are ambiguous. It simply is not possible to separate the de-industrialisation and accompanying decline in fatal injuries, from the potential positive effects of the introduction of HSWA and the establishment of the HSE. The scathing criticisms of the Robens report from contemporaries such as Pat Kinnersley, and the more recent observations of its shortcomings by Tombs and Whyte correctly identify problematic assumptions that were/are not conducive to modern safety theory.[725] However, as an overarching approach to occupational health and safety, the Robens philosophy has, on balance, probably had a net positive effect on industry

[724] S. Tombs and D. Whyte, *Safety Crimes* (Cullompton, 2007), p. 75.
[725] P. Kinnersley, 'Hazards: The Hidden Toll at Work', *International Socialism*, No. 63 (October 1973), pp. 8-12; S. Tombs and D. Whyte, *Safety Crimes* (Cullompton, 2007).

and it has been adopted widely by several other countries including Canada, Australia and Singapore.[726]

Over the period 1974 to 2014 the influence of the Robens philosophy was increasingly evident in the approaches taken by businesses and this was accompanied by the growth of the occupational safety industry. At the start of the period there were trained factories inspectors, there were trade union safety representatives, and there were process safety engineers in hazardous industries. In the coal mining industry there were ventilation specialists whose responsibility it was to ensure safe and breathable air underground. But the proliferation of generalist health and safety managers and the health and safety consultancy industry happened during the period. Professional bodies and routes to professional qualification grew from Aston University offering the first occupational health and safety degrees in 1971 to thousands of training providers and a large selection of qualifications and professional membership levels.

The pivot in 1974 to a system of self-regulation had the effect that employer compliance became entirely dependent on the will or whims of individual companies and the effectiveness of regulation. The Piper Alpha case study revealed the problem of regulatory capture and the effects of this on the platform's culture and safety systems. Separately it was illustrated in the Hickson and Welch case study, that a company open and willing to take positive and proactive steps was likely to have a close and collaborative working relationship with the Health and Safety Executive. But the ICL Stockline case study revealed the weaknesses of the system of regulation, which was easily and deliberately duped and evaded for two decades.

Over the course of the forty year period there was a growing campaign for reformed legislation to hold negligent employers to account. This concluded in the introduction of the Corporate Killing and the Corporate Manslaughter Act 2008 which no longer included the identification doctrine or the need to find a controlling mind. It was, of course, the identification doctrine that failed in the case of James Martell and Euromin.

[726] C. Sirrs,' Accidents and Apathy: The Construction of the 'Robens Philosophy' of Occupational Safety and Health Regulation in Britain, 1961–1974', *Social History of Medicine* 29:1 (February 2016), p. 68.

However, the new corporate manslaughter legislation was stripped of the directors' duties provision that many campaigners believed would provide the explicit positive duty on directors to inform themselves and ensure hazards were controlled in their organisations. Since the introduction of the new legislation there have been some successes but only small companies have been convicted. The new corporate killing law was essentially watered down and didn't do what it was originally advertised to do. This left many campaigners and families feeling short-changed. David Bergman of the CCA summarised his feelings on the new legislation:

> I took a position myself that [this doesn't], the law is something that we should applaud but in no way suggest that this is the solution to the problem. And in the end that was kind of the position the CCA took was yes we support this law but it doesn't deal with many other things, particularly in relation to directors' accountability.[727]

By way of conclusion of the legislative position, the option of gross negligence manslaughter has always been available to prosecutors, but there is significant evidence, as identified by Tombs and Whyte, that there is a general reluctance to prosecute corporate criminals. There is unlikely to be a change in attitudes and perceptions unless individual directors' personal freedom and wealth is put on the line. The emergence of new frameworks including the UN's Sustainable Development Goals, corporate social responsibility programs and environmental, social and governance standards provide a potential opportunity for increased focus on ethical business practices and more emphasis on the 'triple bottom line', which takes into account people and planet, in addition to profit. Good working conditions and social justice are both important aspects of a sustainable 'triple bottom line' business model.[728]

Finally, having illustrated the originality of this research, the characteristics of the modern industrial fatality, and the thematic conclusions of the thesis, all that remains is to set out the implications for future research. As discussed above, this thesis bridges a gap between labour history and industrial safety theory. There are significant opportunities to continue this with further research on the development of the health and safety industry, the health and safety professional,

[727] Interview with David Bergman, founder of the Centre for Corporate Accountability, conducted by Victoria Hill, 9 April 2021.
[728] B. Willard, *The New Sustainability Advantage: Seven Business Case Benefits of a Triple Bottom Line* (British Columbia, 2012), p. 9.

and in-depth historical research into the development and application of modern technological safety systems in the last fifty years. Labour history has a rich body of work relating to health and welfare at work, but research relating to physical hazards and traumatic injuries at work is sparse in contrast. Similarly there is an opportunity to further examine and analyse the meanings and effects of industrial fatalities in modern life. An example of this type of research can be seen in the oral history projects conducted with the families of men killed on Piper Alpha. Piper Alpha has received a significant amount of attention from historians, but there are thousands of other cases of industrial fatalities that could provide insights and understanding of these events and the prevailing social injustice they represent. Lastly, there are implications for both applied safety theory and for policy. This thesis serves as a reminder to industry that there is still work to do and that complacency is dangerous. There is also a pressing need for further research to explore the relationships between organizational culture, organizational learning, and the ramifications of past events on the development of future policies within the realm of industrial safety.

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