What is the role of a safety professional?
The identity, practice and future of the profession

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ABSTRACT

The role of a safety professional is central to the way organisations understand and manage safety since it is these expert roles that provide their organisations with their safety narrative. Yet despite the importance of this role, we understand very little about safety professional identity and safety professional practice – who are they and what do they do? This thesis asks the fundamental question for the existence of the safety profession – What is the role of a safety professional?

The primary research design involved a 6-month longitudinal ethnographic case-study of professional identity and safety professional practice within a large Australian energy company. 12 mid-level and senior-level safety professionals were interviewed monthly regarding their work, and this data was supplemented by continuous work observations by an embedded researcher throughout the study period. Through the research design, the results of this study provide a deeper and broader perspective of safety professional practice, than the existing descriptive research into the role of safety professionals.

Safety Professional identify is rife with tensions and contradictions that reveal the complex social and organisational challenges associated with the role. Safety Professionals are both friend and enemy of line management and the frontline workforce. Safety professionals through the practice of their role: align themselves and their work with management objectives, develop safety specific processes and practices, satisfy organisational needs at the expense of worker safety risk reduction, and lack a working connection between safety science knowledge and their safety professional work, decisions and advice.

Contemporary safety theory describes new ways for achieving safety in organisations that are largely at odds with current organisational safety approaches and existing safety professional practice. This thesis provides the first practical description of the role of a safety professional thorough a resilience engineering, safety-II, and safety differently theoretical lens. The conclusion from this research, is that organisations expect safety professionals to perform their existing role, and that the contemporary safety science literature demands them to work vastly differently. This thesis makes a significant scientific contribution to the understanding of safety professional identity, safety professional practice, and the future
design of the role of a safety professional which will narrow the gap between safety professional work and the safety of work.

STATEMENT OF ORIGINALITY

This work has not previously been submitted for a degree or diploma in any university. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the thesis itself.

David John Provan
September 2018
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Section 9.1 of the Griffith University Code for the Responsible Conduct of Research (“Criteria for Authorship”), in accordance with Section 5 of the Australian Code for the Responsible Conduct of Research, states:

To be named as an author, a researcher must have made a substantial scholarly contribution to the creative or scholarly work that constitutes the research output, and be able to take public responsibility for at least that part of the work they contributed. Attribution of authorship depends to some extent on the discipline and publisher policies, but in all cases, authorship must be based on substantial contributions in a combination of one or more of:

- conception and design of the research project
- analysis and interpretation of research data
- drafting or making significant parts of the creative or scholarly work or critically revising it so as to contribute significantly to the final output

Section 9.3 of the Griffith University Code (“Responsibilities of Researchers”), in accordance with Section 5 of the Australian Code, states:

Researchers are expected to:

- offer authorship to all people, including research trainees, who meet the criteria for authorship listed above, but only those people
- accept or decline offers of authorship promptly in writing
- include in the list of authors only those who have accepted authorship
- appoint one author as the executive author to record authorship and manage correspondence about the work with the publisher and interested parties
- Acknowledge all those who have contributed to the research, facilities or materials but who do not qualify as authors, such as research assistants, technical staff, and
advisors on cultural or community knowledge. Obtain written consent to name individuals.

Included in this thesis are papers in Chapters 2, 3, 4, and 5, which are co-authored with other researchers. My contribution to each co-authored paper is outlined at the front of the relevant chapter. The bibliographic details or status for these papers including all authors, are:

**Chapter 2:** Published paper

**Chapter 3:** Published paper
Provan, D. J., Dekker, S. W., & Rae, A. J. (2018). Benefactor or burden: Exploring the professional identity of safety professionals. *Journal of Safety Research, 66*, 21-32. [https://doi.org/10.1016/j.jsr.2018.05.005](https://doi.org/10.1016/j.jsr.2018.05.005)

**Chapter 4:** Paper under review
Provan, D. J., Dekker, S. W., & Rae, A. J. (2018). An ethnography of the safety professional’s dilemma: Safety work or the safety of work?. Manuscript submitted to *Journal of Safety Science*.

**Chapter 5:** Paper under review

**Appendix 1:** Published Paper (not included in main body of thesis)
REFLEXIVE STATEMENT

All research is shaped intentionally and unintentionally by the researchers, based on who they are. In particular, the ethnographic research reported in this PhD contains an inseparable link between myself and the research. This reflexive statement is my attempt to be open about me – my background and my experience prior to, and in conducting this research. In this section I reflect on my own discourse about the role of safety professionals linked to specific events in my career and during this research.

As for me, I am a white, upper middle class, 39-year-old male. I am married with three young children. I was born and raised in Brisbane, Australia and have lived in Australia my whole life. My entire adult career has been spent as a safety professional in large organisations with more than 10’000 employees.

Undertaking a PhD, with the research question – What is the role of a safety professional? – was intended to be the culmination of my 20-year safety career. I now understand the question I was asking better, and whilst I have provided answers for the current and future role, this question for me has become a new beginning. I will spend the rest of my career continually searching for better answers.

I commenced my undergraduate behavioural science degree with majors in Work and Health, and Psychology at Griffith University in 1997. A few years later at the age of 20, I became the safety manager for a manufacturing organisation where I sat in a glass ‘fishbowl’ office in the middle of the production floor. I was told by my first manager not to go out on the shop floor and interrupt the workers. I remember clearly asking myself, what is my role? Nothing I’ve learned in my university degree could help me here. Why would the role of a safety professional include not talking to the workers?

After fumbling my way through a few months of fixing safety documentation, I realised I needed to find a larger organisation with a safety team, that would enable me to learn from experienced professionals. I took a role as a safety officer within the Queensland Railway. The first target I was set by my boss was to spend as much time as possible in the field in the area that I was supporting. I was required to keep a field log of where I went, for how long, who I spoke to, and what I learned about the operation. My target was 50% field time in the first 6-months, because I was ‘useless as a safety officer unless I understood the operation
and had good relationships with the workers and managers’. The role of a safety professional was no clearer to me. My first two jobs couldn’t have been more different.

Whilst at Queensland Rail I spent several years with safety responsibility, not only for worker safety, but also for the oversight of the safety integrity of passenger rolling stock. This introduced me to safety engineering, system safety, safety cases, and the complexity of technical integrity management within complex socio-technical operating environments. This added a new dimension to the role of a safety professional – major accident prevention, not only occupational health and safety. I believed I needed more safety knowledge so completed my Masters degree in Safety and Risk Management at Queensland University of Technology. However again on reflection, nothing I learned there was useful for my continuing professional role. I became even more curious about my role. Why is there such a large gap between the education and practice of safety professionals?

By the time I was 25, I was the Head of Safety for Siemens across the Pacific region. This provided me with my first exposure to safety, and the role of safety professionals in other countries. It was also my first safety executive role, working closely with the CEO and shaping the safety roles of others. In this role, I was exposed to many industry sectors, including: construction, energy, mining, oil and gas, healthcare, industrial automation, and logistics. I responded to the call within the safety literature and across industry for safety professional’s to better understand business management, by completing a Masters of Business Administration with majors in Finance and Economics. I believe that what I learned during my MBA about the “non-safety” context and dimensions of organisational decision-making, made me a better safety professional. Why was non-safety education more useful knowledge for my role as a safety professional?

I decided that I wanted to work in a recognised safety-critical industry, i.e. aviation, aerospace, oil and gas, or nuclear power generation. In 2010, I joined Origin Energy as the General Manager Safety of the Oil and Gas Division. I started this role just two months after the BP Macondo Well Blow-Out in the Gulf of Mexico. Infamously, BP and Transocean were celebrating seven years injury free the day before an explosion that killed eleven workers. Is what we focus on in our role as safety professionals connected to the operational safety of our organisations? In my role at Origin I oversaw a peak safety workforce of almost 250 safety professionals. Why was there such a vast difference in the individual practice and effectiveness of safety professionals?
Throughout my career I have been a participant in the evolving role of safety professionals within organisations. Whilst at the time, I always believed I was practicing my professional role with discipline, on reflection my activities, decisions and advice lacked scientific rigor. Do safety professionals leverage safety science empirical evidence in their professional practice?

In 2014 the global price of oil collapsed, and it was my responsibility to make the decisions on how to reduce the financial cost of safety across the organisation. This was to be achieved by reducing the number of safety professionals by approximately 60%. At the time, I was actively engaged in exploring the Resilience Engineering, Safety-II, and Safety Differently theory, so I contacted Sidney Dekker to ask for his thoughts on the current and future role of safety professionals. We established that with the exception of a few critical studies, the safety science research into the role of safety professionals was extremely lacking. The attention to the role of safety professionals in the contemporary safety literature was equally absent. I no longer wanted to be solely a participant in the safety profession, but instead an active shaper of our future.

Since my undergraduate degree in behavioural science, my thinking about safety was heavily orientated towards sociological and psychological perspectives. Since 2012, my beliefs and thoughts about safety have been heavily influenced by the theory presented in the safety differently literature. My approach to undertaking this PhD, including my choice of universities and supervision team was determined by my views on safety theory.

My PhD commenced with asking the fundamental question, and from my perspective an existential question – What is the role of a safety professional? This question is relevant because of the context surrounding the profession – there is no universal requirement or core operational reason for organisations to have safety professionals, and many organisations operate successfully and safely without any dedicated safety professional roles. Therefore, safety professionals should be able to describe their role, and justify their right to exist as a profession as it relates to the safety of their organisation. We are not presently able to do make this justification.

On commencing my PhD, I naively thought that if we could change the way that safety professionals thought about safety and their role, that would change their practice, and then that would change the safety of their organisations. This approach is a neat and convenient solution, perhaps true in part, but social theory suggests is wildly insufficient. I realised part
of the way through my research, that I was taking a ‘bad apple’ or ‘human error’ approach to
the safety profession (which is ironic given my PhD supervision team), and a deeper
exploration of the role of safety professionals situated in their organisational context was
interesting and necessary. I had a unique opportunity to undertake an embedded longitudinal
ethnographic case study within my current organisation, to deeply explore my research
question. As is the nature with ethnographic research, my research sub-questions evolved
throughout my project, as each discovery lead to the next inquiry. It was a rewarding journey.

After an exhaustive literature review into safety professional practice, I still felt that
we knew very little about the underlying context of the role of safety professionals. The
profession in its current form was born out of burgeoning legal compliance obligations on
organisations throughout the 1990’s. To this day, compliance and the role of safety
professionals shares a complex relationship. Whilst the literature is dense with commentary
and speculation about what safety professionals, should and shouldn’t do, and be and
shouldn’t be, it was sparse with empirical research. Following some extensive survey-based
studies, we did have a good understanding of the tasks and education of safety professionals,
however we didn’t know how they personally internalised safety and their role as safety
professionals. I decided to start here, with the beliefs of safety professionals.

Whilst outwardly confident in their thoughts and beliefs about safety and their role as
safety professionals, I discovered deep unresolved internal conflicts and tensions. Safety
professionals are confused about their: training and education requirements, important
personal attributes, the interface of their role with organisational managers, and the dual
focus on enforcing compliance and empowering autonomy. I realised that the role of safety
professionals is deeply conflicted, and this is reflected in their beliefs about safety and their
thoughts about their role. However, I also realised that perhaps instead of the current focus
on resolving these conflicts that was being argued by the profession, and within the literature,
instead we needed to embrace each of these contradictions as role paradoxes. Working with
organisational paradox and multiple institutional logics required a deep understanding of
work in context, and the real-life situated practice of safety professionals.

The major phase of research for this thesis involved understanding the daily practice
of safety professionals. I commenced my 6-month embedded ethnographic case study in
January 2017. Mid-way through my data collection, I was observing one day-long meeting
between organisational managers and safety professionals and noted that there were no
items of conversation about specific safety risks facing the workforce. All of the discussion was regarding more generalised social, political and administrative safety activity. I looked back over my data for direct links between safety professional work and worker safety risk reduction, and both surprising and concerning at the time, I found these objective links to be largely missing. The work of safety professionals was fulfilling individual, social and organisational needs, it was just that the objective connection to safety risk reduction was remote at best. How could it be that safety professional work could be so removed from direct influence on worker safety?

Although not included specifically in the body of this thesis, Drew and I combined these observations with Drew’s previous work on: probative blindness, false assurance and risk assessment, as well as Sidney’s work on the bureaucratisation of safety. We developed a model of organisational safety work based on the theory of institutional work and titled the paper ‘Safety work vs the safety of work’ which we published in Safety Science. This model was developed during my data collection and initial analysis, and subsequently became the template model for the final analysis of my extensive interview and field data. The observed work of safety professionals was able to be categorised into this model of safety work, however more interesting were the underlying themes uncovered in relation to the practice of their current role. Following this research, I was able to form an answer to my primary research question concerning the current role of safety professionals.

I was also now also able to describe how the current role of safety professionals was different to, and in contrast with, contemporary safety management theory including: resilience engineering, safety-II, and safety differently. Given my beliefs, supported by increasing empirical evidence that this new approach to safety management in organisations yields greater safety benefits, the final part of my research was to specifically define the role of safety professionals through this theoretical lens.

Following the Columbia Space Shuttle Incident, David Woods had written a report and subsequent book chapter titled ‘How to design a safety organisation: A test case for resilience engineering’ that in 2006 was published in ‘Resilience Engineering: Concepts and Precepts’. This was my starting point, so I contacted Dave Woods and invited him to collaborate on this research project. I was extremely grateful for the opportunity to visit the Ohio State University to undertake an intensive collaboration that produced the final chapter of this thesis – The future of the Safety Profession. Whilst my ethnographic research had answered the question
relating to the current role of a safety professional, I had now also provided one possible answer to the same question relating to the future role of a safety professional.

There is a mutually re-enforcing relationship between the nature and practice of safety work in an organisation, and the role of safety professionals. It was therefore impossible to undertake this PhD research without exploring safety work across organisations more broadly than just through the role of safety professionals. In addition to the paper attached as an appendix to this thesis, I also collaborated on another paper describing ‘Safety Clutter: The accumulation and persistence of safety work that does not contribute to operational safety’, which was published in the Journal of Policy and Practice in Health and Safety. In this paper, several of the examples of safety work, and our theorising about the mechanisms that create safety clutter in organisations were drawn from this PhD research.

My personal and professional background influenced the design, conduct, and analysis of this research. As I commenced my research, I could not reliably answer the question – Would safety be compromised if there were no safety professionals? This uncertainty made me take a critical look at the profession, and my own assumptions, throughout this research. I am a sympathetic insider, and I believe that there is a valuable role for the safety profession to play in organisations. I want the safety profession to succeed and to have its value to contemporary organisations redeemed and legitimised.
CHAPTER 1: INTRODUCTION

There is no compelling evidence that safety professionals improve the safety of their organisations (Borys 2015). So, what is their role? Safety professionals currently perform activities that satisfy the diverse political, social, and administrative needs of the management of their organisations. However, the contemporary safety science literature suggests that the role of safety professionals needs to be focussed on understanding and responding to the dynamic nature of safety risk within their organisation (Woods 2006). The conclusion from this thesis, is that the role that organisations expect safety professionals to perform, is very different from the role suggested by contemporary safety science literature.

In this thesis I define the term ‘safety’ as ‘an ability for a system to perform its intended purpose, whilst preventing harm to persons’. Safety, or the lack of safety, is an emergent property of an operational system. Thus, safety can be thought of as the combined result of the decisions and action of all persons with an ability to interact with the operational system. ‘Safety management’ is a label that is used to describe practices that can direct, monitor and intervene in core operations for the purpose of generating or maintaining safety. Finally, and central to this thesis, the term ‘safety professional’ is used to describe roles within an organization that exist with the primary purpose of safety management, and that do not have a core operational purpose for the organization.

The origins of the safety profession can be traced back to the industrial revolution, however in its modern form it is only 30 years old. Prior to the 1980’s, safety roles in organisations fulfilled specific instrumental technical or operational functions surrounding safety risks that were core to the organisations continuing operations, e.g. safety personnel monitoring underground mine ventilation systems, safety personnel as ‘look-outs’ for trains during track maintenance activity.

The 1980’s can be described as the ‘decade of disaster’, where the international community witnessed several mass-fatality events across many safety critical industries, involving increasingly common technologies and services. Major incidents included: Piper Alpha (1985), Japan Airline Flight 123 (1985), Challenger (1986), Chernobyl (1986), and the Exxon Valdez (1989), etc. These occurred alongside the many national incidents across the mining, construction, and rail industries. International communities and governments
demanded action from private companies to improve safety, and to be able to demonstrate
that they were safe. Safety legislation was enacted and expanded by governments throughout
the developed world. Safety critical industries responded by rapidly increasing their
investments and efforts in safety, and the safety profession became the primary mechanism
to develop, implement and operate these safety programs and safety activities.
Organisational safety work expanded beyond its instrumental origins to include expressive
functions that focussed on shaping stakeholder thoughts and mindset about safety.

The evolution of the safety profession has been in response to the regulatory and
social expectations on organisations to comply with laws, and to not seriously injure workers.
Despite the increasing organisational interest in safety and the burgeoning number of safety
professionals, scant research attention has been directed to exploring the role of safety
professionals in organisations. One of the few large studies involved a survey of the safety
professional tasks of more than 5400 participants across 12 countries, which found a
remarkable similarity in their tasks and activities (Hale and Guldenmund 2006). These tasks
included: safety management system administration, risk assessment, safety audit, incident
investigation, and safety training. Instruction on how to perform such tasks makes up the
bulk of contemporary safety education programs. The purpose of this thesis was to explore
the underlying beliefs and purposes associated with safety professional work, and how
professional practice is situated within modern, complex, socio-technical organisations which
extends the one-dimensional views of safety professional practice (i.e. tasks and education)
reported in the existing literature.
1.1 RESEARCH QUESTION

The primary research question of this thesis was: What is the role of a Safety Professional? This question was intentionally broad as it offered the opportunity to conduct open inquiry through an ethnographic case study with practicing safety professionals. ‘Role’ in this context relates to the function assumed, or part played by a safety professional in a particular situation. This exploration of the situated practice of safety professionals enabled a deep understanding of the: what (task), why (intention), and how (relationships) of safety professional work. The primary research question (RQ1) was explored through 5 sub-questions (SQ1-5):

RQ1: What is the role of a safety professional?

SQ1: What are the institutional, relational and individual factors that shape the role of a safety professional?

SQ2: What is the professional identity of a safety professional?

SQ3: What are the objectives of safety professional work activities?

SQ4: What is the current role of safety professionals within organisations?

SQ5: What is the future role of a safety professional through the theoretical lens of resilience engineering, safety-II, and safety differently?

The above research sub-questions evolved during the research as the data from the study, drove the questions and research methodologies for each subsequent study. The research questions are applied to a broad range of safety professionals through this study, including specialists involved in health and safety engineering, as well as generalist safety management roles.
1.2 METHODS

1.2.1 Methodological Considerations

This thesis reports on four research studies that have been designed and conducted to answer the primary research question: What is the role of a safety professional? Chapter 2, 3, 4, and 5 each contain a methods sections relevant to the individual study being reported in the respective chapter.

The safety professional’s role exists within a complex and dynamic social system and their knowledge is socially situated and constructed through interaction with others. Therefore, the best way to understand the practice of safety professionals is to interact, observe and discuss with them their practice in their work setting. This ethnographic research method in turn requires a social constructivist epistemological approach (Creswell 2014). Whitehead (2004) describes ethnography as an interpretive, reflexive and constructivist process.

There is an absence of existing ethnographic research into the practice of safety professionals which limits our understanding of their role. The safety professional practice research that does exist, calls for the studies conducted in this thesis to be undertaken. Daudigeos (2013) found that staff professionals in real life context have received scant attention in the last three decades and there is significant value in understanding practical agency within organisations. Zanko and Dawson (2012) advocated the value of case studies that examine safety management in context and over time in particular workplace settings. Borys (2015) conducted a literature review on the value of safety professionals that raised the question of how individual and role factors are related to one another and combine for the safety professional to add value. Hale (1995) described the complex relationship between safety professionals and management within organisations, that until this thesis, had remained largely unexplored in practice.

To deeply understand safety professional practice in its organisational and social context, a small group of participants within a single organisation provided the reference. The research design for chapters 3 and 4 consisted of an embedded ethnography where the principal researcher was conducting own-company research as a full-time participant observer within the organisation being studied. Vaughan (2004) in her historical ethnography of NASA following the challenger safety disaster provides an example of the usefulness of
thick and rich individual case descriptions of human systems in advancing social and organisational theory.

1.2.1 Research Design

The research design, including the data collection and data analysis methodology, was based on established qualitative research methods (Creswell 2014), including ethnography (Glaeser 2005) and grounded theory (Corbin and Strauss 2014). Glaeser (2005) describes social life as a continual process of ‘action-reaction-effect sequences’ (“consequent processualism”) and the data collection methods utilised in this research answered these ‘how’, ‘why’, ‘what happened’ and ‘so what’ questions regarding safety professional practice. Glaeser (2005) proposes that social theorising should focus on the principles underpinning the dynamics between actions and reactions and flows or effects across space and time. This ‘reflexive ethnography’ approach adopted for the main study within this thesis, is consistent with complexity theory, social theory, and underscores the importance of the researcher being embedded within the organisational system, and the longitudinal method for data collection.

Grounded theory, supported by additional qualitative analysis techniques, including discourse analysis and template analysis, were used to analyse the data for chapters 3 and 4. Corbin and Strauss (2014) advise that grounded theory should be used when researchers are aiming to explain what is actually going on rather than describe what is happening. The aim of this study was to develop new theory and a grounded theory approach was the most suited primary method for analysing the qualitative data.

To deeply understand the complexity of the structure, agency and identity factors of safety professional practice a small group of participants within a single organisation provided the case study sample (Yin 2017). Flyvbjerg (2001) in a chapter titled ‘the power of example’ demonstrates the utility of a case study approach to social science research (cited in Hopkins 2016) All ethnographies impact the subjects of investigation by their closeness and interaction with research participants (Glaeser 2005). It is understood and was expected that the data collection processes impacted the participants in the study throughout the research period. These impacts on both the participants and the researcher are reflected in the conclusion of chapters 3 and 4.
1.2.2 Participants

The participants in this study were mid-level and senior-level safety professionals working within a single large Australian energy organisation. These nested case study (Yin 2017) participants were currently performing a diverse mix of dedicated generalist and technical specialist safety roles. All of the roles presently performed by the participants are classified as OHS Professional Level 2 and Level 3 positions in accordance with ‘The OHS Professional Capability Framework’ adopted by the International Network of Safety and Health Practitioner Organisations (INSHPO) (Pryor, Hale et al. 2015). Eleven participants were male, and 1 participant was female. Participants had worked in full-time safety professional roles for between 2 and 20 years with an average of 12 years of experience. Eight of the 12 participants had tertiary safety qualifications.

1.2.3 Ethics

Ethical clearance was obtained prior to conducting this research. The following ethics approvals cover all of the research reported in this thesis.

GU Ref: 2016/614 Chapter 3 and chapter 4
GU Ref: 2017/466 Chapter 5

The key ethical consideration relevant to this research is that the principal researcher has a conflict of interest between their role as an employee and their role as a researcher, which was mitigated through the research methods and disclosed to participants in the information sheet and informed consent. Notwithstanding this ethical consideration, the benefits of the study outweighed the potential risks to participants.

Final completion reports have been submitted in relation to both of the above ethics approvals, and no further research is being conducted under these approvals

1.2.4 Own Company Research

An important methodological consideration for this study was that the principal researcher was conducting own company research. The role of the principal researcher within the organisation and their intimate knowledge of the organisational system being researched provided a unique opportunity to develop a new theory of safety professional
practice. The benefits of own company research for this ethnographic study were compelling in that the researcher had access to participants and data that would be unknown or unavailable to external researchers. This access and data enabled a thick and rich description of the beliefs and practice of safety professionals within an organisation reported in Chapter 3 and 4.

The ethical, research integrity and methodological issues with own company research have been described in numerous publications (e.g. Coghlan and Brannick 2014) and the research design for this study was considerate of these limitations. The literature review informed the factors to be explored, and the research design was purely observational to mitigate principal researcher bias and ethical concerns. This own company ethnographic research case study filled a current gap in the empirical literature into the real-world practice of safety professionals.
1.3 OVERVIEW OF THESIS

The following section outlines each main chapter of the thesis and the contribution to the research questions.

Chapter 2: Safety Professional Literature Review

Chapter 2 investigates the existing body of literature related to the role of safety professionals within organisations. More than 100 articles were reviewed and thematically analysed to identify the factors shaping the practice of safety professionals. This review of the literature answered SQ2 and provided the first insight, based on the existing literature, towards an answer for RQ1. Much of the literature described the institutional and social factors that shape the role of safety professionals, and little attention was given to the individual factors. Discussion about the role of safety professionals was absent from most independent safety disaster investigation reports. The role of safety professionals received brief mentions in the independent accident reports of: Pike River Coal Mine (safety professional capability), Texas City Oil Refinery (safety professional influence on management) and the NASA Challenger and Columbia incidents (safety professional involvement in operational decisions). The findings of this literature review are reported in chapter 2. Given that the role of a safety professional appeared to be shaped extensively by factors outside the control of the individual safety professional, I was curious about what safety professionals actually thought and believed about safety and their role. Before progressing any further with the research into safety professional practice, it was important to conduct an exploration of safety professional identity.

Chapter 3: Safety Professional Identity

Chapter 3 investigates the thoughts and beliefs of safety professionals regarding safety and their role within organisations. The research design for this chapter involved four open ended interview questions that provided participants the opportunity to explore their personal background, safety ideology, organisational role, and success criteria. Whilst on the surface the responses and descriptions of participants seemed largely consistent and rational, upon analysis of the data, deep tensions and contradictions were identified. The safety professional identity findings were related to a 5-factor model of professional identity:
experience, motives, values, beliefs, and attributes (Ibarra 1999). Understanding the thoughts, beliefs and motivations of safety professionals provided the individual context for the subsequent longitudinal ethnography of safety professional practice.

Chapter 4: Safety Professional Practice

Chapter 4 investigates the practice of safety professionals. The research design for SQ3 and SQ4 involved a 6-month longitudinal ethnography which included monthly interviews and on-going work observations. SQ3 applied a model of safety work to identify the objectives of the individual tasks of safety professionals. Thematic analysis of the interview and observation data provided an answer to SQ4 and the broad current role of safety professionals within organisations. Following the research reported in chapter 4, the first answer is proposed for the primary research question (RQ1). The role of a safety professional is ‘to support line management to implement safety processes and practices that meet organisational safety needs’.

During the data collection and analysis of the research reported in chapter 4, a co-authored a paper with Dr. Drew Rae titled: ‘Safety work versus the safety of work’ was published. This paper is not included in the main body of my thesis; however, it has been attached as Appendix 1 and should be read in conjunction with the results presented in chapter 4.

Chapter 5: The Future of the Safety Profession

Chapter 5 investigates one possible future of the safety profession. A transformation of the safety professional role is proposed through the theoretical lens of resilience engineering, safety-II, and safety differently. This chapter outlines the negative organisational and safety professional role consequences of traditional (safety-I) approaches to organisational safety and the role of safety professionals. The future role of a safety professional is re-defined as a ‘guide’ rather than as a ‘controller’. Following the research reported in chapter 5, a second answer is proposed for the primary research question (RQ1). The role of a safety professional is ‘to identify the changing shape of risk and facilitate action before people are harmed’.
Chapter 6: Conclusion

Chapter 6 is an overall conclusion to the thesis. It provides a summary of the key findings and how the research has addressed each of the research questions. In addition, chapter 6 details the scientific contribution and the practical implications of the thesis. This section concludes with an outline of a forward research agenda for the role of safety professionals within organisations.

Chapters 2, 3, 4 and 5 are constituted by individual papers that have either been published or submitted for publication in peer reviewed academic journals. Each of these chapters starts with a summary detailing the rationale for the study and concludes with an afterward of the outcomes for the research aims. Each of these chapters involve papers that have involved other researchers and so my individual contribution to each paper is detailed and all co-authors are acknowledged. The primary research question and the overall thesis direction and design is the result of my individual decisions, under normal PhD supervision.

1.4 THEORETICAL OVERVIEW

This thesis explores the role of safety professionals through a social constructivist worldview using ethnographic research methods. Social constructivism refers to the institutionalisation of concepts, models and knowledge through repeated roles and interactions within a social system that embeds meaning and reality for individuals (Berger and Luckmann 1966). The research conducted in this thesis into the role of safety professionals is situated at the intersection of three complimentary disciplines of social science: social theory, organisational theory, and safety theory. Social theory provides the lens on individual and collective sense making and action within societies – organisations are first and foremost complex networks of people. Organisational theory provides a theoretical perspective on organisational and institutional life, within which the role and practice of safety professionals is situated. Specifically, relevant to the role of safety professionals are the organisational theories of: institutional work, institutional logics and the sociology of the professions. This body of organisational theory draws heavily on the origins of social theory, social psychology and sociology. Safety theory provides an insight into the specific facet of organisational life being attended to by safety professionals. Safety theory helps us to understand the mindset, goals and approaches employed by safety professionals to conduct their work.
Existing theory and research into the safety profession comes largely from a positivist worldview and has sought to understand the behaviour and skills of safety professionals as separate and distinct from their organisational context and social setting. This historical approach, with some exceptions (e.g. Hale 1995, Daudigeos 2013, Pryor 2014), has severely limited our understanding of safety professional practice, and organisational safety more broadly. This thesis is unique in respect of its depth of exploration of the:

1. Daily practice of safety professionals within a large complex organisation
2. Beliefs and mind-set of safety professionals in relation to safety and their role
3. Individual and collective sense-making regarding safety work objectives
4. Shaping of institutional logics related to safety professional practice
5. Understanding of safety professional practice as institutional work
6. Real-life relationships between safety professional work and operational safety

This research has enabled aspects of both organisational theory and safety theory to be tested and extended. The following section provides a brief theoretical overview of the social, organisational, and safety theory relevant to the research design and findings of this thesis.

1.4.1 Social Theory

Social theory provides a framework for understanding the complex individual actions of people, and their relationships within social communities. The role of a safety professional is shaped by both institutional (‘structure’) and individual (‘agency’) factors. Structure describes the patterned arrangements of the organisation (norms, relationships, rules) that enable or constrain the actions of individuals within the system (Bourdieu 1977). Agency is the capacity of individuals to act independently of this structure (Barker 2005). In relation to this thesis, structure and agency provides the reference for the detailed exploration of the institutional and social structures, and inter-personal relationships, particularly between safety professionals, line management, and frontline workers.
1.4.1.1 Structuration

Safety professionals are continually both shaping their world, and being shaped by their world, such that their professional practice is situated within the duality of structure and agency. The design of this research reflects existing theory about the social processes of organisations, specifically the social theory of ‘structuration’ (Giddens 1984). Structuration follows the earlier theories of ‘habitus’ (Bourdieu 1977) and the ‘social construction of reality’ (Berger and Luckmann 1966) and is concerned with how social systems should be conceptualised (Giddens 1984). Structuration theory proposes that social practice and human action occur as a result of the inseparable intersection of structures and agents (Giddens 1984). Structure should not be considered solely as rules and resources independent of human subjects, but rather as the situated activities of human agents produced and re-produced through interaction (Giddens 1984).

Analysing the ‘structuration’ of social systems involves understanding the conditions governing the knowledgeable activities of situated actors, who draw upon rules and resources in diverse action contexts (Giddens 1984). Agents and structures are not independent phenomena, but rather a duality, and the structural properties of social systems are both medium and outcome of their situated practices (Giddens 1984). Structuration theory includes the concept of ‘practical consciousness’, through which human agents pay attention to events going on around them and relate their activity to those events through a process of ‘reflexive monitoring’ (Giddens 1984). This thesis explores the structure, agency and identity factors that safety professionals consciously consider relevant to their rational determination of action, and provision of advice.

Structuration theory proposes a close link between agency and power. Agency refers to the ability of a safety professional to intervene in the organisation with the effect of influencing a specific process or state of affairs (Giddens 1984). Their effectiveness in expressing agency is dependent on the “two faces of power” described by Bachrach and Baratz (1970) as the ‘mobilisation of bias’ that is built into organisations (bureaucracy), and the capability of individual actors to enact decisions (ethical responsibility).

1.4.2 Organisational Theory

Modern organisations are socially and institutionally complex. Contemporary organisational theory provides a background understanding of how safety professionals
might navigate their organisational lives. Safety professionals are agents within organisations, therefore, the organisational science literature provides a useful reference to understand their practice. Specifically, the theories of institutional logics, institutional work, and the sociology of the professions, provide important and useful insight to frame this research.

1.4.2.1 Institutional logics

Organisations are shaped and sustained thorough the collective sense making and shared practices of the individuals within them. This socially constructed context and patterns of practices, assumptions, values, beliefs and rules by which individuals within organisations provide meaning to their social reality is termed institutional logics (Thornton and Ocasio 1999). The theory institutional logics highlights the importance of systems of meaning, and how interests, identities, and practice models take shape in wider socio-cultural contexts (Dobbin 1994, Thornton and Ocasio 1999, Lounsbury and Ventresca 2003, Lounsbury 2008). It is these social contexts that create and maintain the cognitive, normative and regulative pressures that fundamentally shape organisational behaviour (Scott 2001). The theory of Institutional logics emphasises the integration of structure and agency, or the material and the symbolic (Zilber 2016).

The theory of institutional logics provides a theory for understanding how the institutional work of practitioners in organisations is created by, and creates institutional logics (Zilber 2016). Institutional logics offer the set of cultural justifications that justify an individual’s practices and ways of being within their organisation (Friedland and Alford 1991). These institutional logics are decomposed and recomposed in creative ways through individual and collective action (Thornton, Ocasio et al. 2012, Zilber 2016). However, the study of micro level institutional logics – that of individuals and their daily lives within organisations – is largely missing from the organisational research (Barley 2008, Powell and Colyvas 2008, Hallett 2010, Cloutier and Langley 2013, Cornelissen, Durand et al. 2015, Zilber 2016).

Institutional logics are not observable features of organisations themselves. They are reflected in structures, practices and behaviours (Thornton and Ocasio 2008). Institutional logics are contextualised through understanding their relational, temporal and performative dimensions (Garud, Gehman et al. 2014). Since institutional logics themselves cannot be observed, they must be inferred through interpretations of institutional work and the actions of the individual actors who perform it.
1.4.2.2 Institutional work

Whereas Institutional logics refers to shared values and beliefs, institutional work refers to tangible activities. The duality of Institutional logics and institutional work can be understood as a reciprocal relationship where they simultaneously are the cause of, and creation of each other. To understand institutional work, we must understand institutional logics and vice versa.

Institutional work is the collection of formal and informal action within an organisation that attempts to shape facets of organisational life (Lawrence, Leca et al. 2013). Institutional work can be further defined as “the purposive action of individuals and organisations aimed at creating, maintaining and disrupting institutions” (Lawrence and Suddaby 2006, p.215). Lawrence and Suddaby (2006) argue that the professions within organisations are the ultimate agents of this institutional work.

Operational work more generally can be described as the tasks and activities within the organisation that contribute directly to the production and sale of goods and services. Alongside this core operational work, sits institutional work. For this reason, it is largely the peripheral professions within organisations that are responsible for conducting, or requiring others to perform institutional work (Scott 2008). Therefore, safety professional work activities can be categorized as institutional work (Rae and Provan 2019).

The difference between ‘institutional work’ and ‘operational work’ can be seen in the example of organisational safety management activity. In that safety is an emergent property of operational work, however organisations are increasingly attempting to manage this facet of organisational life as if it were an objective in itself (Rae and Provan 2019). This introduces a competing institutional logic or organisational paradox regarding the trade-off between performing safety work and performing activities that directly contribute to operational work. Since safety work competes with the productivity and cost of operational work, then it needs to be legitimised in ways other than its contribution to the core organisational logics related to selling and supplying goods and services to customers. Thus, we understand the reciprocal relationship between institutional work and institutional logics.

Institutional work is increasingly becoming a central topic of enquiry within the organisational science literature. The study of institutional work is an important part of the study of organisations, particularly in the last two decades with the growth in the professionalisation of the workforce (Barley 1996). An example of this growth in
professionalisation of the workforce, is the exponential growth in the safety profession over the this 20-year period (Provan, Dekker et al. 2017).

1.4.2.3 The Sociology of the Professions

The role of the professions in shaping and performing institutional work is an important object of enquiry for understanding the functioning of organisations (Reed 2018), and in the case of safety professionals, provides a useful platform to explore organisational safety more broadly.

Since the 1960’s professionals have progressively transitioned from almost exclusively working within large professional firms to being employed and embedded within organisations (Suddaby and Muzio 2015). Organisations even created their own professions (Baron, Dobbin et al. 1986), and the safety profession is an example of a profession created by industry in response to societal and regulatory pressure being placed on organisations. (Provan, Dekker et al. 2017).

Sociological theory and research into the professions throughout the 1970’s and 1980’s showed the conflict that emerged when the common professional values of ‘autonomy’ and ‘independence’, clash with the controlling structures of bureaucratic organisations (Scott 1965, Haug 1973, Oppenheimer 1973, Sorenson and Sorenson 1974, Derber 1983, Derber and Schwartz 1991). Although this conflict in values exists, professionals were sometimes able to buffer themselves and their work from these controlling structures to preserve their core values (Nelson and Trubek 1992). In fact, the ability of professionals to separate themselves and their work, and take control of key structures and processes has been linked to the success and effectiveness of their work (Ackroyd 1996, Reed 1996, Faulconbridge and Muzio 2008). Safety professionals attempts at separating their professional activities within organisations are evident through dedicated safety management systems, safety training, safety incident management, and safety improvement programs.

The professions in organisations are progressively adopting the institutional logics of management, for example, in the wake of the NASA Challenger Accident we understand how the thoughts, actions, and logics of safety engineers aligned with those of management (Vaughan 1997). Even professional service firms are adopting the logics of corporations (Brint 1994, Leicht and Fennell 2008, Faulconbridge and Muzio 2009). Professional identities within
professional service firms now emphasize ‘efficiency’ and ‘commerce’ at the expense of the more traditional values of ‘ethics’ and ‘public service’ (Suddaby, Gendron et al. 2009, Suddaby and Muzio 2015).

Some of the literature on organisational professional conflict suggests that the professions are a dominant and superior institutional form that can resist bureaucratic pressure in the accomplishment of their objectives (Suddaby and Muzio 2015), while a competing hypothesis called ‘adaptation theory’ suggests that the professions have fully adapted and submitted to the bureaucracy as a superior institutional form (Wallace 1995). The safety professional literature very much suggests that Wallace is right when it comes to the safety profession (Provan, Dekker et al. 2017).

### 1.4.3 Safety Theory

Safety theory is largely divided between two competing schools of thought, labelled by Hollnagel as Safety-I and Safety-II. Our historical, and to a large extent current approaches to safety management, have relied on top-down bureaucratic control over the functioning of organisations and the activities of workers. Such standardised, normative organisational approaches include: safety management systems (Amalberti 2001), behavioural safety (Geller 2005), and safety culture (Hudson 2007). As a result, contemporary organisations, particularly larger companies involved in highly regulated activities, have evolved into complex bureaucracies.

This debate between centralisation and decentralisation is not new within the safety or organisational literature. Perrow (1984) argued that the conventional engineering approach to system safety would ultimately fail as systems became increasing complex and new approaches were required. The high reliability organisation literature promoted the need for non-traditional organisational capacities such as: sensitivity to operations and a commitment to resilience (Weick, Sutcliffe et al. 1999). Amalberti (2001) discussed the challenges of purely centralised approaches to safety in improving the safety of some industries and technologies.

The traditional top-down approaches to safety have been continually expanded in an attempt to eliminate all injuries in organisations through a ‘Zero Accident Vision’. The Zero
Accident Vision was recently adopted by the ILO and all member countries at the XXI World Congress on Safety and Health as Work 2017.

Some authors have suggested that improving safety in modern organisations requires strategies that are significantly different to historical safety and organisational practices (Borys, Else et al. 2009, Dekker 2014, Hollnagel 2014). This alternate safety theory has been increasingly described in the safety science literature over the past fifteen years, and is commonly labelled as: resilience engineering, safety-II, safety differently, or simply the ‘new view’ of safety. This approach to safety has evolved from the French ergonomics tradition of distinguishing between “Activite” (job) and “Tache” (work task) and “tache formelle” (formal work) and “tache informelle” (informal work) (Daniellou 2005). These distinctions between the description and practice of work, has been translated in the safety science literature as ‘work as imagined’ (WAI) and ‘work as done’ (WAD) to distinguish between the normative top-down views of work captured in management systems and behavioural safety programs, and the descriptive bottom-up views of how work is performed by workers (Hollnagel, Woods et al. 2006). These theories emphasise the need to understand the complex functioning of organisations and rely on all people’s expertise and insights to support normal work as actually done to improve safety (Hollnagel 2008). Rather than prescribing safety requirements, and managing conformance to them to eliminate safety problems, safety differently argues the need to study how success is created, and the local adaptations necessary to make it so (Dekker 2014). Organisations need to understand why things go well, and enhance their capacities to sense and adapt to the ever-changing situations that they face (Woods, Branlat et al. 2015).

Safety theory has direct implications for the current and future role of safety professionals within organisations. A further comprehensive overview of safety theory is provided in chapter 5 as it is directly relevant to the historical and future approach to safety in organisations and the role of safety professionals. A systematic review of the safety professional literature is provided in chapter 2.
2.1 STATEMENT OF CONTRIBUTION OF CO-AUTHORED PAPER

This chapter includes a co-authored published paper. The copyright has been transferred to Elsevier, however, authors have the right to include their article in a thesis or dissertation. The bibliographic status of the co-authored paper, including all authors, is:

2.2 RATIONALE FOR THE STUDY

My starting point for this thesis was to attempt to understand everything that had been academically published about the role of safety professionals. A systemic literature review or summary paper reporting on safety professional practice did not exist, as they do for many other safety topics, for example, individual safety theories, safety risk management, safety leadership, and safety culture, etc. Before finalising my research design to explore the role of safety professionals I wanted to understand the studies that had been previously conducted and develop a clearer understanding of where my research question fit into the existing literature.

This chapter reports on a comprehensive systematic literature review which reviews more than 100 publications relating to safety professional practice. I found that the literature mainly consisted of theory and commentary about the role of safety professionals. Given my professional experience, I felt for the most part that these existing models of safety professional practice were gross oversimplifications of the role. The literature with a few exceptions lacked high-quality empirical research, and therefore there were significant gaps, misconceptions, and contradictions in our understanding of the role. Many of the research studies that had been performed, were standard surveys reporting on the work tasks and education programs of safety professional, not explorations of safety professional practice.

I chose to apply three macro categories derived from social theory – Institutional, relational, and individual, to the themes identified in the literature review. This helped me to develop my understanding of how the existing literature reported the interplay of structure and agency, as well as the relationships between the safety professional and other people within the organisation which I knew to be an important consideration for practice.

My review of the literature took a full year and, and the project seemed to never end. The first draft of the literature review was more than 25’000 words and considerable additional effort then went in to refining the themes, consolidating the sources of similar and contradicting findings, and preparing the paper for publication. Ultimately the paper presented in the chapter is less than half of the original length. Whilst attempting an exhaustive review of the existing literature on safety professionals proved to be an ambitious objective, I believe that this literature review laid an essential foundation for the research design of the thesis, and my ability to collect and deeply reflect on the data.
Bureaucracy, influence and beliefs:  
A literature review of the factors shaping the role of a safety professional

2.3 ABSTRACT
Safety professionals have been working within organisations since the early 1900’s. During the past 25 years, societal pressure and political intervention concerning the management of safety risks in organisations has driven dramatic change in safety professional practice. What are the factors that influence the role of safety professionals? This paper reviews more than 100 publications. Thematic analysis identified 25 factors in three categories: institutional, relational, and individual. The review highlights a dearth of empirical research into the practice and role of safety professionals, which may result in some ineffectiveness. Practical implications and an empirical research agenda regarding safety professional practice are proposed.

2.4 INTRODUCTION
Since Hale’s (1995) reflections on the role of safety professionals in this journal, the safety profession has grown in size, has spread across ever more industries, and has become increasingly bureaucratized on the back of ballooning regulations, organisational processes and a separation or professionalization of the safety role (Townsend 2013, Dekker 2014, Pryor, Hale et al. 2015, Righi, Saurin et al. 2015). In the present review, we identify, collate and assess the past 25 years’ worth literature on the practice of safety professionals. Consistent with Hale’s original intentions, ‘safety professional’ is used for roles whose primary purpose is to provide safety advice which may focus on specific hazards (e.g. process, transportation, ergonomics, industrial hygiene), or constitute a generalist safety role to coordinate advice and support (e.g. safety management systems, culture, contractor management, emergency response).

The job design, title, objective and ‘mission statement of safety professionals varies widely across industries and within organisations. Brun and Loiselle (2002) found more than 100 different titles. Hill (2006) identified no common definition of practice or common terminology to explain what safety professionals do. Even line managers may not
understand, nor does the general population (Lawrence 2008, Ferguson and Ramsay 2010). The job might involve hazard recognition, evaluation and control (Ferguson and Ramsay 2010), improving working conditions and compliance (Walters 1999), ensuring good personal safety decisions (Leemann 2014), developing safety culture and reducing injuries (Johnson 2014), influencing managers to improve safety (Borys 2000), preventing injuries and fatalities (Manuele 2016), monitoring the organisation’s resilience (Woods 2006) and building safety awareness and infrastructure (Blewett and Shaw 1996). Given these disparate objectives of safety professional roles within organisations, having a common understanding and evaluation of safety professional effectiveness remains elusive for both organisations and individuals themselves.

The limited research that has been conducted on safety professionals since Hale (1995) is dominated by studies concerning tasks and education (e.g. Nedved and Booth 1982, Dejoy 1991, Brun and Loiselle 2002, Blair 2004, Hale, Bianchi et al. 2005, Hale and Guldenmund 2006, Wu 2011, Chang, Chen et al. 2012). However, within the last five years, some researchers have begun exploring the practice of safety professionals from an organisational and social perspective through the use of ethnographic research methods (e.g. Olsen 2012, Daudigeos 2013, Pryor 2014, Reiman and Pietikainen 2014). Whereas these studies offer some insights into the variability and complexity of safety work, they provide no consistency in their reflections on, and possible critique of, the expectations and actualities of the role of safety professionals in organisations today.

The present review aims to; synthesize the existing disparate literature on Safety Professionals within organisations, provide practical implications for safety professionals and organisations, and contribute a set of specific questions that the literature raises, but requires further empirical investigation to answer. A comprehensive literature search was undertaken using Science Direct and EBSCOhost as the host databases. Keyword searches used combinations of common terms, for example: ‘safety manager,’ ‘safety practitioner,’ ‘safety professional,’ ‘safety officer,’ ‘safety advisor,’ ‘OHS Manager.’ Google Scholar was used to identify additional cross-discipline literature. Citations and references were then used to probe related publications. The literature review identified approximately 100 publications that contributed commentary, theory and, or empirical research concerning the practice of safety professionals. A thematic analysis was conducted through a social theory lens as organisations are primarily complex human systems. A cognitive map was used to organize
these topics into twenty-five factors, eight themes and three categories that relate to and shape safety professional practice (see figure 1). The categories were termed ‘institutional,’ ‘relational’ and ‘individual’ to describe the primary association of these factors with either the environment, practice or person. Institutional factors relate to the organisation, its social and political context, and how it is managed and operating. Relational factors point to the interaction between the safety professional and other personnel and processes within the organisation. Individual factors are internal to the safety professional, their capabilities, knowledge, and beliefs. These categories align with widely used social theory frameworks for ‘structure,’ ‘agency’ and ‘identity.’

![Figure 1: Factors shaping safety professional practice](image)

### 2.5 INSTITUTIONAL FACTORS

Safety professionals’ roles are shaped by the institutions they interact with – government regulators, academic institutions, and professional bodies, as well as the features of the organisations they work within. These factors guide, constrain and enable the formation of a professional identity. Institutional factors form a large part of the theoretical discussion in the literature; however, there has been a limited collection of empirical data relating these to safety professional practice.
2.5.1 Safety Profession

Despite some evidence and argument to the contrary (Almklov, Rosness et al. 2014), the professionalization of the safety role is widely considered necessary for advancing the quality of safety professional practice and improving the regard for safety professionals. Professionalization involves service orientation, a code of ethics, a specialized body of knowledge, academic education and qualification, and continuous learning (Ferguson and Ramsay 2010). Safety professional certification dates from 1970 in the United States through the American Society of Safety Engineers (Gorbell 1970). Today there is a global network of safety practitioner organisations and institutes known as INSHPO, and many countries have some form of professional standards and a safety professional certification scheme. In response to the growth in the safety profession, academic education programs for safety professionals commenced in the early 1990’s, but with widely varying curricula and differing internship or fieldwork requirements (Marshall and Mackey 1995, Arezes and Swuste 2012). Some graduate programs were traditionally entirely technically focused which mirrored the tasks and functions of safety professionals in the workplace as passive advisors on specific safety matters (Nedved and Booth 1982, Swuste and Arnoldy 2003, Ferguson and Ramsay 2010, Wybo and Van Wassenhove 2016). The literature repeatedly recommends the inclusion of traditional management (i.e. MBA curriculum) alongside risk management, with a focus on; communication, management of change, influence without authority, human behavior, decision-making, negotiation, conflict management, coaching and consulting, as well as safety principles (Marshall and Mackey 1995, Adams 2000, Adams 2003, Swuste and Arnoldy 2003, Ferguson and Ramsay 2010, Pearson 2016, Wybo and Van Wassenhove 2016). In addition to technical, management and interpersonal content, safety programs should include psychology and sociology (Swuste and Arnoldy 2003, Wybo and Van Wassenhove 2016). In the mid-1990’s only 50% of tertiary safety courses contained psychology units (Taylor 1995).

The relationship between education, experience, and career progression seems less clear than in many other professions (i.e. engineering, medicine, law, finance). Adams (2000) argued there is a sharp difference between how practitioners and educators view the safety professional role, and this is most evidenced by the gap between how professional associations and academic institutions view safety professional competence, as opposed to the practitioners themselves. In the UK, Smith and Wadsworth (2009) found that while 88% of practicing safety professionals believed that they had sufficient technical knowledge to
provide advice, only 21% were degree qualified. Education is not a major determinant of job content, and it seems practitioners with vastly different levels of education from certificate to Ph.D. carry out the same tasks within their organisation (Hale and Guldenmund 2006). As little as 20% of safety professionals are tertiary qualified (Smith and Wadsworth 2009) and academic programs are not comprehensively reflective of the skills safety professionals require.

Safety professional associations are implementing barriers for entry into the profession based on education and experience. Previously, the requirements varied widely. Fowler, Sauer et al. (1998) undertook a review of safety professional job advertisements in Australia during 1994-1995 and found that 60% specified tertiary safety qualifications and 73.5% required safety experience. Even if certification of safety professionals is credible evidence of skills and knowledge, Smith and Wadsworth (2009) found that organisations with certified safety professionals had better management of technical issues (e.g. chemicals, stress, vehicles) but poorer overall hazard management. This is consistent with the bias toward academic education and with that of safety certification towards technical competency. Garrigou and Peissel-Cottenaz (2008) studied practicing safety professionals in France where there was no national professional certification program. In this study of 372 participants, the researchers concluded that one-sixth of respondents were in a position of great difficulty in their role, described as professional distress. These findings included the following: 25% had poor cooperation with stakeholders, 36% believed they were not part of an organisation that focused on safety, 45% felt isolated, 54% felt their company often compromised on safety, and 44% were not invited to the management committee. Alarmingly, only 2.5% (9 of 372 participants) felt at ease negotiating safety issues with management.

2.5.2 Regulation

A primary role of safety professionals is to enable their organisations to comply with the law (Olsen 2014). Increasing goal and risk-based legislation has coincided with a huge increase in demand for safety professionals. Organisations that previously were required only to implement action/state requirements now require expertise to interpret and translate legislation into company actions that demonstrate compliance (Hale, Borys et al. 2015). Such regulatory compliance activity increasingly dominates the tasks and activities of safety
professionals (Dekker 2014).

Criminal penalties for breaches of vague and broad obligations (Niskanen, Louhelainen et al. 2014), for example: ‘ensure a safe system of work’ and ‘ensure hazards are managed,’ coupled with personal criminal penalties, have driven the safety approach of senior management and—consequently—the safety profession. The compliance role of safety professionals has shifted from meeting legal obligations to protecting the company and its officers (Ryan 1989), which may occasionally be incompatible with the need to engage with regulators. Niskanen, Louhelainen et al. (2014) found that safety professionals were less likely than workers to believe that workers should talk freely to government safety inspectors.

The European Network of Health and Safety Professional Organisations (ENSHPO) conducted the largest study on the role and tasks of safety professionals included in the present review. 5495 safety professionals from 12 countries completed a 173-item questionnaire on the range and frequency of tasks performed, hazards advised on and stakeholder relationships (Hale and Guldenmund 2006). 22 tasks were carried out by more than 60% of safety professionals in all countries, with the top tasks being: “check compliance with policy and law,” “risk assessments,” “job safety analysis,” and “develop company policy.” These tasks provide clear evidence of the significant influence of safety regulation on the role of a safety professional throughout the developed world. That said, many believe that compliance is insufficient to manage safety (Hill 2006) or has no impact on safety improvement (Shannon, Robson et al. 1999). However, this relationship between compliance and safety remains vigorously debated in the contemporary safety literature. Safety compliance activity shaping the role of safety professionals has expanded from its primary purpose to improve safety within organisations to; supporting liability management for company officers and meeting bureaucratic requirements not directly linked to managing safety risks.

2.5.3 Performance Measurement

Saying ‘good safety is good business’ has become popular (Mottell, Long et al. 1995), based on the belief that minimizing operational risks enhances productivity or protects against financial losses. Swuste (2008) suggests that the relationship between safety and financial performance is not clear, citing the Bhopal Gas Disaster in 1984 and claiming the catastrophic incident left the company financially better off after the incident than while
operating the asset. Only one-third of safety professionals believe that safety gets consideration equal to financial objectives (Smith and Wadsworth 2009). In the absence of safety fitting neatly into a model of competitive profit, organisations stumble to express their safety goals. They may care most about high consequence events but express their goals using largely irrelevant low consequence event counting (Hopkins 2000, Dekker, Long et al. 2016), leaving safety professionals to reconcile their personal understanding of what is important, their understanding of the organisation’s financial goals, their understanding of the organisation’s safety goals, and the formal expression of these. The goal conflict present in safety professional roles is more significant than other professions, which is exacerbated by the on-going debate in the safety literature concerning how to measure safety, and they may be ill-equipped to manage these demands.

2.5.4 Safety Bureaucracy

Safety professionals are central to the development and administration of safety bureaucracies within organisations. These internal organisational safety bureaucracies drive the activities and relationships of safety professional’s and further reinforce their beliefs about safety management (Swuste, Gulijk et al. 2014).

Many organisations have developed stand-alone safety management systems structurally separating safety requirements and activities from core business processes and systems (Olsen 2014). Olsen (2014) conducted a survey of New Zealand safety professional’s and found that a significant part of their role included writing safety policies and procedures, documenting and auditing safety management. Some descriptive studies have been conducted into the tasks and functions of safety professional’s (Booth, Hale et al. 1991, Dejoy 1991, Brun and Loiselle 2002). These studies highlight the range of activities of safety professional’s that can be linked to core elements of safety management systems, including monitor and prepare reports, inspection and auditing, regulatory compliance, emergency response, incident investigation, hazard and risk assessment, and training.

Safety professionals have become administrators of safety bureaucracies, and their reputation among the workforce has suffered. Cheng, Ryan et al. (2012) conducted a questionnaire among construction workers ranking 15 management practices that were important to safety performance. Having a ‘formal safety organisation structure’ was ranked second lowest with ‘safety promotion’ ranked lowest. Common bureaucratic safety activities
of ‘accident statistical analysis’ and ‘safety audit’ also ranked low in importance for safety. This proliferation of bureaucracy has been identified by safety professionals themselves, with too much paperwork being cited as one of the biggest barriers to building an effective safety culture (Biggs, Banks et al. 2013). Other studies show that safety professionals rely on bureaucratic processes to exert authority and influence in their organisations (Olsen 2012, Daudigeos 2013).

Safety bureaucracies shape the nature of safety professionals’ relationships with others in the organisation. Through investigations, audits, and non-compliances, companies impose discipline to non-compliant managers and rule-breaking workers (Hill 2006). Hill (2006) suggests that disciplinary action results in anger, not improvements to safety. Talking about negative things like non-compliance and incidents makes others ignorant, defensive or even hostile towards the safety professional (Saari 1995). Hale (1995) identified ‘control preaching’, a role based on the belief that others are unlikely to manage safety on their initiative effectively. This hampers openness and learning. It is hard for line managers and front-line workers to have the confidence and maturity to admit errors when the safety professional and organisation condemns any deviance or non-compliance, and only in rare companies can these relationships be maturely handled (Hale 1995). Moreover, of course, in complex, highly technical organisations, an effective safety professional cannot be a tabulator of statistics, creator of a paper trail of compliance, cheerleader of past safety performance, or a cost center that slows production (Woods 2006). Bureaucracies are not conducive to empowerment, opportunity, diversity or creativity, which are required to manage emergence and dynamic processes. Deference to the protocol should be balanced with deference to expertise in complex systems (Amalberti 2013).

2.5.5 Safety Culture

Reiman, Rollenhagen et al. (2014) identified eight cultural archetypes and described the potential challenges for a safety professional under each different type of organisational culture. Biggs, Banks et al. (2013) related the most common barriers to safety culture as reported by safety professionals are; competing business priorities, production and cost pressure, and workload and time pressure. All aspects of safety management have to exist alongside these real world issues (Biggs, Banks et al. 2013). Safety professionals who are not in touch with these cultural challenges easily become isolated. Improving the safety culture
of their organisation is often described as one of the key roles of a safety professional. Smith and Wadsworth (2009) studied the relationship between safety cultures, quality of safety advice and safety performance. While safety advice was associated with safety performance, there was little association between safety advice and safety climate (Smith and Wadsworth 2009). This study suggests that safety professionals have no measurable impact on the safety culture within organisations. In a contradicting study, Nielsen (2014) demonstrated that changing the behaviors of a safety organisation positively impacts safety climate and reduces injuries. Change in culture can be created and facilitated by altering the safety professional’s behavior to be more engaging and participative with line management and workers (Nielsen 2014).

2.5.6 Safety Structure

The safety professional’s role and formal ability to influence within their organisation rely on their structural position in the hierarchy (Wybo and Van Wassenhove 2016). Some organisational structure attributes directly shape the role and effectiveness of safety professionals including whether they are internal resources or external consultants, organisational proximity to senior management, their formal line of report, and the amount of personnel and financial resources.

Cameron, Hare et al. (2013) found organisations that relied solely on external consultants rather than internal safety professional resources had three times higher accident rates. This finding is consistent with previous studies (Hinze 2002), and Hale (1995) suggested that external resources cannot effectively understand the organisational context or adequately influence company policy. Interaction with the most senior management is necessary (Reiman and Pietikainen 2014). Galloway (2013) argues that the most senior safety professional should report to the organisation’s Chief Executive Officer since safety is the ‘highest priority,’ and Brun and Loiselle (2002) conclude that this recognized hierarchical authority improves the safety professionals ability to influence. This, however, is seldom the case (Pryor 2014). Most safety professionals have a low level of involvement with senior management, and low attendance in management forums or participation in critical decision-making and planning processes (Brun and Loiselle 2002, Pryor 2014).

There is an ongoing debate across industry about whether a safety professional’s role should formally report to the line manager that they are responsible for supporting, or
through to a more senior safety professional. There are advantages and disadvantages of both organisational safety structures. Woods (2006) suggested that a key aspect of the role of a safety professional was independence. Safety professionals should report outside the operational chain of command, as their role is to challenge assumptions and models of risk held by line management and crosscheck the rationale for decisions (Woods 2006, Haddon-Cave 2009). Structural separation limits line management’s attempts to dominate, marginalize or ‘shunt aside’ the safety professional (Woods 2006). Reiman and Pietikainen (2014) identified that there is a strong possibility for conflict between safety professionals and line management, and while they try to make it work, it is necessary to maintain role independence. Silence on the part of the safety professional can be driven by concerns not to expose a line manager when they report to the person they are advising (Grote 2015). An independent matrix style of organisation with dual authority structures is more likely to accept challenge and leverage it to improve (King 1999). Cameron, Hare et al. (2013) found that the formal authority of the safety professional was related to improved safety performance, and in all cases where safety professionals saw themselves as having authority; they also held a senior position.

The disadvantages of independence and structural separation are that the safety professional may be distanced from daily work and not sufficiently involved in operational decision-making processes as they are happening (Woods 2006, Reiman and Pietikainen 2014). Reiman and Pietikainen (2014) identified tensions that exist between different safety functional roles in the organisation, for example, OHS and process safety. A formally structurally integrated group of safety professionals is more likely to ensure alignment between all the safety professionals and this synchronization across an organisation positively influences overall culture (Wu, Lin et al. 2010). In a further study that supports safety professional’s reporting outside line management, Hinze (2002) found that sites, where the safety professional reported to the site manager, had on average higher accident rates than those who reported to a more senior safety professional or a head office manager.

On the other hand, a safety professional is a functional role, not hierarchal, and it does not own nor is it accountable for safety (Wybo and Van Wassenhove 2016). Safety is an accountability of line management, and it is argued that safety resources should be integrated into the line structure to ensure full involvement with, and support of a line manager's priorities rather than a structurally separate afterthought (Galloway 2013, Wybo and Van
Stalnaker (1999) suggests that safety professionals too often don’t remember the fundamental relationship between line management and support organisations and when they forget who is supporting whom then problems ensue, and formal reporting relationships can prevent this. Wu (2011), studying Hale’s three role types, found that the most common tasks of safety professionals were associated with this role of ‘advice coordination,’ and the least frequent were those tasks related to ‘safety expertise.’ This suggests the increasing dominance of safety bureaucracy and line management direction on the role of safety professionals. Further, safety professionals that report to line managers align their goals and activities with engaging and protecting their line manager from the organisation's bureaucratic social threats rather than engaging and protecting the worker from safety risk (Watchter 2011). Regardless of the formal resourcing structures adopted, organisations need to ensure that the voices for safety are loud and able to be heard (Hopkins 2009). Safety professionals often have additional non-safety related duties that don’t fit elsewhere (Ryan 1989, Johnson 2014). This may not be a detriment to safety management. Cameron, Hare et al. (2013) found that including environmental responsibility correlated with lower accident rates on site, for instance.

Research conducted in the United States referred to as ‘staffing for safety’ has shown a direct relationship between accident rates and the ratio of safety professionals to the overall workforce (Cameron, Hare et al. 2013). Accident rates reduced in line with an increase in safety professionals up to a ratio of 1:50, however, it is more important what the safety professionals do rather than just increasing the number (Cameron, Hare et al. 2013). That said, despite the increase in safety professional resources over the past two decades, Borys (2015) identified only two empirical studies which have demonstrated a strong relationship between safety professionals in an organisation and its safety outcomes (Rebbitt 2012, Cameron, Hare et al. 2013). In addition to safety personnel, Woods (2006) suggests that safety professionals should be provided with significant independent funding and resources and the authority to determine how it is invested. He believes that safety investments are most required when line managers believe they can least afford it. Smith and Wadsworth (2009) found that 27% of safety professionals felt that they had no influence at the level that set the safety budget. Safety professionals are often best placed to identify the safety investments required in their organisation, however, have little direct control over these decisions.
2.6 RELATIONAL FACTORS

Safety professionals do not make decisions that manage day-to-day operations and therefore needs to establish relationships with people and processes throughout the organisation. These relationships enable the safety professional to; understand, determine, and influence the direction of the organisation in the interest of safety. Hale (1995) was the first to describe the complex relational dynamics and the nature of the interaction between safety professionals and line managers. However, in the 20 years since this discussion, there is limited research into the practice of the role of a safety professional. There are some descriptive studies of activities (Reiman and Pietikainen 2014) and a small number of studies that have explored the social aspects of a safety professional’s role (Broberg and Hermund 2004, Garrigou and Peissel-Cottenaz 2008, Theberge and Neumann 2010, Daudigeos 2013, Pryor 2014).

Line managers within organisations will not make decisions and take courses of action that are unacceptable – or “unsafe.” However, the constructs of “safe” and “unsafe” are subjective rather than objective. So, where there is a possibility that things might be unsafe, there needs to be a process of alignment of beliefs, language, and actions. This social process continues until there is broad agreement that a future course of action is safe. “Safe” is not a standard to be reached; it is a point of consensus among stakeholders.

Reiman and Pietikainen (2014) propose that safety professionals have three key influence mechanisms: safety skills and knowledge (education, experience, operational contextual knowledge), personal orientation and abilities (character, courage, relationships), and organisation (formal authority, structure, management systems). Antonsen (2009) identified that the ability to get others to follow the safety professionals advice in a given situation is based on 6 factors (that closely aligns with Ferry 1987): organisational structures and formal authority, power from knowledge and expertise, control of rewards and resources, coercive power (punishment), alliances and networks (tap into others sources of power, and personal power (charisma, political skill, individual characteristics). Daudigeos (2013) confirmed that safety professionals rely on factors closely resembling the above two studies to establish the power to exert influence in their organisation (formal authority of others, external knowledge, control of safety processes and information, and fear of punishment through legal consequences).
The present review identified twelve relational factors categorized into four relational ‘views’ that describe the nature of the way safety professionals determine their position and how they relate to others: challenge, alliance, influence, and authority (see figure 2). One view ‘challenge’ is that the safety professional is neither part of the decision-making process nor an impartial provider of information - instead, they seek to shift the consensus towards their perspective through outside challenge on behalf of safety. Another view ‘influence’ also holds that the safety professional stands outside the decision-making process, however, provides information, options, and advice to inform the consensus. The third view ‘alliance’ is that they are part of the decision-making process and the champions for one end of the spectrum of outcomes, always urging for a consensus with lower safety risk, however, they participate and negotiate with stakeholders until alignment is achieved. The fourth view ‘authority’ suggests that safety professionals are (or at least should be) the ultimate decision-maker or arbiters of whether a course of action is safe.

Figure 2: Relational views of a safety professional

2.6.1 Challenge

“If two people in the same organisation always agree, then one of them is unnecessary.”

– Pater (2006)

A primary role of a safety professional is to challenge the assumptions, priorities, and actions of line management (Woods 2006) and they have a professional and moral responsibility to “speak up” (Rebbitt 2013). Organisations have become increasingly
bureaucratic with respect to safety management, and this has come at the expense of the culture required for the open expression and consideration of diverse ideas and opinions. Very few hierarchical and bureaucratic organisations tolerate dissent well, and instead value and reward conformity (Haddon-Cave 2009, Rebbitt 2013). Rebbitt (2013) argues that this increasing bureaucracy has led to a weakening of business ethics, retaliation towards dissenters and even pressure to break the rules to achieve organisational objectives. The right to disagree is fundamental one without which good business ethics cannot survive (Shahinpoor and Matt 2007). Bad news is seldom embraced, and managers may even avoid or minimize contact socially and structurally with the safety professional to avoid it (Ryan 1989). There are three mechanisms for safety professionals expressing challenge; speaking up, whistle-blowing and constructive inquiry.

2.6.1.1 Speaking up

Speaking up can be considered a core part of a safety professional’s role, however, it has not been studied. Investigations into major safety disasters conclude that the safety professional either didn’t raise critical safety issues or was unsuccessful in ‘being heard’ and changing decision-making (Gehman 2003, Baker 2007, Haddon-Cave 2009). Morrison, Wheeler-Smith et al. (2011) describe speaking up as a discretionary communication of ideas, suggestions, concerns or opinion about work-related issues with the intent to improve organisation functioning. Speaking up is necessary for safety as it opens up new perspectives for decision-making and action (Grote 2015).

It can be personally risky for a safety professional without formal authority to expresses their dissent, and to do so effectively they must obtain and polish interpersonal skills, such as influence and persuasion which is not taught in formal education (Rebbitt 2013). Rebbitt (2013) suggests that a safety professional should be mindful of the personal impact of the information on line management and their objectives; Is it a threat to them? Does it imply failure on their part? Does it provide them a benefit? There are practical strategies that can be adopted by safety professionals to challenge in less open environments including overtly playing devil’s advocate, implying agreement but expressing a different viewpoint, or the use of sarcasm or a joke with an oblique reference (Rebbitt 2013).

There are several reasons for not speaking up about safety in organisations mainly relating to uncertainty on a personal level. These reasons include status differences,
damaging relationships, feeling of futility, lack of experience in job or the issue, adverse impacts on others, poor relationship with supervisor, fear of punishment, fear of negative label, the conflict between efficiency and safety and time pressure (Grote 2015). Peer pressure and personal uncertainty are powerful motivators; no one wants to stand out from the crowd and studies have repeatedly shown that less than one-third of people witnessing inappropriate behavior will report it (Rebbitt 2013).

2.6.1.2 Whistle Blowing

To counteract the bureaucratic pressure not to challenge the hierarchy, the concept of the safety professional as a whistle-blower emerges in the literature (Hale 1995, Saari 1995, Antonsen 2009, Hansen 2012). Whistle-blowing is an act of voluntary disclosure of inappropriate behavior or decisions to persons in a position of senior authority in an organisation (Sexty 2011). Hale (1995) describes the ‘controller’ role of safety professionals where they should step out of friendly advisor or support role and condemn unacceptable practices with vigor when necessary. In his discussion of the complex relationship with line management, Hale (1995) suggests that safety professionals may need to learn how to become whistle-blowers. Antonsen (2009) argues that employee safety representatives from trade unions in some countries have been and are institutionalized whistle-blowers.

Hansen (2011) takes an opposing political perspective and very clearly advises safety professionals to know your corporate culture and do not go over your bosses head. Stalnaker (1999) also argues that safety professionals should not undermine the authority of line management. These views seem to promote the role of the safety professional as being in service of line management rather than in service of safety within the organisation.

2.6.1.3 Constructive Enquiry

Rather than formal whistle-blowing processes, safety professionals and organisations should work on developing a culture where clear and open disclosure of concerns is encouraged and occurs (Rebbitt 2013). He suggests that safety professionals have a role in promoting an open environment through embracing the dissent of the workforce and management toward them. Challenge needs to be done in a constructive manner using an enquirer method (Grote 2015), and honesty is not a rationale for insensitivity (Pater 2006). Grote (2015) suggests that inclusive leadership that explicitly values diverse contribution
creates an environment of psychological safety for people to take the personal risk required in speaking up. Tong, Rasiah et al. (2015) found that leadership empowerment behavior correlated with a safety professional’s psychological empowerment, perceived organisational support, and this, in turn, increased their safety commitment and safety teamwork.

Woods (2006) proposed the metaphor of “cold water and an empty gun” to describe the safety professional that doused the production and cost objectives of the organisation due to safety concerns and then didn’t have a workable solution to move forward. Safety professionals should offer practical solutions or functional processes to arrive at practical solutions when they challenge line management and are mindful of the production, cost and time objectives of the organisation (Rebbitt 2013). Organisations need to provide clear and comprehensive training on the benefits of challenge, how to challenge and how to receive a challenge to both safety professionals and line management (Grote 2015).

An important role of a safety professional is to challenge line management and the organisation for the purpose of maintaining or improving safety. As safety professionals have increasingly aligned their roles with line management, they have paradoxically weakened the diversity and strength of their voice for safety in the organisation. Having conflicting views on safety is a safety resource for organisations, by serving as a kind of requisite variety that facilitates learning (Antonsen 2009). Bringing this diversity of viewpoint is the ‘informative’ (Woods 2006) role of a safety professional however it is often unwelcome information and creates tension between the line manager and the safety professional.

2.6.2 Alliance

“None of us are as smart as all of us together.”

– Greer (2001)

Safety professionals create alliances with people, programs, and objectives of the organisation. Safety advice that is positioned in a way that contributes or compliments needs or wants of others in the organisation is likely to be received differently than that expressed as a challenge. Alliance is described as a win-win outcome for the safety professional and other people’s agendas.

Theberge and Neumann (2010) propose five practical strategies for safety
professional influence and political manoeuvring all related to alliance with other stakeholders and programs: recognise the agenda and interests of others, identify possibilities for ‘goal hooking’, attend to the ‘soft systems’, implement organisational arrangements to advance the agenda, and implement tools that integrate into existing management processes.

The two key groups of stakeholders for safety professionals to situate their advice in alliance with are line management and front-line workers. Greer (2001) suggested that none of us are as smart as all of us together and while safety professionals think they need to have the answers and are the resource for everything concerning safety, many times they do not even know the questions. Safety professionals should engage workers and line managers and seek their advice and active participation in devising solutions which not only improves their quality but also moves the ownership of safety processes from the safety office to work sites (Greer 2001). Safety professionals need effective facilitation skills to build their methods on the participatory involvement of line management and the frontline workforce (Limborg 2001). Goal alignment between the safety professional, line management, and the workforce through alliance is important for working together to improve safety. Production goals are acute, ‘how much did you produce today?’ whereas, safety goals are chronic, ‘how many injuries did you have this month?’ Line managers expect safety professionals to embrace and contribute to the bottom line performance of the organisation (Woods 2006, Lawrence 2008, Laduke 2011, Wybo and Van Wassenhove 2016). Traditionally safety professionals have taken the role of ‘expert’ or ‘controller’ and challenge line management where goal conflict exists. Instead, they should focus on alignment of objective and tasks with line management and the workforce (Hale 1995).

2.6.2.1 Line managers

Woods (2006) argues that safety professionals need to contribute to all organisational goals. A safety professional cannot be a safety ‘expert’ in an organisation if they are always troublesome to the business by negatively impacting time and cost (Reiman and Pietikainen 2014). Adams (2003) suggests that too often safety professionals are focused on being a technical expert with little concern for a management solution, which sees line management view them in terms of regulatory compliance rather than overall business improvement. Too often the advice, actions, and decisions of a safety professional may be seen as antagonistic
in that they negatively impact business resources (Bryant 1999). As a result, many companies prefer a safety professional that maintains a low profile and therefore doesn’t interrupt production (Ryan 1989).

Safety professionals have to learn how to communicate with managers more effectively and develop a detailed understanding of the manager’s problems to advise effectively (van Dijk 1995). Hansen (2011) suggests safety professionals get the ‘green light’ by aligning advice with the bosses’ priorities and having detailed plans. Safety professional’s need to learn how to sell ideas to management and create the business case for safety (Ryan 1989, Hill 2006).

In a 24 task questionnaire administered to safety professionals, Dejoy (1993) found that the item rated as lowest importance and the lowest time spent was "developing methods to evaluate the cost-effectiveness of control systems." Safety professionals appear to maintain ignorance and benevolence towards the financial objectives of the organisation. Greer (2001) describes this well using the statement ‘seek first to understand, then be understood’ (Covey 1989) referring to a safety professional’s responsibility to know first and foremost what drives the organisation's senior management and work with this rather than against it. The safety professional is regularly out of goal alignment with the organisation, and they have created a culture of separateness by implementing programs that do not contribute to the company’s financial and production goals (Hill 2006). Hale (1995) describes an adult – adult relationship between line managers and safety professionals that focus on mutual support and the achievement of common goals. Manuele (2003) agrees with this and describes the goals of a safety professional as; effectively and economically reducing risk, contributing to the organisation’s safety in addition to safety, and being an active participant in achieving all of line management’s goals.

Safety professionals have the opportunity to be change agents that help their organisation realize economic optimization and in turn create for themselves the credibility and power to improve safety (Hill 2006). For themselves, safety professionals who are problem solvers, multi-skilled and demonstrate results that are woven into the organisation’s financial goals are viewed as a valuable asset (Hill 2006).
2.6.2.2 Front-line workforce

Knowing and working with the needs and wants of the front-line workforce is a useful source of alliance for safety professionals and positions their advice with the support of the workers exposed to the safety risks. Safety professionals need to ask more questions because what they believe is unsafe is probably the fastest and most effective way to do work (Walters 1999). Walters (1999) suggests that understanding the needs and reasoning behind workers decisions is time-consuming, but these workers are also resourceful at bypassing undesirable safety controls. Solutions to a safety concern will always be better if resolved jointly through interactive problem-solving sessions with the safety professional and the front-line workforce with as much latitude and judgment to the worker as possible (Walters 1999). Safety professionals should treat workers with respect and listen to their safety concerns and solutions in a way that acknowledges the workers like the safety experts that they are (Stalnaker 1999). Limborg (2001) proposed workers should participate in prioritizing problems to be solved, and a safety professional’s solution should always be considered insufficient if front-line workers have not been actively involved in developing, testing and introducing changes.

The body of resilience engineering literature expands this participative strategy of safety professionals to one of enabling and facilitating the adaptive capability of the organisation. Woods (2006) proposes that safety professionals seek ways to enhance coordination across the normal chain-of-command and organisational boundaries enhancing resilience and reducing brittleness. Reiman, Rollenhagen et al. (2014) suggests safety professionals promote novelty and diversity, which leads to self-organised order and adaptation. These strategies will enable the organisation to anticipate and recognize issues that are not known or previously experienced (Pidgeon and O’Leary 2000).

2.6.2.3 Business Processes

Management knowledge and skills are useful for safety professionals to create an alliance between their advice and the people, objectives, and programs of the organisation. A safety professional requires both technical and management skills to be effective and they are equally important (Ryan 1989, Adams 2000, Leemann 2002, Swuste and Arnoldy 2003, Blair 2004, Wu, Lin et al. 2010). However, commonly safety professionals are unable to speak the language of the business (Hill 2006) and due to a lack of broader management capabilities
are isolated from mainstream decision-making (Leemann 2002). Safety professional’s need to understand the business system as a whole and be able to communicate from the unique perspective of senior management (Adams 2003).

Safety professionals perform below line management’s expectations in management skills, strategy and organisational support (Lawrence 2008): line managers perceive safety professionals as too technically focused, not able to view issues from the big picture, and not able to integrate programs into the organisation. Wagner (2010) also found that CEO’s felt safety professionals were technically proficient in general safety knowledge but lacked core capabilities around understanding business strategy, change management, and influencing skills.

Safety professionals need skills similar to line management, and traditionally many organisations have recruited safety professionals with a management background (Hale 1995, Leemann 2002, Wybo and Van Wassenhove 2016). Hale (1995) warned that line managers entering safety roles retain the norms of the people they must now ‘control,’ lacking the independence or credibility to challenge former and future colleagues.

Blair (2004) found that safety professionals reported business acumen as a top competency needed for business survival. However, when Chang, Chen et al. (2012) surveyed safety professionals for what was required to achieve greater safety performance, the lowest ranked dimension of tasks was ‘apply business principles.’ Even if safety professionals must develop management skills to be effective in their role (Adams 2003), financial and business skills are rarely taught in safety education (Hill 2006). Safety professionals with management skills can align safety management with the organisation’s goals, processes and culture as well as manage their teams and resources effectively (Seabrook 2003).

2.6.3 Authority

“On issues of risk and safety I think the issue is really power.”

– Charles Perrow (cited in Antonsen 2009)

Safety professionals relate to others through the use and leverage of formal authority to progress their firm views about safety. Line management has the authority for most decisions in an organisation, however, senior management and safety professionals
determine safety processes that bound these decisions. Power is an issue in safety management more relevant than culture (Antonsen 2009, Dekker and Nyce 2014). Dekker and Nyce (2014) propose that power is everywhere in safety through the roles of hierarchy (i.e. line management) and elites (i.e. safety professionals). Safety professionals may have the knowledge but not necessarily the power, and conversely, line management has the power but not necessarily the knowledge (Borys 2000). Borys (2000) argues there is the potential for safety improvements to fall through this knowledge-power gap. A safety professional should enable the safety knowledge of line managers to continuously develop to align knowledge with hierarchical power (Borys 2000). However, organisations should also ensure that safety professional empowerment and authority does not result in the marginalization of local system specific safety expertise held by the workforce (Almklov, Rosness et al. 2014). A safety professional’s power and authority to exert influence in organisations is an important and complex issue with advantages and disadvantages for safety management. Except for the study conducted by Daudigeos (2013), there is limited research on safety professional power within organisations.

Line managers, particularly senior management holds high levels of formal and informal power in safety, which can easily suppress the concerns of safety professionals in the organisation. This power and accountability dynamic between the safety professional and line management has been further imbalanced by Company Officers due diligence obligations and individual criminal liabilities in all developed countries (O'Neill and Wolfe 2014). Dekker and Nyce (2014) argue that if there if safety in power than line managers should give more of it to those below including workers and safety professionals who together are most likely the best placed to develop safety solutions. A safety professional needs to develop their formal and informal power and authority to influence and ‘talk truth to power’ (Dekker and Nyce 2014). There is vigorous debate in the literature about whether and how much formal authority a safety professional should have. Sources of formal authority that enable safety professionals to make decisions or have decisions made in their favor include senior management, safety systems and rules, and decision rights (formal rights of sign-off and veto).
2.6.3.1 Senior management

Through their access at many levels of the organisation, safety professionals use senior management authority to sanction advice and decisions that apply to middle management and the front-line workforce. Safety professionals get ‘buy in’ from senior management to strengthen their authority over line management and then further use regulation and audit strategies to influence them (Olsen 2012). In some cases, safety professionals use a strategy of making line management performance visible to top management (e.g. overdue corrective actions), and base most of their advice on reactive information (e.g. incidents, audits, and regulation change) rather than proactive insights (Olsen 2012).

2.6.3.2 Safety Systems

Safety professionals use the formal authority of the company’s safety systems and rules that they devise and administer to support decision-making in their favor. This source of authority is the practical expression of bureaucracy in the earlier section on institutional factors. Safety professionals rely most on the authority elicited to them and their advice through the organisation’s safety systems and bureaucratic processes (e.g. safety reporting, incident investigation, and audit) (Olsen 2012, Daudigeos 2013).

Olsen (2012) argues that safety professionals have difficulty influencing decisions because they are placed on the sidelines of the organisation. While she found that safety professionals have three parts to their role - advising management, safety management systems, and regulatory compliance – their political strategies to influence decision-making in the organisation mostly followed and leveraged their available bureaucratic safety processes (Olsen 2012). Safety professionals use their technical knowledge as power over managers to create dependency as well as maintaining tight control over safety processes (Blewett and Shaw 1996). In this role, the safety professional can use the safety system to play the role of ‘doctor’ and the line manager the ‘patient’ who receives a diagnosis and recommendation without question (Broberg and Hermund 2004).

2.6.3.3 Decision rights

Woods (2006) argues in support of the safety professional having sources of formal authority to make decisions about safety investment and to review and approve operational
decisions. Cameron, Hare et al. (2013) identified aspects of the safety professional’s role that resulted in lower accident rates and some related to the authority of safety professionals. Safety professionals that had the authority to give instructions to the front-line workforce had half the accident rate than those who just advise line management. Organisations, where the safety professional vetted and approved sub-contractors as part of their role, had lower accident rates. Cameron, Hare et al. (2013) propose that safety professional formal authority and involvement in operational decision-making are the factors that improved safety performance.

2.6.3.4 Limitations of authority

There is a wide critique in the literature of safety professionals relating to others through formal authority based on two main arguments: less optimal and sustainable decisions and marginalization of local expertise.

Unilateral mandates from a safety professional are usually short-lived, operationally problematic and require constant monitoring (Hale 1995). This directive approach relying on bureaucratic enablers creates adversarial relationships with line management and the workforce. While consensus and alliance based approaches require more time, they create better and more sustainable long-term solutions (Walters 1999). Through using formal bureaucratic strategies, safety professionals are not able to convince management that they should increase the safety standards above that required for regulatory compliance and the safety professional mainly works on systems and processes to improve safety (Olsen 2012). Safety professionals with formal authority over safety decisions may lead to less optimal operational and safety outcomes. Safety professionals should justify their advice and input into organisational decision-making in ways beyond senior management sanctions and safety system requirements.

One concerning potential consequence of a safety professional utilizing formal authority is that the ‘knowledge’ generated by a safety professional might displace or marginalize existing local or system specific safety knowledge embedded in operational practices (Almklov, Rosness et al. 2014). Almklov, Rosness et al. (2014) provide case studies in the marine and rail industries where they observe discourses based on generic approaches to safety management that result in a disempowerment of the workforce and their perspectives. The safety professional has ‘model monopoly’ over ‘safety management’ and
leads to the worker feeling powerless (Almklov, Rosness et al. 2014). A safety professional’s formal authority and the development of the resulting safety bureaucracy based on generic international standards shifts power and authority from the workforce and even line management towards safety professionals, regulators and third parties to the detriment of front-line system specific safety expertise (Almklov, Rosness et al. 2014).

2.6.4 Influence

“A safety professional needs to bring relevant information and be heard by the organisation”


Safety professionals influence organisational decision-making through providing advice for decisions that others are making, as well as how they create pre-conditions in the organisation that influences decision-making without direct involvement. Safety professionals need to know how to navigate the organisation and involve and get the support of the right people to influence decision-making (Broberg and Hermund 2007). Many safety professionals are unclear how to influence others within companies and are frustrated by giving, as they see it, good professional advice that is not followed or implemented (van Dijk 1995). Swuste and Arnoldy (2003) suggest that the safety professional’s personal effectiveness and ability to influence and stimulate others are as important to safety as formal management systems. Wagner (2010) found that Chief Executive Officers of organisations commonly believe that safety professionals lack the requisite influencing skills and the ability to get things done in their organisations.

The most comprehensive research on safety professional influence was conducted by Daudigeos (2013) to understand how they enact practical agency to maneuver around formal constraints within their organisation. The findings of the study conclude that safety professionals rely on ‘relational-legitimacy building,’ (external networking and references from other organisations) ‘unobtrusive influence tactics’ (adaptive framing of issues by selectively using managerial, administrative, accounting, legal, technical, and moral arguments to legitimize and promote safety) and ‘use of symbolic enablers' (circulating an anecdote that speaks in favor of the practice they are trying to promote and touting the actions of individual managers building 'local heroes'). Internal networking is used to leverage
the formal authority of others, which compensate for limitations in a safety professional’s formal authority and if the safety professional meets resistance than they quickly change to an argument based on the risk of legal repercussions (this finding is consistent with Olsen, 2012).

The safety professional has a role in undertaking actions that are targeted to create the preconditions and expectations for others to act in a certain way (Reiman, Rollenhagen et al. 2014) and this fosters positive safety attitudes that stimulate middle managers to apply safety processes (Wybo and Van Wassenhove 2016). In this way, the safety professional is the teacher of employees and management about safety (van Dijk 1995). A safety professional can support the ongoing development of open and respectful communication about safety through honest story-telling and personal vulnerability (Forck 2010). In this way, safety professionals need to be the courageous, open and honest person that they preach about when they talk about safety culture. Blewett and Shaw (1996) found that safety professionals that enabled individuals to make safety decisions and create change for themselves reduced their formal authority over processes but increased their informal socially constructed power to influence.

When safety professionals are unable to influence what they think are the right things for safety due to organisational and social constraints of cost or culture, it can lead to deep cognitive dissonance, guilt, and disillusionment (Watchter 2011). A survey in the United States identified safety professionals as number 5 on the list of jobs where workers hate their bosses (Johnson 2014). Johnson (2014) argues that while most line managers do not know what safety professionals do, they do not support, don’t listen, reject ideas, and don’t want to spend money on safety. Safety professionals complain, vent, insult line managers from a safe distance and consequently ‘stress-out.’ Two-thirds of safety professional’s that reported ‘hating’ their boss also reported high job stress indicating that extreme frustration festers without resolution when safety professionals have unsatisfying experiences influencing others (Johnson 2014). Safety professionals influence others through relationships, interpersonal skills and understanding organisational context.

2.6.4.1 Relationships

The relationship between the safety professional and the line manager making a decision is important for the safety professional’s ability to influence decision-making. Who
safety professionals are, and the way they engage with others is as important as formal structures (Swuste and Arnoldy 2003). A safety professional needs to develop credibility and trust within their organisation to exert influence (Stalnaker 1999). Their level of credibility and trust are determined by line management and the worker’s perceptions of, knowledge and expertise, openness and honesty, and concern and care (Peters, Covello et al. 1997).

Two studies have been conducted into trust between safety professionals and others in the organisation. Pryor (2014) studied the relationship between safety professionals and line managers and found trust to be a key factor in their level of influence. She found that trust from a line manager’s perspective takes time and is based on the safety professional’s track record, technical knowledge, interaction with others and personal attributes. These personal attributes include, being upfront and honest, not playing politics, straight talking, sorting the ‘wheat from chaff’, handling pressure, taking control in crisis, showing initiative, calling the shots, personal grunt, a positive ‘can do’ approach, being a good communicator, and high emotional intelligence (Pryor 2014).

Conchie and Burns (2009) studied workers trust in information sources and the resulting impact on workers safety behavior. Workers trusted the safety professional more than their project manager, supervisor, and workmates when it came to communication about a safety risk and self-reported that their intention to change risk related behavior was greater following communication from safety professional than communication from other sources (Conchie and Burns 2009). These findings are similar to a study conducted in Australia that found safety professionals have the strongest influence on site safety, followed by supervisors, then workmates (Dingsdag, Biggs et al. 2008). Conchie and Burns (2009) conclude that the three-dimensional model of, belief in knowledge and expertise, open and honest, caring and concerned for others, does influence the level of trust in the safety professional.

2.6.4.2 Interpersonal Skills

Safety professionals are unlikely to be able to develop long, trusting relationships with each of the line managers making decisions within the organisation. The relationship divide may be able to be bridged by a safety professional with well-developed interpersonal skills that can create a constructive trusting environment in a first-time conversation. A safety professional requires a broad and well-developed set of interpersonal skills to be effective at
influencing others (Swuste and Arnoldy 2003). Swuste and Arnoldy (2003) suggest that these interpersonal skills include communication, negotiation, facilitation, problem-solving, decision-making, and assertiveness. The technical skills of a safety professional can be considered necessary threshold competencies. However, it is their interpersonal skills that are the differentiating competencies between effective and ineffective safety professionals (Leemann 2005). A safety professional should present organisational facts and scientific evidence to support their advice (Johnson 2014) and do not stretch the truth to have influence (Stalnaker 1999). Communication skills are essential, but without credibility, they are not enough (Hill 2006).

Except for the Chief Executive Officer, a safety professional has to be able to communicate effectively with a more diverse stakeholder group than any other role in the organisation, including senior management, line management, employees, professionals, contractors, and regulators. The communication ability of a safety professional is the most important capability in determining their effectiveness in their role and ability to influence others (Stalnaker 1999, Seabrook 2003, Blair 2004, Pater 2006, Peters and Peters 2006). Blair (2004) found that safety professionals rated ‘communicating effectively’ as the highest rated competency for their success. Communication skills enable a safety professional to influence others and effectively tackle the difficult situations in the workplace without becoming defensive including dealing with conflict, mediating tensions, speaking truth to power, neutralizing resistance and confronting unacceptable behavior (Pater 2006).

Pryor (2014) found that the main reason for senior management to replace and restructure the role of safety professionals is that they do not have the interpersonal skills to influence at a senior level. A safety professional needs to bring relevant information and have themselves heard by the organisation (Woods 2006). Clear communication skills that include the ability of the safety professional to talk the language of business are critical (Adams 2003) however, training in such skills is missing from most courses and workplaces (Taylor 1995). Veltri (1992) suggested that improving the effectiveness of safety professionals’ communication with senior management would enable safety to move from bureaucratic compliance with regulation to influencing creating and sustaining strategic value.

Swuste and Arnoldy (2003) argued that personal influence skills are the most critical for a safety professional and they must understand: competition and cooperation, dealing with high-pressure, changing others perspectives and generating collective ownership.
Peters and Peters (2006) also believe that personalities involved in safety decision-making will prevail over poorly presented and communicated analytic logic. Negotiation skills are useful for the safety professional as compromises and trade-offs are customary in all organisational systems (Peters and Peters 2006). Safety professionals themselves identify interpersonal skills, such as communication, negotiation, and understanding human behavior as some of their top self-defined training needs (Garrigou and Peissel-Cottenaz 2008).

2.6.4.3 Organisational context

Safety professionals need to intimately know how their organisation functions, including organisational behavior, structure, budgeting, planning processes (Swuste and Arnoldy 2003). However before safety professionals can get things done formally, they need to know the informal organisation - the people, political interrelationships and underpinnings (Hansen 2011). A safety professional needs to figure out what is happening within the organisation at any point in time, from the concerns of senior management to the daily challenges of frontline work. The safety professional needs to at all times maintain a ‘finger on the pulse’ of the organisation to provide useful and credible advice (Saari 1995, Woods 2006, Hansen 2012).

Organisational knowledge and operational context enable the safety professional to advise and provide support as and where it is needed in a practical and effective way. Safety professionals that focus on incidents will never understand what works in normal situations and thus they need to be experts in daily work as much as the exceptions (Saari 1995). Swuste (2008) argues that ‘you will only see it if you understand it’ and thus a safety professional will unlikely be effective until they understand the organisation, the work, and the technology intimately.

2.7 INDIVIDUAL FACTORS

The individual safety professional influences the performance of their role through who they are, what they know, and their career experiences. These four individual factors are: safety beliefs, domain safety knowledge, knowledge worker skills, and risk understanding are categorized as relating to either the beliefs or capabilities of the safety professional.
2.7.1 Safety Beliefs


Hill (2006) suggested that safety professionals predominately focused on traditional safety management approaches, as they believed that “if it ain’t broke don’t fix it.” By continuing to do the same things, safety professional’s maintain their role authority and security through their understanding and competence in these methods (Hill 2006). Hollnagel (2009) described the process where, ‘what a safety professional looks for is what they find’ regarding their beliefs about how to manage safety, for example, non-compliance with systems, unsafe behavior, uncommitted leadership, or poor culture.

Safety professionals are united in their belief that the human dimension (rather than technical or organisational) takes precedence for safety improvement efforts (Brun and Loiselle 2002). Brun and Loiselle (2002) found that safety professionals see safety as an individual responsibility and a question of attitude and behavior, so they argue it is important to modify human behavior through precise work methods. Manuele (2016) stated that safety professionals have to battle the human element and those that are willing to take a risk with their safety. Safety professionals believe that people are the problem when it comes to safety management and this belief extends to workers, line management, senior management and often other safety professionals.

Olsen (2012) found that in addition to the human dimension, safety professionals are also very focused on the organisational dimension of management systems and compliance. In a survey of safety professionals in the United States, Walter (2012) identified training, additional resources and improved management support as the key things needed to improve safety to respond to the problems with worker competence, cost, and management commitment. Safety professionals believe that the following human and organisational improvements will improve safety: employee accountability and ‘buy-in,' communication,
online safety software, safety incentives, detailed workers compensation data, more safety equipment and more time (Manuele 2016).

Despite the changing revelations in safety science, Swuste, Gulijk et al. (2014), found in a study of safety professionals in the Netherlands that human failure remained the dominant explanation for accidents. Professional publications write about accident proneness theory and company programs and safety promotions focus on topics like; instructing workers in safe procedures, more safety training, and communication about unsafe behavior (Swuste, Gulijk et al. 2014). This strategy focuses all safety attention and intervention on the ‘user,’ not the technology, workplace or organisation (Broberg and Hermund 2004).

Swuste, Gulijk et al. (2014) argue that safety professionals do not keep up with academic developments and are not continually researching and learning about safety. For example, the Heinrich Accident Triangle is still used in the professional domain, even though it has repeatedly been disproven academically (Swuste, Gulijk et al. 2014). Safety professionals believe that workers and line management are the problem and safety improvement interventions should be targeted at these individuals, through compliance with systems, behavioral programs, and safety training.

Safety professional’s promoting programs to influence worker behavior is cheaper than modifications to plant or changes to the organisation, and due to the institutional and relational factors described in this paper, safety professionals may not have sufficient influence to deliver more systemic improvements (Swuste, Gulijk et al. 2014). Safety professionals resort to safety promotion activities and other low impact strategies that do not create an impost on the organisation’s resources or objectives, however, nor do they improve safety (Saari 1995).

Reiman and Pietikainen (2014) identified four dimensions of beliefs that influence a safety professional’s approach to their role as well as safety management; organisational, information and uncertainty, human behavior, and safety models of accident causation. The safety professional is seen as self-serving by measuring and advising based on their career background, industry experience or best practice instead of what the organisation wants and needs (Galloway 2013). New scientific findings in the safety science literature are hard for practicing safety professionals to handle, and they challenge their long-held beliefs about safety and their professional role (Swuste, Gulijk et al. 2014).
2.7.2 Domain Safety Knowledge

Safety professionals require advanced domain safety knowledge acquired through academic education and industry experience. The technical skills required by safety professionals have been documented by the International Network of Safety and Health Practitioner Organisations (INSHPO) and are based on the current role responsibilities and hazards managed by safety professional’s (Pryor, Hale et al. 2015). Technical Skills enable safety professionals to advise their organisation on their known safety hazards as well as to establish effective safety management processes.

Safety professionals need specific technical safety competencies due to the organisational and regulatory complexity of safety management in modern organisations (Wybo and Van Wassenhove 2016). Many line managers are unfamiliar with the technical aspects of a safety professional’s role so rely on them to have and maintain technical competence (Leemann 2002). The safety professional role is not the place for on-the-job technical training (Leemann 2002).

2.7.3 Knowledge worker skills

Safety professionals can be considered knowledge workers that provide their expertise to support organisational decision-making that solves problems and improves safety. Their effectiveness relies on their skills in the search, retention, and retrieval of safety information. Safety professionals should maintain currency and accuracy of technical information, which includes the latest academic research and practical industry application and innovation.

As safety professionals participate in and advise on a wide range of issues it could be expected that they would rely heavily on external information, and keep up to date with academic and technological advancements (Yang 2012). Yang (2012) proposes that sourcing and critically evaluating information sources to solve daily problems is a critical competency of a safety professional. Safety professionals should apply rigorous standards of research to practical observations and conclusions (Metzger 2011, Yang 2012, Wybo and Van Wassenhove 2016). Leemann (2014) proposed a mindset of mastery for safety professionals, to pursue the mastering of safety skills and knowledge. He calculated that under the 10’000-hour’s rule for mastery, the safety professional spending 4 hours a day, 250 days a year would take ten years to obtain professional mastery. Safety professionals should be knowledgeable
of current developments in safety science, seek mastery in their professional practices and be factual in advice, requests, and recommendations.

Safety professionals should say no to and stop everything that has no scientific basis, and ruthlessly pursue priorities that do (Leemann 2014). Many of the institutional and relational factors described in this paper that potentially limit the effectiveness of safety professionals may be overcome with a scientific knowledge worker approach to their role and the advice they provide organisations.

Safety professionals have historically, and still currently rely on old, erroneous or incomplete information (Ryan 1989), out-dated beliefs (Walter 2012) and refer to lay theories and folk models of human behavior (Reiman and Pietikainen 2014). Dejoy (1993) found that the second lowest amount of safety professional time was spent on the task of “conducting research studies into technical safety problems.” Laduke (2011) requested safety professionals stop doing a number of things which have no empirical basis and that undermine the profession’s credibility: children’s safety poster contests, celebrating good injury management that lowers statistics, comparing organisational incident rates to industry averages that ignore human suffering, and ‘blame the worker’ mind control behavior based safety programs.

Safety professionals need to never stop learning (Metzger 2011, Pearson 2016). The safety professional is a knowledge worker and has to continuously keep acquiring new knowledge, or they become obsolete (Manuele 2003). Hill (2006) argues that knowledge is not information - information is what is in the newspaper, knowledge is gained through formal education and its practical application. Safety professionals should be able to cite research and best practice alongside their requests, advice, and recommendations (Hansen 2012, Johnson 2014).

2.7.4 Risk Understanding

Safety professionals require an expert critical understanding of the nature of risk – how it emerges, changes, and is understood, mitigated and monitored within organisations. This risk competence of safety professionals will ensure that their advice, influence and the allocation of organisational resources is directed towards the most important safety improvements for the organisation. Safety professionals need to be experts in risk, including both the technical assessment as well as the social construction of risk (Saari 1995, Pearson
A safety professional needs to understand that risk and safety are not rational processes from identification to evaluation, to prevention and overdone rationalism may lead to totally false recommendations (Saari 1995). Saari (1995) suggests that safety professionals should focus on the effectiveness of preventative measures and not the size of the risk. Safety professional’s need to use their technical knowledge as a basis for risk assessment as well as know what works socially within their organisation (Saari 1995).

2.8 CONCLUSION

Safety professional practice is influenced by twenty-five institutional, relational and individual factors that combine and re-combine to determine the nature and practice of their role within organisations. Thus, the role of a safety professional is socially and organisationally complex. Except for the study conducted by Hale and Guldenmund (2006) with 5495 participants in 12 countries, there is a dearth of reliable empirical research on safety professional practice within organisations. This lack of research may be resulting in their reduced effectiveness at improving safety, thus exposing the working population to a greater risk. This risk can be evidenced by fatality rates in most of the developed world not declining over the past five years (Borys 2015, Manuele 2016) which suggests there is an opportunity for new theories and models of safety professional practice.

2.8.1 Practical Implications

The following practical implications provide a platform for safety professionals and their organisations to review their current approaches.

1. Increasing goal-based regulation and company officer liability management have driven growth in safety compliance activity that dominates the tasks of safety professionals. This type of ‘controlling’ activity (i.e. systems, reporting, investigation, and audit) negatively impacts; relationships, the focus on safety risk, and the achievement of the cost and production objectives of line management and the front-line workforce.

2. There is a significant range of safety professional job titles and job designs, which lead to confusing individual objectives and evaluations of their performance.
Organisations lack clarity on their safety goals more broadly and the specific role of the safety professional in achieving them.

3. Safety professionals can influence the safety culture of their organisation through the way that they conduct themselves in open, engaging and participative ways with line management and the front-line workforce.

4. Organisational safety structures and resourcing levels impact safety performance measured through injury rates:
   a. Internal resources are more effective than external resources (i.e. consultants)
   b. Interaction with senior management and participation in management forums is necessary
   c. Accident rates reduce up to a resourcing ratio of 1:50 (safety professional to workforce) in operational environments (i.e. construction) however what they do is equally important
   d. Accident rates can double when site-based safety professionals formally report to site management, as opposed to an off-site senior safety professional, as acute production and schedule pressures can compromise their role.
   e. Accident rates reduce when additional responsibilities (i.e. environment) are added to a safety professional’s role.

5. Centralized organisational safety structures increase role independence and safety organisation alignment, however, reduces operational involvement in decision-making, the effectiveness of interpersonal relationships and line-management influence.

6. Safety professional ‘whistleblowing’ to senior management within organisations, damages relationships and is unlikely to lead to positively influencing safety outcomes. Organisations should foster an environment that values ‘challenge’ and the open raising of concerns enabling safety professional to be supported and rewarded for expressing differing viewpoints.

7. Safety professionals that align safety objectives and activities with other organisational strategies, targets and business processes are effective at stewarding and sustainably improving safety.
8. Safety professionals need to effectively communicate with, and support all of the objectives of line management and the front-line workforce, facilitating alignment between parties.

9. Safety professionals relying on authority (derived from the formal role, senior management or safety systems) to influence safety is less effective with both line management and the front-line workforce than alliance based relational strategies.

10. Effective influencing requires safety professionals with; strong inter-personal relationships built on credibility and trust, advanced communication skills, and expert organisational knowledge and operational context.

11. Safety professionals believe in traditional approaches to safety that is focussed on improving; human behavior (of line management and the front-line workforce) and organisational safety systems.

12. Safety professionals require expert level; domain safety knowledge, knowledge worker skills and a critical understanding of the technical and social nature of risk.

2.8.2 Further Research

Future research should focus on empirically understanding the complexity of safety professional roles and practice. The review raises two specific questions, that require further empirical investigation to answer, and the results of which would enable the design of experimental research.

1. How do the role shaping factors identified in this review interrelate to influence safety professional practice?

2. How can the effectiveness of safety professionals be evaluated?

In 1978, the Commission of the European Communities stated that safety professionals must have: technical knowledge of the company's field of activity, analytical skills, the ability to synthesise and sell as personal qualities that facilitate interpersonal relations, cooperation and teamwork, and a general knowledge of psychology, sociology, and management (Brun and Loiselle 2002). This framework is almost 40 years old and based on the relational and individual factors identified in the literature since, contains a
more complete model of the capabilities required by safety professionals than more recent descriptions. It seems we have advanced little in our understanding of safety professional practice in almost 40 years. Subsequent partial models of ‘safety professionalism’ and ‘safety education’ may have resulted in degradation of safety professional effectiveness over recent decades.

2.9 OUTCOME FOR THE RESEARCH AIM

To me, the existing research into the role of safety professionals, whilst appearing extensive, is unsatisfying and grossly inadequate. Within the literature review reported in this chapter I provided an overview of the handful of research studies that explored aspect of safety professional practice. However, each of these studies investigated a narrow and isolated construct, e.g. influence. The existing literature was unable to provide an answer to for the primary research question of this thesis. The following sub-question was addressed:

SQ1: What are the institutional, relational and individual factors that shape the role of a safety professional?

The majority of the literature discussed the institutional, or ‘structural’ influences on the role of safety professionals. Of particular importance to the rest of the study were the following findings in relation to the existing literature:

- There are widely disparate role titles, job designs, tasks, and objectives of safety professionals in the performance of their role
- There seems to exist a wide gap between formal safety professional education and the capability needs of safety professionals in practice
- There is a significant influence of legal regulation and safety compliance activity on both the role and relationship of safety professionals within their organisations. Legal compliance and the resulting organisational safety bureaucracy, has been the basis for the establishment and evolution of the profession
- The way that organisations measure safety performance through the number of accidents and non-compliances, shapes the reactive nature of the role in practice
A considerable segment of the existing literature also describes relational influences on the role of safety professionals. Much of the literature on these relational or ‘agency’ influences are theories and commentaries as opposed to empirical research findings. Of particular importance to the rest of the study were the following findings in relation to the existing literature:

- Organisational stakeholders may not understand the role of their safety professionals and therefore do not know how to engage and work with them
- There is no clear definition or description of current safety professional practice
- There is an unresolved tension between safety professionals raising safety issues and challenging their organisation, with maintaining harmonious relationships with management

Following completion of the literature review, the remainder of the thesis research was designed. The findings from the literature review drove the development of the remaining four research sub-questions:

- SQ2: What is the professional identity of safety professionals?
- SQ3: What are the objectives of safety professional work activities?
- SQ4: What is the current role of safety professionals within organisations?
- SQ5: What is the future role of a safety professional through the theoretical lens of resilience engineering, safety-II, and safety differently?

Reflecting on this chapter now, upon completion of the thesis, the relational factors (figure 1) and the relational model (figure 2) presented in chapter 2 do not sufficiently take into account the complex context of daily practice. Chapter 2 describes these relational factors, as they are presented in the literature, in isolation from the context of practice. Following the research reported in chapter 3, 4 and Appendix 1, these relational factors are able to be situated within the: beliefs, work, relationships, and objectives of safety professionals. Following the completion of the identity and practice research, the practical implications and conclusions reported at the end of the chapter are able to be clarified and expanded, to make them more helpful to organisations and safety professionals.
CHAPTER 3: SAFETY PROFESSIONAL IDENTITY

3.1 STATEMENT OF CONTRIBUTION OF CO-AUTHORED PAPER

This chapter includes a co-authored published paper. The copyright has been transferred to Elsevier, however, authors have the right to include their article in a thesis or dissertation. The bibliographic status of the co-authored paper, including all authors, is:

3.2 RATIONALE FOR THE STUDY

Following the literature review reported in Chapter 2, the research project reported in this chapter started with the following sub-question:

SQ2: What is the professional identity of safety professionals?

Whilst much of the existing literature attempted to understand safety professional practice from the perspective of the institutional and relational influences, I decided to start my thesis research with safety professionals as individuals. I felt that it was really important to start with this understanding about what safety professionals thought and believed about safety and their role in organisations. With the exception of a few minor studies, findings relating to the underlying beliefs of safety professionals was missing from the literature. I was curious about how they viewed themselves.

I needed to design the research in a way that would distinguish the individual beliefs of safety professionals from the broader context of their current practice. A nested case study of safety professionals within a single organisation was the most appropriate method to achieve this understanding due to the duality of their beliefs and current practice.

Following a review of organisational theory, professional identity was selected as the most appropriate construct to frame this exploration. Professional identity can be a difficult construct to research, and so considerable literature review and planning went into the design of the interview questions and the approach to data analysis. Professional identity research had not previously been attempted on the safety profession, nor on any similar emergent professions. The traditional domain of professional identity research is in the established professions, e.g. education, law, medicine, engineering, and accounting.

Understanding safety professional identity would provide me with the opportunity to conduct future safety professional practice research with an intimate understanding of the background and beliefs of the participants. When complete, it would uniquely position this thesis with an understanding of both the agency (internal) and structure (external) influences on the role of safety professionals. No previous studies regarding the tasks and activities of safety professionals have been able to answer the question of how individual beliefs, as well as organisational influences combine to shape safety professional practice.
**Benefactor or Burden:**

*Exploring the professional identity of safety professionals*

3.3 **ABSTRACT**

The professional identity of safety professionals is rife with unresolved contradictions and tensions. Are they advisor or instructor, native or independent, enforcer of rules or facilitator of front-line agency, and ultimately, a benefactor for safety or an organisational burden? Perhaps they believe that they are all of these. This study investigated professional identity through understanding what safety professionals believe about safety, their role within organisations and their professional selves. Understanding the professional identity of safety professionals provides an important foundation for exploring their professional practice, and by extension, understanding organisational safety more broadly. An embedded researcher interviewed 13 senior safety professionals within a single large organisation. Data was analysed using grounded theory methodology. The findings were related to a five-element professional identity model consisting of experiences, attributes, motives, beliefs and values, and revealed deep tensions and contradictions. This research has implications for safety professionals, safety professional associations, safety educators, and organisations.

3.4 **INTRODUCTION**

The safety profession has evolved significantly over the past 30 years. Increasing safety regulation and social expectation for safety, has expanded the size and seniority of the profession within organisations and across industry. However, we have a limited understanding of their current role and practice within organisations (Provan, Dekker et al. 2017). We understand even less about who they are and what they believe about safety – their professional identity. To embrace, work with, and make changes to the safety profession, it is paramount we understand how they view their world.

There are existing stereotypes associated with the safety profession, such as: Policeman (Walters 1999), Bureaucrat (Woods 2006), Priest (Dekker 2017) and Psychologist (Walters 1999). These are outsider perceptions of the safety profession, not models of professional identity. They are portrayals of who others think safety professionals are, not...
who safety professionals think they are. There is no existing research into the professional identity of safety professionals.

This research aims to understand the safety professional in a more intimate way than previous descriptive research into their tasks and education. Beyond the organisational focus on translating knowledge (‘knowing’) to practice (‘doing’), professional identity looks at the combination of these with other aspects of the individual to understand who they are (‘being’) (Snook, Nohria et al. 2011). Understanding professional identity is pivotal for understanding how professionals embed themselves in organisations (Webb 2015). However, there has been limited research into professional identity broadly across the professions (Clarke, Hyde et al. 2013).

Professional identity helps us to understand why professional practice is the way that it is, therefore providing the potential for change and improved effectiveness, that may, in the case of safety professionals, lead to safer organisations. This type of study, to understand the recursive relationship between professional identity and the identity of a profession, has been called for in the literature (Hotho 2008). The findings describe a view of safety professional identity. Because professional identity is self-described, the findings make no inferences about effectiveness or ineffectiveness of safety professionals, nor do they judge whether safety professionals’ self-concept and beliefs are good or bad.

3.4.1 The Safety Profession

The professional identity of safety professionals is situated within the context of their organisation, and their profession more broadly. This is the intersection between who they are and the context in which they perform their role. The Safety Profession in its present form is approximately 30 years old and to a large extent remains immature and fragmented. Provan, Dekker et al. (2017) conducted a comprehensive literature review on the role shaping factors of safety professionals across organisational, social and individual dimensions. 25 factors were identified, for example: legal regulation, education, professional accreditation, safety culture, job design, and senior management. Despite the significant recent efforts of the International Network of Safety and Health Practitioner Organisations (INSHPO) to define, standardize, train and accredit safety professionals, the experiences of working safety professionals vary considerably across organisations, industries and nationalities (Pryor, Hale et al. 2015).
The present role of safety professionals within organisations has been the subject of significant research. The tasks and activities, education and practice of safety professionals across many countries has been described in the existing literature. Hale and Guldenmund (2006) surveyed more than 8000 safety professionals in over 12 countries to determine the core and common tasks and activities of safety professionals. Chang, Chen et al. (2012) surveyed almost 300 safety professionals and safety educators to establish the core competencies and curricula for the education of safety professionals. Daudigeos (2013) observed safety professionals enacting practical agency and proposed the mechanisms through which they influence safety in organisations. The safety professional body of literature, represented in the examples above, provides a description of what safety professionals might do in organisations and how they are educated. The gap in the existing safety professional literature, is research into how safety professionals think and feel about and identify with their role. This case study into the professional identity of safety professionals begins to address that gap.

3.4.2 Professional Identity

Professional identity refers to an individual's self-concept about their professional role based on their experiences, attributes, motives, beliefs, and values (Ibarra 1999). This is distinct from their organisational identity which is an indicator of an individual's personal association with where they presently work (Pratt, Rockmann et al. 2006). Professional identity has been scantily researched over the past 40 years, and generally only in respect of long-established professional disciplines e.g. education (e.g. Beijaard, Meijer et al. 2004, O'Connor 2008, Clarke, Hyde et al. 2013), and healthcare (e.g. Benoit 1994, Pratt, Rockmann et al. 2006, Chromik 2015).

Professional identity is a complex individual phenomenon that is shaped by both individual and contextual factors surrounding their professional life (Clarke, Hyde et al. 2013). Individuals continually bridge their personal identity with their professional identity through participation, observation, interpretation, and re-interpretation of individual and organisational experiences (Beijaard, Meijer et al. 2004). Thus, professional identity is both an individual and a social construct shaped by education, moral, and conceptual frameworks and also by the performance of roles strongly determined by the professional community and organisation (Giddens 1984, Kogan 2000, Hotho 2008, Bévort and Suddaby 2016). Individuals
develop and adjust their identity as they acquire discourses (Gee, Hull et al. 1996) from many knowledge sources, such as: affect, human relations and subject matter (Beijaard, Meijer et al. 2004). Professional identity is both a product of structure and a product of choice (Bourdieu 1993, Hotho 2008).

3.4.3 Investigating professional identity

Given the constructivist nature of the development and interpretation of professional identity, much of the research into professional identity consists of context specific qualitative case studies (Pratt, Rockmann et al. 2006). Professional identity research needs to consider the personal and often unconscious nature of the beliefs associated with professional identity. The aspects of individual and social life that form professional identity are tacit and unarticulated and significantly influenced by family, close relationships, early career experience, and professional traditions (Sugrue 1997). Individuals internalize these professional and social experiences mostly without giving them much critical reflection (Clarke, Hyde et al. 2013). Therefore, professional identity research needs to find ways to elicit these underlying individual narratives through observation and open discussion with professionals, concerning themselves, their subject matter, and their role (Webb 2015). Qualitative case studies provide researchers with the opportunity to explore professional identity as a complex social and individual phenomenon.

Sugrue (1997) developed a theory of the formation of professional identity of teachers through analysing interview transcripts of 9 student teachers for emerging themes. Gibson, Dollarhide et al. (2010) conducted 2 focus groups of student counsellors at a single academic institution, using qualitative research methods and grounded theory analysis to develop a professional identity theory of new counsellors. Kosmala and Herrbach (2006) conducted semi-structured interviews with 18 practicing financial auditors and 10 former auditors in the UK and France to establish a theory of professional identity in audit firms. Eliot and Turns (2011) conducted a study on the formation of professional identity among engineering students through conducting 4 workshops with a total of 36 participants from a single institution, where participants completed an online survey consisting of open-ended questions. Williams (2010) completed one hour semi-structured interviews with 15 participants to explore the creation of new professional identities for participants who had undergone a career change into the teaching profession. O’Connor (2008) conducted semi
structured interviews with 3 participants to establish discourses of emotionality and professional identity through the lived experience of teachers. The small number of participants in each of these studies is a reflection of the depth required in each individual case (participant) when exploring professional identity. Case study research should be depth-first rather than breadth-first research and where a single case may comprise an entire study (Yin 2017).

Professional identity forms and evolves at the intersection of the individual and their landscape. As professional identity is constantly evolving, it will be influenced by the context that the professional is currently operating within including their current organisation (Reynolds 1996, Beijaard, Meijer et al. 2004). Tensions between agency (the personal dimension) and structure (the socially given) manifest in descriptions of professional identity (Coldron and Smith 1999). Researchers need to find ways through their sampling and data collection to isolate professional identity from organisational identity. In this way researchers are able to describe the thoughts, beliefs and actions of professionals, as they are derived from the individual, historical, structural and social landscapes.

The position of the researcher relative to the research (reflexivity) is particularly important for professional identity analysis. The implicit professional identity of participants is made explicit through an ongoing dialogue and discovery between participant and researcher (Gibson, Dollarhide et al. 2010). For this reason, it is common to include in the research team a member of the profession under investigation.

3.5 METHODS

3.5.1 Participants

13 senior safety professionals from an Australian Energy Company participated in this study. As professional identity is both an individual and a social construct (Kogan 2000) participants were deliberately selected from within a single organisation (social system). This research design enabled the separation of individual identity constructs from those related to organisational identity. These participants were performing a diverse mix of dedicated generalist and technical specialist safety roles. Participants are currently mid-level and senior-level safety professionals, and all were recruited into the organisation to perform safety professional roles, i.e. no participants had performed other roles in the organisation prior to their appointment as a safety professional. 12 participants were male, and 1
participant was female. Participants had worked in full-time safety professional roles for between 2 and 20 years with an average of 11 years of experience. 8 of the 13 participants had tertiary safety qualifications.

3.5.2 Data Collection

Each participant took part in a semi-structured interview completed by the first author. The first author has been a safety professional for 18 years, has undergraduate and postgraduate safety qualifications, and is the most senior safety professional within the participants’ organisation. The duration of the professional relationship between the embedded researcher and the participants range from 1 to 16 years. The embedded researcher’s 18 years of personal experience in safety professional roles and more than six years within the organisation enabled a deep empathy and trust with participants.

Professional identity is largely tacit to an individual (Wackerhausen 2009) and is, therefore, best understood by asking about their experiences, attachments and beliefs, rather than directly asking how they see their professional identity (Barbour and Lammers 2015). There were four open-ended questions asked during the interview:

1. Describe your safety background.
2. Describe how you think safety is best managed in organisations.
3. Describe your role as a safety professional in the organisation.
4. Describe your major successes in your career as a safety professional.

Interviews were conducted in December 2016. All interviews were audio-recorded, resulting in 655 minutes of audio and 169 pages of transcripts.

3.5.3 Analysis

The interview data was analysed using a progressive comparison grounded theory method (Corbin and Strauss 2014) to thematically analyse the content of what was said, and discourse analysis techniques were further used to analyse how it was said (i.e. links and omissions, language, linked concepts, qualifiers and uncertainty, category distinction) (Creswell 2014).

A collaborative analysis process was used where members of the research team individually completed an analysis, and then together each transcript and the proposed
themes were discussed, compared and refined (e.g. Feldman 2004). Themes were continually weighted as more participants independently referred to them. A threshold was set for themes to become findings of the research when 10 of the 13 participants made a strong reference to the theme. Following the analysis, a five element professional identity model (Schein 1978, Ibarra 1999) was selected to classify and report the findings. In text quotations are identified with each participants reference number in square brackets [1-13].

3.6 RESULTS

Safety professional identity is shaped by an individual’s: experiences, attributes, beliefs, motives, and values (Schein 1978, Ibarra 1999). Each of these elements combines and recombines through practice to determine an individual’s self-concept of their role as a safety professional. The analysis identified eight findings which were later categorized in relation to these five elements of professional identity (see table 1).

Table 1: Safety professional findings by element of professional identity

<table>
<thead>
<tr>
<th>Element</th>
<th>Finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiences</td>
<td>3.6.1.1 Career pathway is the dominant factor in determining safety professional identity</td>
</tr>
<tr>
<td>Attributes</td>
<td>3.6.2.1 Relationships are more important than authority</td>
</tr>
<tr>
<td></td>
<td>3.6.2.2 Interpersonal skills are more important than technical skills</td>
</tr>
<tr>
<td>Beliefs</td>
<td>3.6.3.1 Safety improves by enabling change in organisations and people</td>
</tr>
<tr>
<td></td>
<td>3.6.3.2 Modern safety bureaucracy is an encumbrance on safety</td>
</tr>
<tr>
<td>Motives</td>
<td>3.6.4.1 Safety Professionals have a moral and ethical motivation for safety</td>
</tr>
<tr>
<td>Values</td>
<td>3.6.5.1 Leadership is accountable for safety</td>
</tr>
<tr>
<td></td>
<td>3.6.5.2 Safety Professionals ‘draw the line’ about what is safe and unsafe</td>
</tr>
</tbody>
</table>

The number of references to individual findings across the interviews ranged from 80 references to bureaucracy (3.3.2) to 11 references to moral motivation (3.4.1) (see table 2).

Table 2: Participant references to safety professional findings

<table>
<thead>
<tr>
<th>Finding</th>
<th>Participants</th>
<th>References</th>
</tr>
</thead>
</table>

79
Detailed analysis of the above themes revealed deep tensions and contradictions associated with participants safety professional identity that appear un-consciously unresolved (see table 3).

Table 3:  **Tensions and contradictions associated with safety professional identity**

<table>
<thead>
<tr>
<th>Finding</th>
<th>Tensions &amp; Contradictions</th>
</tr>
</thead>
</table>
| 3.6.1.1 Career pathway is the dominant factor in determining safety professional identity | Operational experience vs. Academic education  
(Value diversity but undervalue experiences different to their own) |
| 3.6.2.1 Relationships are more important than authority                 | Relational influence vs. Formal authority  
(Value belonging but require authority) |
| 3.6.2.2 Interpersonal skills are more important than technical skills   | Interpersonal skills vs. Technical knowledge  
(Value interpersonal skills but are valued for their technical knowledge) |
| 3.6.3.1 Safety improves by enabling change in organisations and people  | Enabling change vs. Protecting operations  
(Value change but undervalue the protection of existing operations) |
| 3.6.3.2 Modern safety bureaucracy is an encumbrance on safety           | Bureaucracy vs. Agency  
(Value freedom but believe safety requires bureaucracy) |
| 3.6.4.1 Safety Professionals have a moral and ethical motivation for safety | Moral safety professionals vs. Un-ethical organisations  
(Value morals and ethics but believe others don’t) |
| 3.6.5.1 Leadership is accountable for safety                           | Alignment with line-management vs. Independence advice  
(Value leadership accountability but believe they don’t understand safety) |
| 3.6.5.2 Safety Professionals make decisions about what is safe and unsafe | Drawing-the-line for safety vs. Others making operational decisions  
(Value control but respect others authority to make decisions) |

3.6.1 Experiences
Experiences are described as events or occurrences, which leave an impression on the safety professional regarding how they think about and practice their role. A safety professional’s background can be described in terms of their education, workplace experiences and more broadly, life experiences.

3.6.1.1 Operational experience vs. Academic education

The most common and distinct aspects of a safety professionals career experiences relevant to how they think about safety and their role is their formal academic safety education and, or, experience in high-hazard frontline operations. These primary career pathways into the safety profession determine an individual’s safety understanding, empathy for frontline work, and what they believe creates safety in the organisation.

‘different individuals through education, through their own experiences, their own backgrounds in different organisations will approach safety differently.’ [13]

Safety professionals entering the safety profession through tertiary safety education prior to identifying as a safety professional creates a belief that they ‘know’ how to create safety. Safety professionals that went into their academic safety education without front-line work experience had little practical insight into what the safety profession did.

‘Back then it was, well, what does a Health and Safety person do? And all I got most of the time from my dad, he’s a diesel mechanic, and all he sort of said was, “Well, I think they just walk around with a clipboard and tell you whether something’s right or wrong, or safe or unsafe.’ [6]

After several years of work as a safety professional, they realize that their tertiary education has very little relevance to performing their role effectively.

‘I didn’t get any specific safety training [in my degree] that I’d consider valuable; most of it was learning on the job’ [10]
Safety professionals that have front-line operational experience in high hazard roles or more broad work experience before entering the safety profession believe that tertiary safety education is not the most important experience. Further, they criticize safety professionals that approach their roles from an academic, rather than practical perspective.

‘they need to design the elegant system to meet those requirements, and they need to draw the line in the sand and hold to those requirements. So, I think there’s a group of people that are very theoretical in their approach to safety and very rigid around safety and I kind of think that’s personally disappointing’ [11]

‘there’s a blind deference to the systems that support them, that they see as the crutch for them to walk with and it provides them an opportunity to speak to something that they think is in their technical remit and that is the safety management system.’ [2]

Some safety professionals don’t have any formal safety qualifications.

‘So that’s my career … essentially 20 odd years of experience. But no formal qualifications though’ [4]

As is common in the safety profession, several participants had commenced the first part of their career in safety-critical operational roles and then transitioned to a career as a safety professional. This career pathway led to more discussion and empathy for creating safety at the front-line of the organisation and more inclusive and collaborative approaches to their role.

‘So, my trade and paramedic background give me the people interface and understanding ability, so to go, how do you take a concept from, say, corporate or a standard and then how does that actually look at the person on the ground, how would they interface with that and how would it be effective?’ [3]
Some participants had both an operational career background as well as subsequent tertiary safety qualification. When asked directly which of these experiences they draw on the most to be effective in their role, all of them said their operational experience.

‘what’s helped me build that rapport, build those relationships is that ... high-risk background ... I can actually understand or see from previous [operational experience] ... what the actual risk is, so I’ve got that practical understanding ... I’m unsure if I just had the academics, I’d be as successful or if I’d be able to build those relationships’ [13]

‘more from my time on the tools, my practical experience that I learnt. Uni was definitely important ... But I think the ability to be able to approach a conversation and to also understand that ... people do take shortcuts and try and understand well why do we actually do that? Why are we skipping six, seven? Is there actually a better way to do things?’ [12]

Participants with academic safety backgrounds believe that tertiary education should be a pre-requisite for all safety professionals and without tertiary qualifications, safety professionals are not effective

‘We shouldn’t be employing people without tertiary quals in the health and safety role’ [1]

‘they have something like 11 safety people in the field, eight of which have almost no qualifications. So again, you’re going what do you really, you know what’s the point? You’re actually not even adding value, you’re de-valuing the whole profession to a large extent ... they’re lollipop distributors, that’s their job, then I’d just go get rid of them. Have four or five really good ones, not 11 shit ones.’ [5]

Conversely, participants without academic safety qualifications and instead many years of frontline operational experience believe that there should be a much broader focus on organisations selection requirements for safety professionals.
'I would be overlooked for somebody with a more robust safety resume. So, I think that for me polarizes the conversation around safety. So, what we’re, what we first do is look at the academic attributes of the individual and we look past the nontechnical skills that those people may have and we go through a very burrowing processing to short list some candidates that we’re then going to, put in front of a selection panel of senior leaders who may have a little understanding of what operational safety means, to then have an output that is the employment of an individual in a position that they're ill-equipped for. And we go through and make the mistake time and time again.’ [2]

This tension between tertiary qualified safety professionals and those with high-hazard operational experience in front-line roles leads to some participants without tertiary safety qualification not referring to themselves as safety professionals even though they are performing that role.

‘that for me was my first full-time safety role within an organisation ... it actually quite challenged me around how safety professionals view safety.’ [2]

All safety professionals agree that tertiary qualifications on their own are not enough and that current academic education does not sufficiently prepare safety professionals to be effective in their roles.

‘where our education system falls over is we embed a lot of, you know, academics and professionals within our institutions that, that are teaching what they think should be taught. They haven’t necessarily had the opportunity to walk in the shoes of the people for whom they think that they’re protecting to be able to craft an understanding of what actually ... creates and benefits safety or how does an organisation view safety.’ [2]

‘You know you want your safety manager to be a professional safety person but what is the right qualification and then, and it can’t just be qualification only, it’s got to be
matched to something else ... we need to match with the right experience and the right personal qualities as well.’ [11]

Safety professionals with part of their working lives spent outside the safety profession believe that this time makes them a more effective safety professional, even if that means leaving the profession and then returning.

‘I just think for safety professionals it’s I think actually important to, to move out of the safety field if your, you know if your own organisation can’t do it for you then I think you need to do it because you’ll actually end up being a lot better safety professional.’ [11]

The professionalization of the safety profession has occurred over the past 20 years, and many participants have witnessed this entire development through their working lives.

‘it was only in 1995 was the first time we actually, they employed, at a site with over 300 people full time ... a professional safety person, so someone whose background was safety’ [11]

The vastly different work and education experiences of safety professionals combine with a confused role expectation in modern organisations (Provan, Dekker et al. 2017). Perhaps, the safety profession hasn’t yet found its place or role in their organisation.

‘we don't clearly define what we want a safety professional to do. We don't really clearly empower them. So, they're kind of in this amorphous zone, and it's just really hard work’ [11]

Safety professionals describe their career experiences and relate these to how they think about safety and their role within organisations. Those that have academic backgrounds in safety, particularly early in their working lives talk to the development of technical skills and their usefulness in providing advice in their role. Those that have extensive experience in front-line operational roles talk to their understanding and experience of how work gets
done and their ability to relate to those at the front-line of the organisation. Most interestingly, alongside the individual belief that their career pathway is the most effective, they actively discredit and devalue those safety professionals with different career pathways and experiences. Safety professionals do not value the diversity of career experience in the safety profession, but rather believe there is one best background for an effective safety professional that aligns with their own.

3.6.2 Attributes

Attributes are described as a quality or feature that can be regarded as a characteristic or inherent feature of a safety professional. Professional attributes commonly described in the safety professional literature are technical skills and interpersonal skills. Safety Professionals believe that both technical skills and interpersonal skills are important for them to be effective in their role, however, conclude that interpersonal skills are the most important. Consistent with the bias towards the importance of interpersonal skills, safety professionals believe that relationships are more important than having authority. Safety professionals believe they are most effective in their role when they can use their interpersonal skills and relationships to influence others, rather than when they can use their technical skills and formal organisational authority to control others.

3.6.2.1 Relational influence vs. Formal authority

Safety professionals universally describe the importance of line managers within their organisation leading and owning safety. Safety professionals see their role as supporting and enabling line managers. To do this effectively, they describe the importance of relationships with others in the organisation, and through this the ability to influence their decisions and actions.

‘I see my role as a partner and a support and enabler to the organisation to deliver a great safety outcome, but also to deliver a great business outcome’ [4]

Although safety professionals see themselves as a partner to line managers and others in the organisation and they value relationships over authority – many others in the organisation have a different perspective.
'I would always in passing hear about a meeting because no one else was at their desks. So, the structural guys aren’t there, mechanical guys aren’t there, piping isn’t there, project managers aren’t there – safety are all sitting in their cubical ... and we’re thinking we’re making this place safer, but little did we know, upstairs the whole entire design team, except safety, are sitting there making decisions that are contrary to the documents we’re writing.’ [10]

Safety professionals consider it important to have alignment, and agreement, on their role, the role of line managers and the interface between them.

‘work some alignment around whatever [management] think their role is today versus what I think it should be ... and try and just to get some alignment so that we’re actually moving in concert’ [7]

Safety professionals understand the Importance of relationships to understand the perspectives of others and to be involved in the business.

‘For me, you’ve got plant and field managers and those guys in charge of people and they get pressures from production, they get pressures from safety, they get pressures from a whole suite of areas, so you’ve really got to kind of just let them talk and understand’ [1]

‘I personally get a huge amount of value when I go to the field, talk to some of the guys on the ground. I feel I can do it in a non-threatening manner and then I can help’ [5]

‘a lot of it is really getting involved with what I would call the DNA of how the site actually works, as being an integral part of that.’ [6]

Safety professionals aim to influence safety by working ‘through’ others throughout the organisation and to do this they invest heavily in developing effective relationships.
‘I spend a lot of time influencing people and managing relationships and making sure that we’ve got an in-road into the business that’s, that is in a real partnership way, so that were, embedded and entrenched into the organisation. So, I spend a lot of time on relationships’ [4]

‘as safety professionals move through their careers, it’s the ability to influence down, but you’ve also got to have the ability to influence up as well and across.’ [12]

‘I used to be arrogant enough to think that as a one man I could make a difference on the ground, and the reality is, is that I can only do that if I can work through others. But I can’t actually do it on my own.’ [7]

Safety professionals do not believe that using the formal or informal authority vested in their role is an effective way to steer safety and they understand the negative impact that leveraging authority can have on peer relationships.

‘I’m pragmatic; I’m not just a dude wielding an HSEMS, slamming it down on tables every now and again, or evangelizing.’ [10]

‘[Using authority] that’s where we don’t add value because we mess that up and we lose that relationship, that credibility, that trust straight away’ [13]

Safety professionals do not have any ‘real’ safety authority anyway. Although they have the responsibility to make decisions about, say, the content of a safety document, they do not make any operational decisions that directly impact safety outcomes.

‘it’s not my business unit so I’m not going to make the decision, but I’m going to provide a compelling argument one way or another’ [9]

‘the first thing that struck me ... was the actual challenge of that [safety professional] role and how hard that role actually is because you actually don’t have any direct line management ownership. So, you’ve got a huge interest and a huge care and concern,
but you actually don’t own anything. So, it moves from a, for myself personally from where I could very much take control, make decisions and actually make things happen, to where I’m, you know, coaching, mentoring, prodding where it needs to be.’ [11]

3.6.2.2 Interpersonal skills vs. Technical knowledge

Safety professionals believe that while a baseline of technical skills is necessary for them in their role, it’s their interpersonal skills that determine their effectiveness. It’s these interpersonal skills that assist them in developing the relationships described above.

‘how they can just interact with people and build relationships is huge ... and it’s actually bigger than the technical aspect. Cos, I can go get a consultant to tell me anything, quite frankly. And to a large extent, I do because businesses tend to believe an external voice more than they do their internal voice. Even if it’s exactly the same message. But how you build those relationships and that trust over time is more important than your technical skill set.’ [5]

Safety professionals describe the following interpersonal skills as necessary: communication, collaboration, listening, facilitation and coaching.

‘a lot of people cannot communicate well enough to – especially in operations – get things done’ [1]

‘if you see something coming, how do you raise that with a manager or management team without saying the sky’s falling.’ [5]

‘Enabling for me is also about trying to collaborate with the business, so I think that comes back to this sort of notion of do stuff with the business, not to the business.’ [8] ‘open up the communication line, instead of driving a message from the corporate down we needed to get a message from the field up. So, they needed to tell us what was important’ [9]
‘I see my role as a facilitator, and through facilitation, I provide both service and governance’ [10]

‘Probably in a future state you probably don’t even need a safety professional, you probably just need someone who knows how to engage with individuals and talk through and coach them on how your organisational culture should be.’ [6]

Safety professionals describe their need to relate to others, have emotional intelligence, be credible, open and honest and generally be a ‘people-person’.

‘I truly believe successful people within the safety function they need to be people-people … They need to be able to communicate and relate to our people within the business, no matter what function’ [13]

‘emotional intelligence, you know, understanding the dynamics and the pressures that the different people you’re trying to influence are under – you can’t be a bull in a china shop; you’ll just fail.’ [1]

‘Yeah, and it’s really just being open and honest and not getting too emotional’ [1]

‘it sounds a bit weird, but I guess just being – this is going to sound really weird – being a normal person, quite frankly’ [5]

Safety professionals downplayed the importance and usefulness of technical safety skills in their day-to-day professional practice.

‘There’s no point being a technical boffin all the time when you’re not actually making any change to the world or the way people do their stuff, whatever that might be.’ [10]

Safety professionals with ‘safety technical skills’ don’t necessarily have the ‘work technical skills’ associated with the tasks and equipment being used in the organisation.
‘I haven’t been out there before and swung the tools or pressed the buttons on the gas plant, or whatever it is. You know, therefore there is that potential that people go well you’ve never done this, you’ve never lived in my shoes before so how the hell would you know’ [5]

3.6.3 Beliefs

Beliefs are described as a trust, faith, confidence in, or an acceptance that something exists or is true. Safety professionals believe that safety improves through changing organisations and people and that modern safety bureaucracy is an encumbrance on safety.

3.6.3.1 Enabling change vs. Protecting operations

Safety professionals describe success in their role as enabling change within their organisations. They believe that their organisation is not as safe as it needs to be and their role is to lead and enable the necessary change.

‘everything I think, most of what I do, is in fact I think is going to make a change.’ [10]

‘the role of the safety professional is probably more of a change agent’ [6]

Safety professionals create a safety vision for their organisations and enable them to embark on a ‘safety journey’.

‘I’m leading them through the vision of what great safety could look like three, to five, to ten years’ [4]

‘I’ve always said that good safety performance and good safety outcomes is a journey, not a destination.’ [7]

Safety professionals see their role as enabling safety change and not performing transactional safety work.
‘If I can say nothing in that risk assessment and have all of the operational leaders, have the front-line workforce speak to, and be able to contextualize the risks that they’re facing that’s when I’ve known I’ve been successful in my role.’ [2]

‘I see a lot of [safety professionals] solving it for the business and I kind of think that just further kind of embeds the role of the safety piss boy… being the servant of the business rather than the professor of the business and educating the business.’ [11]

Safety professionals describe successful change as improving the capability of the organisation and its people to manage safety, i.e., the learning outcomes. Safety professionals do not describe their success in terms of successful work outcomes (i.e., cost and production) or in terms of safety outcomes (i.e., injury rate reduction).

‘the success isn’t the activity itself, the success is moving the organisation to understand why we do this and how it benefits safety.’ [2]

Safety professionals describe two areas of change that they enable through their role, programs, and people. Program implementation involves supporting the enhancement of organisational systems and programs.

‘the biggest achievement for me there was to help revamp and refresh and revise the whole control of work system and the permit to work system, to the point where I probably trained up about, oh, maybe a couple of hundred people in how to do hazard and risk assessments using risk assessment protocols.’ [6]

Building capability in people through coaching and development is the most important aspect of a safety professional’s role.

‘I need to be able to build capability through coaching, through mentoring, through experience and exposure and assisting our people to be able to conduct what they do in essence without me in time’ [13]
However, building capability in people is an intangible activity for safety professionals and one that they found hard to describe, justify and demonstrate improvements to their organisations.

*the real conflict I have is that that takes time and it’s this incredibly busy world and then what’s the value you put on, you know, 20 conversations that move the business the right way* [11]

Safety professionals need to make sure that they are implementing the right changes with their organisations – the ones that line managers and front-line workers think needs to be made.

*in the past, we’ve never really listened. So, we always dictate, never listen* [9]

*we’ve got to get better at helping the business make the improvements in the areas that they know are weak* [8]

Safety Professionals continuous focus on change and improvement may create tension and instability with existing operations. There is an un-questioned belief that these ‘improvements’ to people and programs will results in improved safety.

3.6.3.2 Bureaucracy vs. Agency

Institutional factors shape safety professionals understanding of their role, and over time, beliefs about how it is best performed. Safety professionals believe that the modern safety bureaucracy is an encumbrance on their effectiveness in their role. Safety bureaucracy refers to the external regulatory environment as well the procedural controls and safety requirements internal to their organisation.

Safety professionals believe that safety bureaucracy including accountabilities, systems, rules, and performance reporting are fundamental to managing safety and their role is fundamental to developing and administering this bureaucracy.

*I actually think systems underpin good safety* [4]
‘it’s almost fundamental but has to be said ... that we’ve got the right systems in place that enable compliance’ [8]

‘they’re absolutely fundamental, but they don’t need to be overly complicated’ [11]

Safety professionals believe that safety bureaucracy within organisations is overly large and complex, coupled too often with a strict compliance mentality.

‘the issues with a lot of systems is that they’re very top-heavy and they create a lot of burden, and they tend to get in the way’ [6]

‘our system underpins everything that we should be doing, but we’ve overcomplicated everything’ [4]

‘if someone doesn’t have their seatbelt on while they’re doing 3km/hr ... is that something that’s going to be a matter of life or death ... there’s a whole range of things where I think we’ve probably over-boiled the ocean a little bit, you know, you can only cross when there’s a green man, you can only do this, you can only do that, you know, we’ve got to have hazard tape around the toaster machine in a corporate office.’ [8]

‘we’ve overcomplicated our processes or our systems for our people who use them in the field’ [12]

Safety professionals believe that the safety profession has been integral to the development of contemporary safety bureaucracy. Safety professional identity is strongly connected to their role in relation to the elements of safety bureaucracy.

‘when you talk to a whole range of safety professionals and industry leaders, and they just say, “We’ve just taken this stuff too far, right?”’ [8]

‘the blind following of regulation and our compliance mentality that has a negative, I think, effect on the safety outcomes’ [2]
Safety professionals describe the burden of safety bureaucracy on them in their role and on the organisation more broadly. Further, they describe much of the bureaucratic safety activity as adding no value to safety, particularly safety performance reporting.

‘So, the week before was all about preparation of the packs, and then the week after was about the meetings themselves and trying not to get actions out of meetings. So that’s literally half my month gone. And I’ve done zero, apart from hopefully avoiding unnecessary management actions.’ [5]

‘I sit down thinking, why am I doing this? Is it to give something to somebody that’s actually going to add value? Or is it I’m just doing something, and I’m not really sure why I’m doing it, or I’m feeding a machine, I find that quite frustrating if I think I’m just feeding an information hungry machine. And we do that a lot I think in our organisation, but to no end’ [4]

‘a lot of time, energy and activity gets done in the name of safety, and most of it’s not adding any value, it’s just activity’ [7]

Safety performance reporting was a specific area of safety bureaucracy that participants continually discussed as burdensome and non-value-added safety activity.

‘I still produce quite a lot of data and KPIs and metrics to satisfy boards and people alike that probably at the end of the day don’t add any value to the frontline of safety’ [3]

‘I think we over-report to a certain extent, and I don’t know how much value there is in providing lag report, because it’s been and gone, so what use is that to any person really? What’s done is done. We’ve got to get far better at predictable forecasting’ [8]

‘that might be from senior leaders asking for something that you think, well geez, haven’t we supplied that five times?’ [4]
‘an inordinate amount of time on meetings and reporting that actually don’t do anything to actually illustrate what the problems or the performance really is’ [7]

Safety bureaucracy, and particularly safety performance reporting is the currency of the relationship between organisational management and the safety professional. Due to the current safety bureaucracy in organisations, safety professionals believe that their relationship with, and support of line management suffers.

‘the key part of my role that adds no value for safety is the one that should add the most which is, you know, leadership team meetings and those key forums … the information we provide to those forums is immature and trite’ [11]

‘the concept that a senior leadership team don’t fully appreciate that they could have a fatality tomorrow and there’s actually nothing that they’ve got that they can rely on wholeheartedly to tell them they’re not going to have one’ [8]

Safety professionals believe that bureaucratic safety activity absorbs valuable safety resources of the organisation and detracts from managing the day-to-day risk in the frontline.

‘The area I think that drives me around the wall is just the ineffective allocation of resource to risks that are immaterial’ [8]

‘if we use the resource pool to do that, then we’re actually taking the resource pool away from the real work which is keeping people safe in the field’ [4]

‘spending as much time as we do measuring the crap that we actually measure is not an effective use of anyone’s scarce resources’ [7]

‘meeting compliance obligations and other performance metrics that we need to achieve about reporting on safety … I find tedious. I find that it detracts us from engaging more wholesomely with the organisation’ [2]
‘it has to be managed from the field, owned by the field, and managed with a small team that understands the risks and challenges of the day-to-day world’ [9]

While participants believe that many bureaucratic safety activities provide little value to safety, they think that others in the organisation, particularly management and other safety professionals have a ‘false hope’ in the fidelity of these activities.

‘I also think we’re ignorant when we look at how we think a program such as Lifesaving Rules will create safety or protect individuals. It’s a false hope.’ [2]

‘s, you make out a process and ... you’ve actually never told the people about it then you’ve just got a piece of paper, you actually don’t have any control; you’ve got smoke and mirrors’ [7]

Safety professionals describe the anxiety, disempowerment, and judgment as unintended but real consequences of safety bureaucracy.

‘Safety is super challenging. You have a lot of stakeholders. Everybody’s very interested in safety performance. Small things, even though we’re not supposed to sweat them these days, you do.’ [9]

‘I say that because I think it created so much work and I think anxiety in the organisation’[2]

‘you can’t make your own decisions about what’s getting applied to your business based on your actual business’ [9]

‘you do hear sometimes that people say, “This is a butt covering exercise”’ [12]

‘what if I get this wrong, you know, and part of me goes well stiff shit I’ve made the best decision based on the information at the time ... but the way we handle incidents
or the way we handle performance management never seems to look at it in that light. It always analyses as the armchair quarter-back’ [11]

Safety professionals believe that safety bureaucracy has to be significantly reduced, however, are unsure exactly what that looks like, or how to manage the reduction within the organisation.

‘Obviously there's areas where pragmatically things are a massive burden, and we need to kind of remove those’ [1]

‘you can’t throw the baby out because you need something’ [7]

‘every conversation I've had to take something away has been 20 times harder than a conversation to buy more or add more’ [11]

Safety professionals believe that the generally accepted descriptions of bureaucratic safety activity, project onto them and that the safety profession is perceived as detached from the day-to-day work, burdensome, focused on the wrong things, not value adding, and provoking emotive responses. Participants didn’t identify personally with this as a self-concept but strongly believed that this is the opinion of those outside the safety profession.

3.6.4 Motives

Motives can be described as a person's ‘reason for doing something.’ In relation to professional identity, this is the reason for participants becoming a safety professional. Participants described a moral and ethical motivation for performing their role as a safety professional.

3.6.4.1 Moral safety professionals vs. Un-ethical organisations

Safety professionals are motivated in their role by performing a function that contributes to – in their minds - preventing the suffering of others resulting from safety incidents. This motivation stems from one, or a combination of family experiences, previous work experiences or life experiences more broadly.
‘Dad had been involved in a serious physical workplace injury that had him in hospital for six weeks and nine months’ worth of rehab, and then a couple of years later to have a psychological injury … the implications of that still manifest itself, what, fucking 25 years later. I started to see how, where this practice as a career actually has the ability to make a difference and be in the service of others.’ [7]

‘that could be your Mum and Dad … or that could be your wife or your husband or whoever, so you know, when I think about what influences me in my role and throughout my career.’ [2]

‘there’s … a kind of person who’s really cut out for that kind of service provision. Some would say probably go into the priesthood, but not quite far off is that people who generally care about things other than themselves.’ [10]

Safety professionals that have entered the safety profession after some adult years in the workforce have often experienced events during that time that have connected them personally to their current careers and the development of their professional identity. This is most prominent, for safety professionals that have worked in frontline roles in high-hazard environments, for example aviation, chemical manufacturing, military, emergency services, and construction, to name some of the backgrounds of participants in this study.

‘you don’t have to look very far to see somebody that’s either been killed at work or had a serious injury, losing hands, fingers, etcetera’ [9]

‘I remember some things that I was asked to do when I was 17 years old that I would never ask anybody reporting to me to do’ [12]

‘In those first couple of years one of our tankers was conducting an exercise, a patrolling tanker, and we lost four people in an engine room fire … so that’s where the interest in safety stemmed from.’ [13]
Even for those safety professionals that don’t share a personal connection to the human suffering associated with incidents, they associated the professional identity of the safety profession broadly with this characteristic.

‘So, I didn’t I guess get into it like lots of people have who ... injured themselves or a family member got injured and therefore felt internal passion or desire’ [5]

Safety professionals are also motivated by the opportunity in their role, to console the suffering from incidents by understanding how they occurred and create change in their organisation to prevent further suffering in the future. We see this prominently in incident management, investigation and reporting.

‘It’s unfortunate the events occurred but it’s kind of like it would be a shame if we actually didn’t come to the right root cause, determine what happened, how to address that’ [6]

Safety professionals see this motivation to prevent human suffering from safety incidents as a noble pursuit, amidst in their minds, the capitalist and heartless core of modern organisations.

‘the pull of [safety] was sort of noble ... I almost sold my soul, we dare say, to finance, and I was salvaged by this potential to be [a safety professional] – what I considered to be a noble field’ [10]

‘I guess it was something that just resonated with me on a, like a value, if you’re going to spend that time at work how can you do something that might make a difference?’ [7]

Safety professionals are strongly motivated by this moral motivation to prevent human suffering through safety incidents within their organisations. They see this as a reason, or even a necessity, to stand at odds with others who they believe have less moral motivation in their roles. This tension relates to the contradiction between safety
professionals doing what they believe is right for safety, versus doing what they think the powerful hierarchy in organisations believes is right for business.

‘A lot of people comment, “You say no to management an awful lot,” and I said, “Yeah, I do.” [laughs] Whether that’s a good thing or a bad thing, I don’t know’ [7]

This moral identity makes the safety profession similar in motive to the more researched caring professions, most notably, nursing (Benoit 1994) and social work (Webb 2015). Safety professionals often identify their work as a ‘calling’ beyond merely a career or job. Walsh and Gordon (2008) propose that professionals who view their role as a calling are more likely to view their work as a reason for being and their professional identity closely aligns with their overall self-concept. For this reason, safety professionals take organisational safety decisions and outcomes as a personal reflection on themselves not only on the performance of their role.

Safety professional identity and activities are related to their beliefs about safety and others within the organisation (Swuste, Gulijk et al. 2014). This moral motivation for their role has significant implications for safety professional practice within organisations. In a study of Safety Professional influence and practical agency, Daudigeos (2013) found that the ‘sense of moral duty to others in [safety] professionals’ has powerful implications for institutional processes and safety professionals often resort to unscrupulous and Machiavellian tactics in pursuit of their good intentions.

Despite safety professionals motive of preventing suffering, there is no empirical basis that they are delivering on this objective (Borys 2015). This might be somewhat explained by safety professionals within organisations designing and implementing ‘safety work’ rather than improving the ‘safety of work’ (Rae & Provan, Manuscript under review).

3.6.5 Values

Values are described as principles, or standards of behaviour resulting from one’s judgment of what’s important in life. Safety professionals believe that leadership is accountable for safety and their role is to influence others, however, paradoxically, they also believe that they are best placed to determine what is safe and unsafe when it comes to decisions about safety.
3.6.5.1 Alignment with line-management vs. Independence advice

Safety professionals overwhelmingly believe that the leadership and line management of an organisation is accountable for safety and this principle helps define their role and professional identity. In relation to leadership accountability, they describe: leading from the top, line ownership, listening to the frontline, support for safety professional work, and interaction between line management and safety professionals.

Safety professionals believe that it is important that safety is led from the very top of organisations.

‘there has to be senior leadership commitment’ [8]

‘I think you have to have it owned at the top’ [4]

While, safety professionals believe that safety is led from the top of organisations, they understand the reality of work as done on the front-line and its importance to safety.

‘So, absolute ownership at the top, but you also have to have the voice from the bottom. So, if you have one and not the other, I think you’re on a path to nowhere, or just having this dictatorial thing happening’ [4]

‘when your front-line workforce is actually telling you you’re probably going to get us killed then you probably should listen’ [2]

Throughout organisations from the very top to the front-line, safety professionals are clear that safety is owned by line management

‘the view of safety being managed in the line I agree with’ [2]

‘I have an absolute belief that you can’t have good safety unless it’s owned in the line ... if the line are not owning things, then you know, anything can happen out there’ [4]

Safety professionals are clear that the accountability for safety in organisations resides with line management and therefore safety is not owned by them in their role.
‘all safety professionals should be pushing away from ownership and pushing that back on the line and the line having ownership and accountability … we need to move away from thinking that the safety professional is the one that actually keeps people safe’ [6]

‘I’m not a believer that safety’s run by safety [professionals].’ [11]

Safety professionals see their role is to interact with and contribute to supporting line management with this accountability.

‘[safety] has to be thoroughly enabled by the safety professionals.’ [11]

However, safety professionals believe that they, as a profession, are currently not supporting line managers as effectively as they should or could be.

‘we continue to have conversations about the small stuff, and actually we need to be having conversations about, “How do I know it’s not going to go bang and how do it know it’s not going to happen tomorrow?” So [not] sitting in leadership team meetings about the three lost-time injuries that we had’ [8]

While safety professionals feel like they are not effectively able to support line management, they require line management support for them to perform their work.

‘leaders need to proactively support and promote what we’re doing’ [13]

Ultimately, safety professionals understand that line management accountability for safety includes the authority and responsibility to make safety decisions.

‘management retains the prerogative to make the decision, including making bad ones. That doesn’t make them bad people; we all make bad decisions as individuals, but there’s responsibility in there … for me as long as it’s not breaking the law,
operating outside an organisational authority then you’ve had the opportunity to contribute and ... it’s time to muck in and support.’ [7]

3.6.5.2 Drawing-the-line for safety vs. Others making operational decisions

While safety professionals believe that accountability for safety resides with line management, they paradoxically believe that it is their role to draw-the-line on whether something is safe or unsafe. They believe that it is an important part of a safety professionals’ positional authority to make these determinations for the organisation. This role is described as a position of last resort when they feel that they are not being listened to and are unable to influence through their relationships and involvement in line management decision making processes.

Safety professionals see their role as providing recommendations for line managers to make the ‘right’ decisions to improve safety and overall business performance.

‘make some recommendations to improve or reduce the risk of people’ [10]

‘I personally see my role as a coach, someone who’s there to support and provide guidance to help the responsible manager or the leader make the appropriate decisions or the right decisions.’ [12]

‘then you can offer kind of what the, what the minimum or the bottom line position is’ [11]

However, if safety professionals believe that the business is not following their advice, or they perceive actions that are inconsistent with their beliefs about what is best for safety, then they have the authority and obligation to draw-the-line. There is a constant tension between the accountability of line management for safety and the safety professional as the ultimate judge of right and wrong. For some safety professionals, it seems they believe that they are ultimately accountable for managing safety risk in the organisation.

‘there’s times where you actually have to be the policeman and say, “No, we just can’t do that.’ [8]
‘setting standards and pretty much being able to draw a line in the sand’ [2]

‘We're managing the risk; we’re controlling the risk’ [13]

Because safety professionals believe they know the appropriate decision to make for safety in any given circumstance, they monitor and confirm that their recommendations have been implemented and followed.

‘[we are] the keeper and consciousness of part of the organisation ... there’s always an element of sort of policing that is involved in our role.’ [8]

‘I’m not thinking that the direction or the advice I’m getting is being followed, I do know that I’ve got the authority to actually elevate the conversation’ [12]

The contradiction between the contrasting beliefs of line management being accountable for safety yet safety professionals drawing-the-line on safety decisions creates confusion, tension, and conflict.

‘I think a lot of safety professionals still struggle with what it means for the line to be accountable for safety. I think what I’ve seen that people think “Well we want to hold the line accountable, but we’re conflicted and confused”’ [9]

‘balance between how many safety people you have, and the perceived power that they have versus the line accountability piece. And the confidence of the line to fill that role, and actually tell the safety guys to get stuffed on certain topics. There’s a trust, but there’s also a bit of an actually thanks, that’s your advice, and you’re here to give advice, and I’m not going to take bad advice on this particular day.’ [5]

‘there’s been a few scenarios where there’s been massive clashes between people drawing a line in the sand’ [1]
Safety professionals draw-the-line about safety with the clear objective in their mind of preventing safety incidents, however, they have an inner uncertainty about whether they are ultimately achieving this objective in practice.

‘it’s not around keeping people absolutely safe at the end of the day because I’m not standing out there in the middle of the paddock or in the middle of the field supervising someone. That’s where the real safety’s at’ [6]

‘So that’s always, sort of even in the back of my mind around you know, am I even right here because you know I haven’t done it before. So that’s the challenging, the hardest part for me.’ [5]

Further, safety professionals begin to question whether safety professionals in support of line management should be making safety decisions at all, and what is the lost role of the front-line workforce in organisational safety.

‘I think where we’re going wrong as a discipline is swinging the pendulum too far that people can’t think for themselves’ [8]

‘sometimes we forget about the person who has been operating that machine’ [4]

Due to the complicated and confused relationship between leadership accountability for safety, safety professionals knowing what is right and their strong sense of moral duty, if the advice of safety professionals is not followed, they display strong emotional responses.

‘people who are passionate about it like, and take work really seriously can often end up in a bad space pretty quickly when they’re… you know, what they feel is safe and appropriate is not taken on board by production managers and field and plant managers’ [1]
In addition to making a moral appeal, safety professionals claim authority and coercive power over safety decisions based on their ability to rely on regulatory arguments (Scott 2008, Daudigeos 2013).

3.7 CONCLUSION

The professional identity of safety professionals is developed throughout their professional lives, however, is significantly shaped by how they enter the profession. They maintain a hybrid worldview made up of ‘pre-modern’ moral motives and ‘modern’ objectives to create a perfectible organisation. These ideals and objectives combine with an unclear role within their organisations to create a consistent yet confused professional identity. Safety professionals are unsure of their place in the organisation and live with tensions and contradictions about organisations, safety, their role, and their professional identity.

Safety professionals see themselves as upholders of justice, making sure the capitalist objectives of the modern corporation don’t come at the expense of the safety of those on the front-line. They believe that it is their job to hold management accountable for safety. Safety professionals hold an ideal model of how organisations should be managed and seek though their role to create it.

Although the safety profession in its current form has evolved over the last 30 years (Provan, Dekker et al. 2017) the tensions concerning ‘safety’ within organisations have a much longer history. For example, following a number of mining disasters in the United Kingdom, a collection of ‘clergy and learned men’, named the South Shields Committee, were formed in 1839, to apply ‘morals and science’ to the safety problem (Ingham, Winterbottom et al. 1843). The South Shield Committee report reveals similar tensions to those described in the findings of this study, for example: ‘experience in the darkness of the mine vs enlightenment and the advancing principles of education’ (p.61), ‘unassisted efforts of individuals vs. supervision of the state’ (p.66), ‘moral observers vs. immoral organisations’ (p.20), ‘faults in the system vs. faults of the officers and the men’ (p.33), and ‘humane and philanthropic suggestions vs. annihilation of the most productive mines of Britain’ (p.6). 175 years later, safety, and the safety profession is still searching for its place within for-profit organisations.
3.7.1 Multiple institutional logics and professional paradoxes

The contradictions and tensions associated with safety professional identity are exacerbated by them being interpreted as ‘or’ choices, rather than as ‘and’ propositions. Safety professionals would benefit from exploring these dilemmas through the theory of multiple institutional logics (Besnharov and Smith 2014, Bévort and Suddaby 2016) and the theory of paradox in management science (Schad, Lewis et al. 2016).

Safety professionals consciously or unconsciously see these tensions and contradictions in competition, rather than as complimentary. For example, in relation to operational experience vs. academic education, safety is a diverse transdisciplinary profession, and safety professionals and safety departments always benefit from as much diversity of background, experience, and education as possible.

The identified tensions are perhaps not resolvable, and instead to thrive and be effective, safety professionals require a ‘paradox mind-set’ (Miron-Spektor, Ingram et al. 2018). In this regard, Safety professionals might be considered a new form of ‘hybrid professionals’ that assist others in the organisation to make sense of these competing logics (Blomgren and Waks 2015). We suggest that the safety profession is an ideal group to test paradox theories of organisations and professions.

3.7.2 Practical implications

This research highlights three key practical considerations for safety educators, safety professional associations, safety professionals, and organisations.

1. The safety professional role needs to be better defined and more broadly understood
2. Multiple safety professional career pathways need to be maintained
3. Safety bureaucracy needs to be reviewed for scale and purpose across industry

Safety professional role titles, objectives and tasks vary widely across industry. Defining and aligning around a common role of a safety professional would assist all stakeholders to support and interface with the safety profession. Not-with-standing the considerable work done by international safety professional associations, the practicing safety professional role varies significantly (Provan, Dekker et al. 2017). The safety profession will benefit from maintaining multiple career pathways, and a thorough review of safety
academic education is warranted in light of the findings of this research. For example, including field experience in a safety-critical operational role as part of safety academic education may prove to be an effective method of developing greater empathy for frontline work and a practical understanding of safety. Safety professional identity is most strongly and continually influenced by experiences performing safety work in organisations which is largely that defined via safety bureaucracies. The scale, complexity and confused purpose of many bureaucratic safety activities creates a negative perception of safety management within organisations as an operational burden, and by extension, safety professionals internalize that perception, and compensate for it, as part of their professional identity.

Based on this study, future research should seek to understand safety professional identity more broadly across the profession. This would allow the development of a consistent ‘identity of the profession’ archetype, against which academic pathways and work experiences can be aligned in ways that enhance individual safety professional identity, and ultimately support improved organisational safety outcomes.

3.8 OUTCOME FOR THE RESEARCH AIM

Chapter 3 specifically investigated the following sub-question:

SQ2: What is the professional identity of safety professionals?

This was the first study conducted into professional identity of safety professionals and it was exciting to establish these new findings. Following the completion of this research I was able to shape a partial answer to the primary research question, in respect of how safety professionals understood and described their role. I found the exploration of safety professional identity to be a rewarding construct to research, and pivotal for understanding safety professional practice. Professional identity research provides an intimate understanding of safety professionals as humans as an additional dimension through which to understand their role. I particularly connected with the need throughout this thesis research to understand the role of safety professionals through the intersecting dimensions of: education (‘knowing’), tasks (‘doing’), and identity (‘being’).
The existing literature has projected outside perspectives of identity onto the safety profession, for example: Policeman, Priest, Psychologist, and Bureaucrat, and safety professionals have not resolved their internalisation of these stereotypes. The greatest difficulties for safety professionals to resolve in themselves are that:

- They have a moral motivation for their role and would like to be the benefactor of safety, however the way that safety is practiced in organisations has made them the administrator of internal bureaucracies that are burdensome on others
- Safety is important to organisations, but it always seems to push against and compete with the core objectives of production and profit. Constantly challenging and slowing organisational progress conflicts with other operational support roles
- There is considerable contested space in safety professional ‘claim over decisions’. Just who is best placed to make safety decisions? Should line managers or safety professionals ultimately make the final call when it comes to safety? How does the knowledge – power gap play out in the practice of safety professionals?
- They believe in both the importance of front-line empowerment and autonomy for safety, as well as the need for safety bureaucracy to control and direct people

During the open-ended interviews, safety professionals identified with safety and their role in diverse and complex ways. This research revealed to me the complexity underlying the primary research question of this thesis. Following this understanding of safety professional identity, what was needed to answer the primary research question, was an understanding of the complex reality of the safety professional role in practice situated within their organisational context.

As part of the own-organisation research design of this study, the positioning of the researcher with the participants and the differentiation between the researcher’s role as a researcher in comparison with their role as an employee is important for the validity of the process of data collection. I believe that the open-question style of interviewing created an opportunity for participants to safely explore their thoughts. I do not feel that the participants materially changed their practice as a result of these interviews. Some of the participants had personal epiphanies as they explored their beliefs about safety and the role
of safety professionals and these are reflected in the quotes reported in the results of this chapter. The open-question interview design coupled with my non-judgemental support of their narratives allowed participants to freely explore their thoughts.

Reflecting on this chapter now, upon completion of the thesis, I think of the contradictions and paradoxes of safety professional identity more expansively. Following the practice research reported in chapter 4, and the theory proposed in chapter 5, the tensions and contradictions reported in this chapter may be able to co-exist and be resolved more easily than I thought at the time. These professional identity paradoxes could also be thought of as ‘context dependent trade-offs’. The professional identity of safety professionals warrants considerable further research as proposed in section 6.5.
4.1 STATEMENT OF CONTRIBUTION OF CO-AUTHORED PAPER

This chapter includes a co-authored paper submitted for publication. The bibliographic status of the co-authored paper, including all authors, is:

4.2 RATIONALE FOR THE STUDY

The research project reported in chapter 4 was specifically designed to address the following primary research question and sub-question:

RQ1: What is the role of a safety professional?
SQ4: What is the current role of safety professionals within organisations?

A deep and rich case-study research project was conducted to explore the practice of safety professionals. The existing literature has largely failed to understand the complexity, and the daily reality of organisational life as a safety professional. The research reported in this chapter was conducted after the literature review reported in chapter 2 and the professional identity research reported in chapter 3. The literature review reported in chapter 2 had identified the importance of institutional factors in shaping the role of safety professionals and the identity research had done the same with the individual factors.

This exploration of safety professional practice aimed to be inclusive of considering these institutional and individual aspects in the context of the daily work of safety professionals. To achieve this, the most appropriate design was an extensive six-month longitudinal ethnography, within a single organisation, including ongoing interviews and work observations. Performing the study within a single organisation allowed me to deeply understand the institutional context and its influence on the consistency and variation of practice. Performing the study over time allowed me to understand the impact of organisational events (i.e. safety incidents), larger work tasks that were completed over many months (i.e. implementation of safety programs), and the impact of other time-dependent organisational activities (i.e. setting company targets and budgets).

A longitudinal ethnographic case study was a novel and appropriate way to answer the research questions. Also unique to this research design was the recruitment of 12 of the 13 participants that had completed the professional identity study reported in chapter 3, for this research reported in chapter 4. This had considerable advantages for the research, including:
• An open and trusting relationship had been established with each of the research participants during the previous research.

• I was able to relate the practice of the participants to their thoughts and beliefs about their role as safety professionals giving me a deeper insight into the interplay of structure and agency than any previous research on safety professionals.

This research reported in this chapter, would address a large and important gap in the existing literature on safety professional practice.

Appendix 1 contains a co-authored paper titled ‘Safety work versus the safety of work’ and although it is not included in the main body of this thesis, it was essential for analysing the research data reported in this chapter. The paper in Appendix 1 was written during the collection and initial analysis of the data for the study reported in this chapter. The work of safety professionals is situated within the broader context of their stakeholders, and organisational safety work. Appendix 1 should be read in conjunction with chapter 4.
4.3 ABSTRACT

The safety profession has grown and evolved over recent decades, and despite the prominence of the role within organisations, there is hardly any research about the current state of safety professional practice. The objective of a safety professional’s role is often stated as ‘preventing incidents and harm to people’, although the existing research fails to demonstrate a compelling link between safety professional practice and worker safety. More recently, a model of safety work in organisations proposed that safety fulfils broader social and political needs, in addition to the physical reduction of harm. In this paper, we report a study that investigated the underlying objectives of individual safety professional tasks, then performed thematic analysis to explore the contemporary role of safety professionals in organisations. 12 mid-level and senior-level safety professionals were interviewed at monthly intervals for six months regarding their work activities, alongside an embedded researcher performing more than 240 hours of field observations. Categories of ‘safety work’ in organisations – demonstrated, social, administrative, and physical – were used as priori themes to analyse the data deductively. The findings demonstrate the: strength of alignment of the safety professional role with line management, increasing institutionalization of safety professional work, absence of safety professional work directed at reducing safety risks to workers, and the lack of a connection between safety professional work and safety science research.

4.4 INTRODUCTION

Over the past three decades, the safety profession has emerged, grown and evolved into what it is today. The role of a safety professional is to assist their organisations with the ‘management of safety’, but what does this entail? Is it to reduce the risk of injuries to workers, or are there other organisational needs that are met by the safety professional role? Borys (2015) conducted a literature review on the relationship between the presence of safety professionals in organisations and their safety performance measured through injury
or fatality rates – only two studies have demonstrated a reliable correlation. An important question, given this finding is, what activities are safety professionals performing, and why? More specifically, what are the underlying purposes driving safety professional work?

In this paper, we explore the objectives of individual safety professional activities, and the role of safety professionals more within organisations broadly through the application of a model of safety work. The selected ‘safety work’ model (Rae and Provan 2019) is based on the theory of institutional work, and describes four underlying purposes of safety work in organisations. This study aims to test and extend this theory of safety work through applying the model to the data obtained through an extensive 6-month ethnography of safety professional practice.

This study explores the following two research questions:

SQ3: What are the objectives of safety professional work activities?
SQ4: What is the current role of safety professionals within organisations?

4.4.1 Safety Professional Practice


Hale and Guldenmund (2006) surveyed more than 8000 safety professionals in over 12 countries to determine their consistent core tasks. Over recent years the International Network of Safety and Health Practitioner Organisations (INSHPPO) has undertaken considerable activity to define, standardize, and accredit safety professionals (Pryor, Hale et al. 2015). More recently, Provan, Dekker et al. (2018) conducted a case study into the professional identity of safety professionals, explaining how they think about, and relate to safety and their role within organisations. Missing from the existing literature is an understanding of the objectives of safety professional work within organisations, the ‘why’ of safety work. The currently generally accepted justification for safety professional work, ‘to ensure the health and safety of workers’ is empirically untested. Recently Rae and Provan
(2019) proposed a model of safety work, based on the theory of institutional work, and described four underlying purposes of ‘safety work’ in organisations.

### 4.4.2 Safety work

The institutional work literature argues that safety professionals are ‘actors engaged in a purposeful effort’ (Phillips and Lawrence 2012) to ‘create, maintain, disrupt aspects of their organisation to improve safety. This effort by the safety profession has largely translated into increasing volumes of ‘safety work’ (Rae and Provan 2019), a trend more broadly identified within the institutional work literature as the growth of peripheral work (Lawrence, Leca et al. 2013). How is safety professional work shaped, prioritized, and legitimized when it consistently competes with the core objectives of an organisation to maximize production and profit?

Rae and Provan (2019) propose that safety work serves multiple organisational purposes in addition to reducing the physical risk of injury to workers and can be categorized into four discrete types of work: demonstrated safety, social safety, administrative safety, and physical safety. Each of these types of safety work, may, or may not directly or indirectly contribute to the safety of operational work. Rae and Provan (2019) define the four types of safety work as follows (see figure 3):

1. Demonstrated safety work – Satisfying stakeholder demands for safety
2. Social safety work – Re-enforcing our commitment to safety
3. Administrative safety work – Complying with safety requirements
4. Physical safety work – changing the work environment for safety
4.5 METHODOLOGY

4.5.1 Participants

The participants in this study were 12 mid-level and senior-level safety professionals. These ‘nested’ case study (Yin 2017) participants were currently performing a diverse mix of dedicated generalist and technical specialist safety roles within a single large Australian organisation. All of the roles presently performed by the participants are classified as OHS Professional Level 2 and Level 3 positions (Pryor, Hale et al. 2015). Eleven participants were male, and 1 participant was female. Participants had worked in full-time safety professional roles for between 2 and 20 years with an average of 12 years of experience. Eight of the 12 participants had tertiary safety qualifications. Each of the 12 participants took part in a semi-structured interview completed by the first author and repeated at monthly intervals for 6-months between February and July 2017. A total of 69 interviews were conducted.

4.5.2 Data Collection

A longitudinal ethnographic research design gave the researchers the opportunity to understand the variation in individual work activities, what purposes they satisfied over time,
and how events that occurred inside and outside of the organisation influenced their work. The sampling method enabled the research team to match the safety professionals accounts of their work with independent observations of the organisation.

The individual narratives that legitimize safety professional work to themselves can be both conscious as well as unconscious. Rather than directly questioning how safety professionals legitimize their work activities, in each interview, participants were asked to describe examples of their current work activities guided by the following prompts:

1. Describe the work activity
2. Describe why you are performing the work
3. Describe the outcome you are trying to achieve
4. Describe how you are undertaking the work

The above questions enabled the collection of data about the: ‘what, who, and how’ of safety professional work, which is important when examining practices in organisations (Jarzabkowski, Kaplan et al. 2016). Specifically, data was collected on the purpose of each work activity through understanding its: initiation, objective, and context (i.e., questions 2 and 3 above asking, ‘why?’ and ‘what for?’). A total of 69 (15-30 minute) interviews were conducted, and each one was audio-recorded, transcribed, and analysed using the NVivo software package.

Ethnographic field observations made by a member of the research team supplemented the interview data. Field data about the context surrounding the specific work activities discussed with the participants was gathered over more than 240 hours.

4.5.3 Analysis

Seven interviews were excluded from the data-set as they did not meet the criteria of ‘safety professional work’, in that the work was not being performed for the purpose of safety. Some of the reasons for excluding such examples were: general administrative tasks, duplicate work activities that spanned several months, management tasks (i.e., recruitment), and role transition tasks. A total of 62 interviews were analysed.

To investigate SQ3, we performed a template analysis (King 2012) to identify the underlying purpose of each safety professional work activity. This template analysis was
performed on each interview transcript and supplemented with field data. We started with four predetermined priori codes relating to each of the categories in the Safety Work theory (see table 4).

The ethnographic research method enabled the classification to be made based on the purpose of the activity. As described by Rae and Provan (2019) an individual task could be performed for any of the four reasons in table 4. One example of this is the activity ‘develop contractor safety improvement plan’. Through this research, we aimed to understand how safety professional work gets, initiated, created, prioritized and legitimized – ultimately its purpose.

<p>| Table 4: Priori themes derived from the safety work vs safety of work model |</p>
<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Objective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrated</td>
<td>Satisfying stakeholder demands for safety</td>
<td>Performing safety work to satisfy the requests of internal and external stakeholders: e.g., regulators, senior management, etc.</td>
</tr>
<tr>
<td>Social</td>
<td>Re-enforcing our commitment to safety</td>
<td>Performing safety work to communicate and promote safety messages, and create the general feeling that safety is important.</td>
</tr>
<tr>
<td>Administrative</td>
<td>Complying with safety requirements</td>
<td>Performing safety work because it is an administrative requirement of the system or to create evidence that something was done.</td>
</tr>
<tr>
<td>Physical</td>
<td>Improving the safety of physical work</td>
<td>Performing safety work that directly changes the physical work process or equipment used to perform core operational activity.</td>
</tr>
</tbody>
</table>

A thematic analysis of the safety professional work activities was performed on each of the four categories of work. This analysis enabled the development of a non-exhaustive set of sub-purpose categories within the safety work model.

Whereas SQ3 used a priori codes and deductive analysis, SQ4 was investigated using open coding and inductive analysis. We looked for themes that beyond the SQ3 classifications explained how participants made sense of their organisational role. After establishing initial themes, we searched the data for deviant cases – instances of work activity that contradicted
the themes, and unexplained cases – instances of work activity that did not match any of the themes.

4.5.4 Limitations
The participants were all presently working for a single organisation. This sampling strategy was deliberately designed so that the researcher could isolate inter-company variables concerning safety professional work. The case study approach enabled extensive field observation, to establish the specific context that the examples of safety professional work were situated within.

4.6 RESULTS

SQ3: What are the objectives of safety professional work activities?

The individual examples of work discussed during the interviews were identified and chosen for discussion by participants. The intention was not to elicit a comprehensive inventory of tasks and time allocation, instead to deeply understand what was in the front of their mind. The interviews began with, "tell me about some work you are currently doing in your role" and then the following further prompt if required, "whatever is presently taking up a considerable amount of your time". The theory of safety work was useful for interpreting and explaining the varied and complex nature of the contemporary work of safety professionals, who ostensibly perform ‘safety work’ every day. The safety work categories illustrate the drivers and legitimization of safety professional practice within an organisation. The following sections, and Tables 5-8 outline each case: title, purpose, and themes from the analysis, classified into the categories of safety work. The classification is based on the described objective and purpose of the work by each participant, and the field observations of the work.
4.6.1 Demonstrated Safety Work

Demonstrated safety work is performed for the purpose of demonstrating that safety is being appropriately and adequately managed, therefore preserving the right to continue operations. Demonstrated safety work is specifically shaped towards demonstrating safety to the stakeholders that can influence the rights, processes or even continuation of the company’s activities. Demonstrated safety activities are directed up the organisational hierarchy, and outside the company: contractors to the client, junior managers to senior managers, senior managers to Boards, and companies to regulators and communities. Table 5 outlines the specific cases of demonstrated safety professional work described by participants during interviews and the resulting themes.

Table 5: Demonstrated Safety Professional Work

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Purpose</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prepare Board report</td>
<td>Presenting safety performance to the Board for the purpose of demonstrating that management of the company is managing safety.</td>
<td>Managing the safety message up the hierarchy within the company.</td>
</tr>
<tr>
<td>2</td>
<td>Prepare incident presentation</td>
<td>Preparing an incident overview presentation for the purpose of enabling a line manager to present the details of a significant incident to senior management. The presentation demonstrates that safety was appropriately managed before, and in response to the incident occurring.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Prepare risk review for Board</td>
<td>Preparing and presenting an overview of a major accident event risk to the Board to demonstrate that existing risk controls were adequate and effective.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Due Diligence for company transaction</td>
<td>Reporting on the safety due diligence for a planned company transaction to demonstrate how the risks were managed by the existing process</td>
<td>Obtaining company or regulatory approvals</td>
</tr>
<tr>
<td>5</td>
<td>Prepare safety case</td>
<td>Preparing and reviewing the safety case for compliance with the regulatory approval assessment criteria.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Develop obligation register</td>
<td>Developing a business unit safety compliance obligation register to efficiently and comprehensively demonstrate compliance with external safety obligations to internal corporate departments and regulators.</td>
<td>Implementing processes to adequately demonstrate safety</td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Purpose</td>
<td>Theme</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>7</td>
<td>Review implementation of safety system</td>
<td>Reviewing the implementation of the safety system to proactively demonstrate the level of compliance to senior management and the Board and apportion the cause of non-compliance to others.</td>
<td>compliance or non-compliance</td>
</tr>
<tr>
<td>8</td>
<td>Develop contractor improvement plan</td>
<td>Developing a 12-month safety improvement plan due to an individual contractor having had a number of recent incidents. The availability of an improvement plan allows the company to continue using the services of the contractor, in spite of the poor safety performance.</td>
<td>Preventing safety events disrupting the continuing of core operations</td>
</tr>
<tr>
<td>9</td>
<td>Review a serious incident response of a contractor</td>
<td>Preparing information that a contractor had taken appropriate action in response to a serious incident, and that it was appropriate for the company to continue working with them.</td>
<td></td>
</tr>
</tbody>
</table>

Demonstrated safety work is extremely political, and therefore safety professionals spend considerable time navigating the people and processes involved in demonstrated safety work. In large organisations, intra-company demonstrated safety increasingly consumes significant effort to ‘manage the message’. Demonstrated safety work often looks and feels different for the different participants in the activity. Despite the best intentions of regulators, boards and senior management, demonstrated work gets corrupted due to the inevitable: distance between the demonstrated safety work and safety as practiced, the power imbalance between participants, the over-riding assumption that success in the activity is ‘proving’ safety, as well as individual job security and career development drivers.

Senior leaders question the priority and approach to safety of the managers further down the line. In senior roles, away from the day-to-day complexity of running operations, safety decisions seem easy and clear to make, so a judgment for poor safety outcomes can follow quickly.

“Safety leadership isn’t actually the issue, safety management is. The leadership level will not have to be in the detail, so will spruik innovation, safety first and these really large and glorious statements. But its managers who are coping with the goal conflict and the budgets and the change fatigue and everything else”
In one example, line managers were required to present to a panel of senior managers if they had a serious safety incident within their business area. Safety professionals spend considerable time supporting and preparing managers for this presentation.

“We look at failure as a personal criticism rather than as an opportunity to learn and do something better ... people are afraid of airing their dirty laundry ... the punitive mind-set around safety has permeated to all people at all levels”

Further up the chain of command, senior managers have the same experience of presenting the company’s safety performance to the Board. The safety professional in this instance has to support the creation of ‘nothing to see here’, or ‘we have things under control’ narratives on behalf of senior management. To achieve this messaging, significant effort goes into preparing information, particularly when the data suggests safety is not understood, nor in control.

“[the board safety report] will go through 10 to 11 rewrites at the moment, to pitch the right message because you know, how we show it is really important, and at the moment our performance is not great. So, it's not the stats; it's the messaging around the stats.”

Organisations measure safety performance through incident rates and serious safety events, and a significant amount of the intra-company demonstrated safety work relates to the messaging of these performance results. Poor safety performance presents a threat to continuing the core operations of the business. Safety professionals spend considerable time supporting operational management to manage this threat, by explaining and demonstrating that safety is being appropriately prioritized, and performance issues are understood and being addressed. In this instance line managers and safety professionals have an aligned objective, to both appear to be effective at their job – the safety professional for knowing what to do, and the manager for taking action. Contractors often have to demonstrate the effectiveness of their safety management activities and performance to the client who monitors their improvement actions closely.
“So, tracking those actions to completion was really important for us, so we can present that information right across the board ... no-one wants to take a beating. You fight back really good”

Safety professionals administer specific processes to support the development of the information necessary for regulators to authorize approval permits for the company's activities, e.g. Safety Cases, as well as processes that assist with the efficiency of demonstrating compliance, e.g. Obligations registers. Safety professional work can involve both the preparation and internal review of a company’s safety case documents. In one example, the safety professional had a specific role in independently reviewing the safety case report to confirm that the safety case met the regulatory approval criteria.

“I have to look at the safety case in the context that this is a regulatory document demonstrating to the government how we practice”

In an example relating to compliance registers, the safety professional was investing considerable individual and organisational resources in the development of a comprehensive and efficient process to demonstrate legal compliance. This work was directed by senior management, due to a heightened industry and organisational compliance context.

“There are 1100-line items in here, how do we comply, what system or process do we leverage off, document numbers, documents owners ...”

Safety professionals are involved in numerous company governance processes, including conducting safety ‘due diligence’ of company changes, which can include company transactions such as acquisitions and divestments. Such decisions are made by the company based on financial and commercial risks and returns, however, it is necessary also to demonstrate the safety of such decisions. These processes assist in retaining the regulatory license to operate as well as meeting the obligations of the company and Board. Undertaking demonstrated safety work during the transaction, helps with the possible need to prove evidence of appropriate actions and decisions in the future. Safety professional work in this
instance supports the demonstration of safety compliance to regulators, and the due diligence obligations of company Directors and Officers.

“sustaining compliance through the transition and giving regulators the confidence ... and to protect [the company’s] obligations and the interests of our Directors.”

To expand the support of Directors demonstrating their due diligence, safety professionals support the preparation, presentation, and review of material safety risks. Safety professionals support management to present risk information in a way that demonstrates the adequacy of current management practices. This positive presentation of safety information is driven by a combination of a number of factors, including the desire not to upwardly delegate a safety problem, the desire to retain management control over operational issues, and the need for safety professionals to demonstrate they are doing a good job of overseeing safety risk.

“I don’t think that any of the risk work that supports management is conscious of the complexity of the issue ... it’s a very ineffective tool, a blunt instrument”

Demonstrated safety work is as much, if not more about the protection of the reputation of individuals, teams, and companies as it is about safety. The politics of safety within organisations present personal threats to individual job security and career progress, such that demonstrated safety work can also be undertaken to apportion blame for poor safety performance or non-compliances. For example, when an internal safety department conducts a safety audit of an operational business unit, the purpose of this can be predominately about demonstrating the appropriate performance of the safety team, through reporting the inadequate performance of operations.

4.6.2 Social Safety Work

Social safety work is performed for the purpose of communicating and re-enforcing the importance of, and the organisational commitment to safety. Social safety work is specifically shaped towards encouraging and motivating all personnel to prioritize safety in
their decisions and operational work. Table 6 outlines the specific cases of social safety professional work described by participants during interviews and the resulting themes.

**Table 6: Social Safety Professional Work**

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Purpose</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Develop Safety Strategy</td>
<td>Developing a safety strategy that brings people together around common objectives and safety priorities</td>
<td>Aligning the organisation with a future direction for safety</td>
</tr>
<tr>
<td>11</td>
<td>Facilitate Safety Strategy workshops</td>
<td>Facilitating organisation-wide 'alignment' workshops on safety commitment and the safety strategy</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Develop annual objectives and targets</td>
<td>Setting the business unit safety priorities, safety objectives and safety performance targets</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Safety support for 'business strategy' project</td>
<td>Representing safety as part of a strategic project team so that they can say that safety was involved, even though there is no meaningful role to play</td>
<td>Participating in tokenistic activities so that the people responsible can be seen to be doing the right thing</td>
</tr>
<tr>
<td>14</td>
<td>Participate in the review of a safety compliance breach</td>
<td>Participating in a review of a several months old non-compliance, so that the management team can say they have responded and continue to take safety seriously</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Implement a 2017 contractor safety improvement plan</td>
<td>Maintaining contractor company commitment and accountability to improving safety</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Challenging leadership to improve safety commitment</td>
<td>Questioning and challenging business unit management to be accountable for safety, and to demonstrate their commitment to their workers</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Support management response to contractor fatality</td>
<td>Supporting senior management to re-enforce to the organisation their safety commitment following a significant adverse safety event.</td>
<td>Supporting management’s accountability for safety</td>
</tr>
<tr>
<td>18</td>
<td>Develop leadership improvement program</td>
<td>Helping the leadership team create a program to lead and communicate their safety commitment</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Attend field operator safety program</td>
<td>Supporting a program designed to improve frontline commitment and capability for safety</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Attend monthly safety review meeting with management</td>
<td>Participating in a meeting to facilitate the alignment of the safety team with the priorities of management</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Participate in a contractor safety forum</td>
<td>Aligning and improving contractor company commitment to safety</td>
<td>Generating ownership and commitment to safety from other</td>
</tr>
<tr>
<td>22</td>
<td>Manage field-based trials of new safety capability</td>
<td>Obtaining management understanding and commitment to support a safety improvement activity</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Purpose</td>
<td>Theme</td>
</tr>
<tr>
<td>-----</td>
<td>-----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td>23</td>
<td>Attend industry learning from safety events forum</td>
<td>Demonstrating and supporting the collective commitment of the organisation to improving industry safety performance</td>
<td>roles, teams and companies</td>
</tr>
<tr>
<td>24</td>
<td>Participate in weekly contractor safety review meeting</td>
<td>Maintaining contractor commitment to safety, monitor safety performance and align on common problems</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Deliver Safety Presentation to all staff</td>
<td>Delivering a ‘safety is our number one priority’ general communication to all employees</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Spend time in the field building relationships</td>
<td>Spending time to develop trusted and open relationships with site line managers</td>
<td></td>
</tr>
</tbody>
</table>

Social safety activity is important for organisations to create the environment where safety is considered, and prioritized in every activity, every day. Creating this ideal environment is an ambitious intention, and due to the social complexity, and contradictions inherent in organisations, this activity can get misconstrued as disingenuous and unsympathetic to reality. Social safety professional work is considerably focused on; generating alignment on future strategy, supporting management to demonstrate their accountability, and generating ownership and commitment to safety from others.

Safety Professionals generally rate alignment on the importance and future direction for safety. These alignment activities include; safety strategies, safety improvement plans, and safety improvement programs. The purpose of the safety improvement plans and strategies are as much, if not more, about alignment and priority for safety as they are about their specific content.

"Trying to align the organisation around where we’re going … We’ve got all levels of the organisation engaged from people at the shop floor right through to the board."

"[to] get the message out to everybody in the field saying, “Hey everybody this is our 2017 plan, it’s really important”"
The reason that such alignment and commitment are important, is that safety professionals are not confident of operationally how to create safety improvement. Shared ownership of the strategy and targets both: acknowledges that safety professionals don’t control the decisions that improve safety, and that safety professionals can’t be held responsible if targets are not achieved.

“we would set a [safety performance] target lower ... it was more just trying to drive an outcome, but we didn’t know how to get there.”

Line managers need to accept and demonstrate their accountability to lead safety in the organisation. Safety professionals often have a clear view themselves of what safety leadership looks like, and they work with line managers to understand and enact these behaviours for them to “exercise their responsibility”.

“I don’t see them pulling for this; it'll be me having to push ... so that’s my concern at the moment, is that they’re still not, they don’t see [safety] as part of their job.”

Safety professionals find it difficult to influence leaders to perform proactive safety leadership activities, however, when safety performance worsens, or a significant safety event occurs, they find it difficult to contain and steer the resulting reactive leadership safety activities.

“we’ve had a few incidents that’s created almost this storm ... or this front where we’ve got senior managers running around and waving flags, stopping work. The conversations I’ve had with people ... speaking to one individual, they said, “you know, not being insensitive to the situation and scenario but we’re not allowed to do anything, we’ve basically put a halt to operations so that senior management can go around and feel warm and fuzzy that they think they’ve done the right thing.”

Safety professionals aim to help line managers to understand that safety is part of core operations and that safety performance is an emergent property of the organisational system and operational work.
“you don’t have a safety problem, that’s part of the outcome, you’ve actually got an operational problem ... and, if anything, I’m their operations manager”

Safety professionals direct and participate in activities that generate ownership and commitment to safety, and safety improvement from organisational units and contractors. These activities are often dictated and driven by senior management as opposed to being determined by the safety professional.

“we see a number of contractors elsewhere having issues, so that must be the story across everybody. It’s just the senior leadership are worried about contractors ... so then you all need to go and do a heap of work with them”

Safety professionals aim to generate leadership commitment and support for specific safety improvement activities to create the priority and resources necessary for implementation.

“We can [work with] the front line about a [safety improvement], but if it doesn't have management understanding, then it seems to die on a vine.”

The emphasis on safety commitment across the organisation through social safety work can create the situation where ‘safety’ is perceived to need to be involved in everything. Non-operational and lower safety risk parts of the organisation, e.g., finance departments, don’t want to be accused of not including safety in their activities and decisions. Therefore, safety professionals become involved in such departments, often in a non-value adding way. Either the safety professional’s participation is tokenistic, or they participate by initiating operational safety work in non-operational environments. For example, having finance teams join in toolbox talks, rather than working with the finance team to influence how the budgeting and capital allocation process might contribute to improving the safety of workers.
4.6.3 Administrative Safety

Administrative safety work is performed for the purpose of setting and following clear rules and requirements for safety. Administrative safety work is specifically shaped towards requiring all parts of the organisation to participate in defined processes and practices and to comply with defined requirements. Participation in and completion of administrative safety work is often recorded and checked. Table 7 outlines the specific cases of administrative safety professional work described by participants during interviews and the resulting themes.

Table 7: Administrative Safety Professional Work

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Purpose</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Develop new contractor management process</td>
<td>Developing company-wide requirements and procedures for contractor safety management</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Develop safety critical activities and roles requirements</td>
<td>Developing company-wide requirements and processes for the identification and management of safety-critical activities and roles</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Develop motor vehicle safety procedures</td>
<td>Consolidating four operational safety procedures into one company-wide process and set of requirements</td>
<td>Develop new processes and requirements for safety</td>
</tr>
<tr>
<td>30</td>
<td>Attend an external meeting of a National Road Safety Forum</td>
<td>Benchmarking the company’s standards and processes for safety to review and update company safety requirements</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Revision of safety management system</td>
<td>Reviewing the company’s safety management system and supporting processes</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Develop compliance guidance for safety management system</td>
<td>Developing guidance information to advise operational business units on how to comply with the requirements of the safety management system</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Implementation of Safety Management System requirements</td>
<td>Implementing a program to review all company requirements and implement changes to operational procedures to comply</td>
<td>Implementation and compliance with safety management system requirements and company programs</td>
</tr>
<tr>
<td>34</td>
<td>Implementing safety management processes</td>
<td>Implementing changes to company requirements within an operational business unit</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Revising operational processes to comply with company requirements</td>
<td>Re-writing operational safety management plans to align and comply with changes to company safety management system structure and requirements</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Purpose</td>
<td>Theme</td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>36</td>
<td>Implementing new contractor management requirements</td>
<td>Collating contractor contact details in a database to enable safety communication with all contractors and suppliers.</td>
<td></td>
</tr>
<tr>
<td>37</td>
<td>Implementing safety management processes</td>
<td>Implementing changes to company requirements within an operational business unit</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Implement new motor vehicle safety requirements</td>
<td>Implementing a new process for motor vehicle safety (training and vehicle specifications) to comply with changes to company safety management system</td>
<td></td>
</tr>
<tr>
<td>39</td>
<td>Develop construction project safety plan</td>
<td>Preparing a plan to comply with legislative requirements for prescribed work – Demolition.</td>
<td></td>
</tr>
<tr>
<td>40</td>
<td>Review Asset Safety Management Plans (SMP)</td>
<td>Reviewing and updating the site safety management plans to comply with changes to legislation</td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>Facilitate safety risk assessment</td>
<td>Facilitating a safety risk assessment to comply with safety requirements, for a decision that has already been made.</td>
<td></td>
</tr>
<tr>
<td>42</td>
<td>Develop Bow-Tie risk assessments</td>
<td>Developing bow-tie risk assessments using existing risk information to comply with safety requirements</td>
<td></td>
</tr>
<tr>
<td>43</td>
<td>Provide safety input into an operational project</td>
<td>Providing safety input to meet the safety requirements for the organisational change project</td>
<td></td>
</tr>
<tr>
<td>44</td>
<td>Lead significant incident investigation</td>
<td>Performing ICAM incident investigation to comply with company requirements due to the incident severity</td>
<td></td>
</tr>
<tr>
<td>45</td>
<td>Participate in health risk assessment workshop</td>
<td>Participating in a risk workshop to prepare a generic risk register to comply with safety requirements</td>
<td></td>
</tr>
<tr>
<td>46</td>
<td>Provide safety support for an organisational program</td>
<td>Facilitating safety processes to ensure that the organisational program complied with safety requirements</td>
<td></td>
</tr>
<tr>
<td>47</td>
<td>Provide safety support for maintenance shutdown</td>
<td>Developing processes and documents (plans, risk registers, etc.) to comply with safety requirements</td>
<td></td>
</tr>
<tr>
<td>48</td>
<td>Conduct investigation on hand tool incident</td>
<td>Leading investigation process with the contractor to review work documentation and update the safe work method statement (SWMS), and job safety analysis (JSA)</td>
<td></td>
</tr>
<tr>
<td>49</td>
<td>Review of prequalified contractors</td>
<td>Reviewing and checking the existing register of contractors for documentation, and record compliance with the safety management system</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>Review of safety management plans (SMP)</td>
<td>Performing compliance audits against the site safety management plans</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Purpose</td>
<td>Theme</td>
</tr>
<tr>
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<td>--------------------------------------------</td>
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<td>-------------------------------------------------</td>
</tr>
<tr>
<td>51</td>
<td>Perform annual review of safety risk registers</td>
<td>Conducting a desk-top review of the completeness and currency of site safety risk registers</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Preparing information and data for an internal safety audit</td>
<td>Coordinating business unit preparation of information and logistics for an upcoming internal corporate safety management system compliance audit</td>
<td></td>
</tr>
<tr>
<td>53</td>
<td>Monitor contractor significant incident investigation</td>
<td>Monitoring a contractor performing a significant incident investigation associated with their activities to ensure it complies with our requirements</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Safety performance reporting</td>
<td>Preparing and reviewing safety performance data for submission to the management team</td>
<td>Compile and provide safety reports</td>
</tr>
</tbody>
</table>

Administrative safety work occupies a considerable amount of the time and attention of safety professionals. Administrative safety work involves developing and implementing safety processes, performing required safety practices, and monitoring and verifying compliance.

Safety professionals develop safety processes for others in the organisation to implement and follow, which can include developing detailed supplementary documentation and guidance that ensures people can understand and meet what is expected of them. The objective of company-wide processes is to create standardization in, and oversight of, the approach to safety management.

“no matter where you are in the company you would be using the same or similar sort of tools to do things.”

“if you let each asset update their own [risk] register, you end up with seven registers, and very different risk tolerances, different mitigation plans, and nothing will talk to each other”

The company safety requirements and processes create further administrative safety work for safety professionals within operating businesses units, who are required to translate the company requirements into operational safety processes for people further down the line.
to follow. The objective of implementing these company safety requirements is to ensure and confirm compliance back to the ‘company’.

“The key element, I mean, it goes without saying, but naturally compliance.”

Safety professionals within the operational business units are aware of the administrative (and non-value adding) impact of implementing company requirements and sometimes provide a shield for operations personnel until they have worked out how to administer the activity efficiently.

“here’s another [company] change, it’s more documentation ... let us do the back of house work, so you can focus on your day to day work”

“you can also lose track of what the end game is from a risk reduction perspective, so it really just falls down to that ... it’s not an attack on them, it’s just they [corporate safety professionals] don’t live in that space”

It is the belief of some safety professionals that the significant volume of administrative safety work does not add to the reduction of safety risk in the business. Instead, they are consumed by work that might not be improving safety, and worse, makes it difficult for them to relate to others in the organisation who might question their activities.

“we’ll have a product, and we’ll be able to say that we’ve done something, but we know full well that nothing material will change as a result, because it’s not connected [to the operation], it’s not understood. People don’t know; it won’t get followed.”

“after an audit, 2,000 or 3,000 procedures got written. And the majority of people in the business don’t even know that those procedures exist ... the challenge for me is we’re trying to put that into a SMP that doesn't just make people just glaze over.”
“they’re thinking, “safety is being a pain in the ass, making my life a misery.” I’m like, “It’s not my objective. I’m trying to help you guys.” So that’s been interesting discussions to have.”

Added to the dilemma facing safety professionals regarding the relationship between administrative safety work and safety risk reduction in the company, is the need for them to perform and support the required safety practices personally. While at times these practices have a direct contribution to reducing safety risk, many times these processes are conducted exclusively for compliance and appearance purposes. For example, safety professionals are asked to perform risk assessments and investigations to comply with safety requirements when decisions have already been made. Risk assessments are often performed with a predetermined operational outcome decided.

“And it wasn’t what you’d say like a risk assessment in the traditional sense of we’re considering this idea, do a risk assessment, and then we’ll [make a decision] … This has been talked about for many months before I was involved. We would have recommended against it”

“at the end of the day it’s all a desktop activity … the biggest conversation we had was around the potential consequence … which determines whether things get fed up to senior management and to the board.”

Evidence suggests that voluminous administrative safety work in the field where work is being performed does not contribute to reducing safety risk, as experienced by a safety professional in their findings from an incident investigation.

"We had a robust safety work method statement that identified the [specific] risk, and this gentleman, in this case, read the permit and performed a job safety analysis, but he didn’t read the safe work method statement.”

Safety professionals perform administrative safety work that monitors and verifies compliance with safety management requirements. This assessment and audit activity
confirm that the necessary administrative safety work is being performed in the operational business units. These monitoring and verification processes are documented processes looking for evidence of other documented processes.

“Most, we end up getting over that arbitrary line, [but often we say] we need you to write an extra document.”

Safety professionals also perform administrative safety work to prepare other people in the organisation who are required to be part of corporate or external audit processes, which can take considerable time and effort.

“I’m starting to get the site ready for [the audit], it’s in three weeks’ time, so I’ll get down there in the next week and just start helping them get ready … give the leaders some coaching around what an audit is about which will help them be more relaxed so that they can give the right support to the audit team.”

4.6.4 Physical Safety

Physical safety professional work is performed for the purpose of changing the physical conditions of work, i.e., work process, work equipment, work personnel. Physical safety work is specifically shaped towards directly reducing safety risk to people. Table 8 outlines the specific cases of physical safety professional work described by participants during interviews and the resulting themes.

Table 8: Physical Safety Professional Work

<table>
<thead>
<tr>
<th>No.</th>
<th>Title</th>
<th>Purpose</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>Upgrade offshore helicopter</td>
<td>Manage the procurement and deployment of a new generation helicopter for offshore personnel transport.</td>
<td>Upgrade to work equipment</td>
</tr>
<tr>
<td>56</td>
<td>Replace cylinder transport trolley</td>
<td>Facilitating the re-design and introduction of new transport trolleys to move LPG cylinders and reduce manual handling</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Title</td>
<td>Purpose</td>
<td>Theme</td>
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</tr>
<tr>
<td>57</td>
<td>Implementation of new technology for site inspections</td>
<td>Establishing new capability to conduct field inspections using UAV's to reduce manned aviation activity</td>
<td>Re-design or substitution of a work activity with a safer process or technology</td>
</tr>
<tr>
<td>58</td>
<td>Safety advice for work at heights task</td>
<td>Providing specific advice and direction to re-design work at height task to reduce safety risk</td>
<td>Re-design or substitution of a work activity with a safer process or technology</td>
</tr>
<tr>
<td>59</td>
<td>Review and trial of confined space rescue plans</td>
<td>Redesigning the confined space rescue plans for a specific work location and conducting field tests to ensure the plan would work if required</td>
<td>Re-design or substitution of a work activity with a safer process or technology</td>
</tr>
<tr>
<td>60</td>
<td>Rapid access physiotherapy program</td>
<td>Implementing early intervention and treatment program for employees performing manually intensive work</td>
<td>Improving the physical capability of employees</td>
</tr>
<tr>
<td>61</td>
<td>Contribute safety requirements to plant design</td>
<td>Contributing safety requirements to the design of a new Major Hazard Facility (MHF) so that safety needs are directly considered during design decisions, alongside production and cost</td>
<td>Facilitating production and cost sacrifice judgments for safety</td>
</tr>
<tr>
<td>62</td>
<td>Suspend all offshore aviation activities following inspection anomaly</td>
<td>Deciding to ground all offshore aviation activity following a routine inspection anomaly until checks were completed to remove uncertainty regarding the integrity of flight operations</td>
<td>Facilitating production and cost sacrifice judgments for safety</td>
</tr>
</tbody>
</table>

Physical safety work is the most closely linked safety professional work to the reduction of safety risk, i.e., the safety of work. Physical safety work involves changes to the equipment, work process, employee, and, or the resources available for operational safety (time and capital).

Safety professionals find performing physical safety work the most challenging type of safety professional work. Physical safety work intervenes in the tools and tasks of frontline employees. While demonstrated, social and administrative work impose time and resource burden on the organisation because it is performed alongside the core operations, physical safety work changes the core operation. It is somewhat ironic that the type of safety work that impacts safety risk the most directly is the hardest to perform. Physical safety work is hard because stakeholders don’t have an aligned perception of work as done, nor the associated safety risk.

Upgrades and improvement to the equipment and technology involved in the core work activities of the organisation can be identified and managed by safety professionals.
Senior management can be challenged by becoming involved in physical safety work as it reveals the gaps in their understanding of operational work practices. This limited operational understanding is relevant in the case of equipment and technology upgrades for safety, as the required capital investment (potentially $millions) needs senior management approval.

“there is a disconnect between the executive and the frontline management teams ... they understand the headline risks that are associated with [the equipment], but actually how it’s used, and what systems we have in place to mitigate those threats, I think would be lost on them.”

Upgrades to the equipment used by front-line workers for core operational activity requires close collaboration with the users of that technology.

“we need to listen to our people more. what may be modified and tested, on a flat piece of concrete with an empty cylinder, may not be relevant to going into a site or over grass or rocks”

Operational work processes can be modified, supplemented or replaced with safer work processes. The effort and difficulty associated with safety improvements to core operational activities depend on stakeholder beliefs and opinions about the safety risk of the existing process. It is incredibly difficult when safety professionals are the ones suggesting to management and the frontline that work needs to change.

“unless faced with an inordinate amount of data to support your view you would not be successful in introducing a new [core work process]”

Where management or the frontline employees initiate the review and change process in their respective interests, change becomes easier so long as they maintain control over the change decisions.

Safety professionals can make or facilitate the making of sacrifice judgments on behalf of safety. Sacrifice judgments can, and should, be made during standard operational decision-
making processes, for example, when designing a new workplace, or preparing a project schedule. However, sacrifice judgments are typically reactive and involve stopping, delaying or suspending core operations due to an unmanaged or uncertain safety risk.

“I took the step to say that we’ll actually take a pause in operations until we can get a clear understanding of what the potential impact is ... That just put that breathing space between the frontline operations and the people who are actually working on the [issue]”

4.6.5 Testing and expanding the model of Safety Work

The results of this study provide a non-exhaustive first sub-categorization of the four types of safety work (Rae and Provan 2019). Table 9 presents the categories and sub-purposes of safety work performed by safety professionals.

<table>
<thead>
<tr>
<th>Sub-purposes of Safety Work</th>
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<tbody>
<tr>
<td>Demonstrated</td>
</tr>
<tr>
<td>Managing the safety message through the hierarchy</td>
</tr>
<tr>
<td>Obtaining regulatory or company approvals</td>
</tr>
<tr>
<td>Implementing processes to adequately demonstrate safety compliance</td>
</tr>
<tr>
<td>Preventing safety events disrupting operations</td>
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<tr>
<td>Building relationships to increase safety influence</td>
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</table>

The examples of safety professional work described in this study were categorized based on the purpose of the work as described by participants. In complex social systems such as organisations, stakeholders can have different purposes for their involvement in the same work activity. The model of safety work and institutional work more broadly is not
sensitive to the contradictory drivers of the same work activity, between in the case of safety work, safety professionals, senior managers, operational managers, and frontline employees. Safety Professionals are often in the middle of “safety work as imagined” and “safety work as done”. For example, in the case of demonstrated safety, the gap between the stated intent of senior management to ‘understand and learn’ and the inferred (felt) intent ‘to accuse and justify’ of the frontline worker, contractor or safety professional.

Safety professionals are performing additional work to their core role of safety work and their general administrative and management duties. We have labelled these as ‘interpersonal work' and ‘line management work’.

4.6.5.1 Interpersonal work

Safety professionals perform significant relational development and social influence work within organisations. Safety professionals need to work within and across the different drivers and perspectives of stakeholders described above. Safety work is always pushing against core operational work, cost and production targets. Safety professionals are constantly attempting to change other’s beliefs, thoughts and actions, of people that they both, don’t know, and from whom they are organisationally distant. Safety Professionals perform considerable activities for the purpose of developing relationships, understanding key stakeholders, and creating personal social standing to generate influence. Safety professionals understand the importance of this work, but its intangibility challenges organisations.

“Checklists are tangible, so maybe there's a sense that something's being produced if checklists are being completed. How do I put a value on having 20 conversations across the organisation? There's no record of that. No one knows that I've done that. But I'm spending half my time just fostering those relationships.”

“A week later, a manager may be struggling with something and go, shit, that [safety professional] was a nice guy. I'll pick up the phone to him. I'll be able to talk honestly with him, and he'll give me some thoughts ... when you have the relationship, and you've built the rapport. That's when your technical knowledge becomes handy. Because now you're a resource to be utilized.”
4.6.5.2 Line Management work

Safety professionals are requested by management to lead and support activities that are not related to safety. These requests are for one of two reasons:

1. The safety professional is a discretionary resource that management can assign to non-safety work that needs to get done.
2. Management want to implement something that is not-wanted by employees so utilize safety and the safety professional to ‘legitimize’ the change (for example, dress codes, working hours, contracting arrangements, etc.)

This work can be labelled line management work as it is serving the purpose of delivering on management needs, not safety needs. Due to the prevalence of social safety work and the resulting commitment to safety within contemporary organisations, labelling an activity as ‘safety’, provides the work or decision with broad stakeholder legitimization, and is considered ‘not up for debate’.

**SQ4: What is the current role of safety professionals within organisations?**

Individual items of safety professional work can be classified as demonstrated, administrative, social and physical safety work, based on the sense-making of purpose by the safety professional. Further thematic analysis of the data identified several themes related to the contemporary role of safety professionals within organisations:

1. Supporting the objectives and decisions of line management
2. Developing and implementing safety practices and processes
3. Supporting organisational safety needs (Demonstrated, Social and Administrative)
4. Utilizing industry and professional experience to determine safety direction

4.6.6 Supporting line management

Safety professional work is prioritized based on the wants and needs of management, not on the current risk faced by the front-line workforce. “Power is an issue in safety more important than culture” (Antonsen 2009). Professionals aligning themselves with, and supporting management is a reasonable and expected organisational behaviour – to do what the boss wants.
The safety professional literature is divided on how aligned the role should be with the management of an organisation. There have been repeated calls for safety professionals to better understand the needs of management and support their decisions (Dejoy 1993, van Dijk 1995, Bryant 1999, Stalnaker 1999, Adams 2003, Manuele 2003, Hansen 2011, Hansen 2012). Others disagree and propose that safety professional must always keep a ‘thumb on the scale for safety’ (Hale 1995, Saari 1995, Columbia Accident Investigation Gehman 2003, Woods 2006, Shahinpoor and Matt 2007, Antonsen 2009, Haddon-Cave 2009, Rebbitt 2013, Grote 2015). Many of the views on the need for safety professionals to carefully consider their positioning in relation to management come from investigations into major disasters, and from contemporary resilience engineering theory.

The safety profession may have solved one problem, its ongoing organisational position, and relevance through embedding itself in the management structure of the organisation, and paradoxically created another, reducing its agency and independence. The existing safety professional literature demands that safety professionals support line management and the delivery of all organisational objectives to be a value-adding function within the organisation (Provan, Dekker et al. 2017). To a large extent, this has been achieved by orientating their activities in support of the needs of management. However, this alignment with line management and the reinforcement of established institutional logics competes with supporting the mitigation of safety risks faced by the frontline workforce.

Contemporary organisations define management as the internal customer of the support functions, including safety. Management foot the bill and therefore direct the resources to achieve their goals, on their terms. Safety Professionals see themselves as a support role to management (Provan, Dekker et al. 2018). This research supports that view, and raises the question: how different would the role of a safety professional be if frontline employees and the people exposed to safety risk were considered the customer? There is an absence of safety professional work the supports and amplifies the voices and needs of the front-line worker (Weber, MacGregor et al. 2018).

It can be argued that management wants workers to be safe, so therefore the role of safety professionals does already support workers. This argument is a gross oversimplification of work, hierarchy, relationships, and goal-conflict within an organisational system. The gap between work as imagined by management and work as done by the workforce limits the ability of safety professional work to be targeted and effective. In turn, this leads to work
generalizations and greater activity for the purposes of demonstrated, social and administrative safety, which are the realm of management, rather than physical safety which is the realm of the workers. This gap between safety work that meets the organisational needs of management, and safety work that reduces risk to the front-line workers is essential to understand if we are to improve the contribution of safety professional work to the safety of operational work.

Safety professionals see themselves and as accountable to management for their role performance, and discharge this through their safety work. They do not see themselves as responsible for worker safety. Safety professionals perform the role of demonstrating safety on behalf of management through managing the message and preventing safety events disrupting the continuing operations of the organisation and management's achievement of their production and profit goals. Or as Woods (2006) suggests “being a tabulator of statistics and a cheerleader of past safety performance”. “If two people in the same organisation always agree, then one of them is unnecessary” (Pater 2006).

Contemporary resilience engineering, safety II, and safety differently literature demands that safety professionals independently challenge, and reshape the core objectives and logics of an organisation (Hollnagel, Woods et al. 2006). Continually reframing line managers and an organisation's model of risk requires a new relationship between safety professionals and line managers, and a reorientation of safety professional work. Safety professional work is socially complex (Hale 1995) as a core part of them effectively performing their role is to challenge the actions, decisions, and beliefs of management. This tension between both supporting and challenging the actions of management has long been associated with the safety profession (Hale 1995). We have simplified the relationship over the past 20 years (Provan, Dekker et al. 2017), but where we have ended up needs urgent critical reflection. This study has highlighted that safety professionals find it difficult to perform this role of challenging the actions of individual managers due to the closeness of their relationship, and paradoxically safety professional agency over recent years continues to decline. Due to the chequered history of safety professionals in having poor relationships with management – they are now squarely ‘in service’ of line managers rather than in service of a clear safety risk reduction purpose, with expertise, legitimacy, and social capital.

The relationship between safety professionals and line management could be considered as an ‘institutional ecology' in a similarly reciprocal relationship as traditional
professions (such as medicine and law) and the state (Suddaby and Muzio 2015). Safety professionals need line managers, and this symbiotic relationship, coupled with the relative power difference with line management has marginalized any obvious displays of disagreement. Consistent with ‘adaptation theory’, safety professionals have evolved to survive within the constraints of their institutions (Wallace 1995). This adaptation for survival, however, may be at the expense of the challenge and intellectual competition necessary to maintain safety. Safety professionals need to rebalance their stakeholder relationships across the organisation between management, front-line workers, technical specialists, and others. Is the role of a safety professional to enable better organisational decision-making, or to make the best of management decisions that have already been made? Organisational life may be easier for a safety professional the closer they are aligned with management; however, safety may be improved through more independence.

4.6.7 Developing and implementing safety processes and practices

The continued calls for the increased professionalization of the safety professional role over recent decades has resulted in the ongoing institutionalization and standardization of safety professional work (Townsend 2013, Dekker 2014, Pryor, Hale et al. 2015, Righi, Saurin et al. 2015). Presently a vast abundance of ‘safety work’ exists in organisations, separate from, and parallel to the operational work (Rae and Provan 2019). The emergence and growth of safety work in organisations correlate with the rise and increase in safety professional roles with companies (Provan, Dekker et al. 2017). This is a broader trend within contemporary organisational referred to within the institutional work literature as the growth of peripheral work (Lawrence, Leca et al. 2013).

As safety is an emergent property of operational work and so the separation of safety work from operation work limits the direct impact of the activity on the reduction of safety risk. This study highlights the extent of the: separation, fragmentation, and standardization of safety professional work, through the growth of demonstrated, social, and administration safety work disconnected from operational safety. Safety professionals spent considerable time engaged in demonstrated and administrative safety work which appeared significantly distant from operational safety outcomes (Rae, Provan et al. 2018). These activities included: managing messages, participating in tokenistic activities, developing generic safety processes and practices, and compiling safety information, etc.
The success of safety professionals and their organisations at separating out safety professional work from core operations is evident through their dedicated safety management systems, safety incident management processes, and safety improvement programs. As well as through the wide-spread performance of demonstrated, social and administrative safety work by; management, workers, technical specialists, and safety professionals.

There is an established international network of safety professional associations referred to as INSHPO. INSHPO, together with national professional associations (e.g., Safety Institute of Australia, American Society of Safety Professionals, etc.) define guidelines for safety professional tasks, capability, certification, tertiary curriculum accreditation, even recommended role position descriptions. This body of advice and requirements, while extensive and vital for progressing the profession, is based on our existing knowledge of professional practice. Recent research suggests the safety professional role and activities, and therefore knowledge and skill requirements remain as an empirically unresolved question (Borys 2015, Provan, Dekker et al. 2017).

Safety professional work is currently legitimized by executing normative, top-down decisions and mandates of line management. The resulting institutionalization of the role of a safety professional (Slager, Gond et al. 2012) creates a legal and moral defence for safety problems and events (Wastell 1996, Provan, Dekker et al. 2017, Rae and Provan 2019). For safety professionals, having an institutional and process orientation enables them to justify the activities they are performing independently of the safety outcomes experienced by the organisation. Safety professionals, through the professionalization of their role, have become effective at distancing the performance of their work from safety incidents. Safety professionals are conspicuous in their absence from independent investigations into major disasters. Wastell (1996) described how this focus on institutionalized methodology leads to a focus on the process instead of the outcome. In the case of safety professionals, a focus on safety work (demonstrated, social, and administrative), rather than the safety of work (Rae and Provan 2019). Their organisations can not criticize safety professionals for following institutional processes; however, they can criticize them for independent decisions and freedom of action. In contemporary hyper-political organisations – the personal security offered by institutional work is welcome.
Safety events can occur anywhere and at any time, and the multiple contributors that combine to result in them exist across the organisation. Therefore, safety professionals require the flexibility, freedom, capability, and freedom of action for practice variation. They need to roam the organisation, ask, interpret, analyse and enable new understanding about operational work, and facilitate real-time decision-making in response. Such that, they need to be free agents as much as possible, not be confined by the reactive needs of management, their organisation or their standardized professional role. Safety professionals are currently not the autonomous agents that they need to be to understand and facilitate reductions in safety risk. Independent thought and agency are critical for safety professionals to facilitate changes in organisational courses of action (Pater 2006, Woods 2006, Provan, Dekker et al. 2017). The current institutionalization and professional stratification of the safety professional role reduce the ‘safety energy’ available for proactive safety activity as and when it is needed in the organisation (Woods, Branlat et al. 2015).

4.6.8 Supporting organisational safety needs

During this study, safety professionals were often unable to articulate a clear goal for their work activities. The underlying purpose had to be teased out and observed through their practice as if it is not something that is typically considered by professionals in their work. When participants did say why they were performing the work activity, they expressed the goal in overly generic ways, for example:

1. "to support the achievement of the organisation's goals."
2. "to implement the safety management system."
3. "to simplify activities."
4. "to improve safety."

In the above description of the stated goals of safety professionals, we can see the tangible impact of their alignment with line management, and the professionalization of the role. As such, safety professional work rarely had a clear and specific goal that was related to a current risk exposure facing front-line workers. Safety professionals are arguably best placed in the organisation to monitor the ever-changing nature of safety risk; however, they do not seem to perform this role currently. And ironically, as their roles have moved closer
towards supporting management needs and increased institutionalization, it has moved further away from the safety risk facing the workforce. The unintended consequences of this are that, by not reducing safety risk, safety professionals are not acting in the best interests of the organisation, its workers, or other stakeholders. Physical safety work should be deliberately created and legitimized to improve safety, and if necessary, performed in the place of the other types of safety work. Alarmingly, but not surprisingly though, physical safety work is the most challenging type of safety work for a safety professional to perform.

When safety professionals perform ‘blunt-end’ safety work – social, administrative, demonstrated – it doesn’t impact too many people and the core operation of the organisation. It is somewhat inconvenient for personnel that have to do extra activity in addition to their core work, and it creates a performance drag on the business, but it does not deeply disrupt or upset their work. This safety work is ‘on the side lines’, or ‘run in parallel’ to the core operational work. As much as we hear the mantra and talk that safety needs to be integrated into the ‘core operations of the organisation’. What that actually means is that ‘safety work needs to be more easily and efficiently incorporated into our daily work day’. It does not mean they want safety professionals to perform physical safety work and disrupt the way that we work.

However, given that safety is an emergent property of operational work, disrupting the way that operational work is performed, i.e. by performing ‘sharp-end’ safety work – physical safety does change the tools and tasks of people. Physical safety work includes safety changes to front-line work activities and environments – which can consist of the physical work of operators, as well as other tasks such as engineering design, work planning, materials purchasing, etc.

Physical safety work is the most direct and reliable form of safety professional work to achieve the objective of reducing safety risk. Physical safety work creates acute trade-offs and goal conflicts between the current way of performing work where the stakeholders have already balanced the various needs (including safety) associated with the work in a way that is acceptable to them. Safety professionals dare not impose a change concerning physical safety work unless allowed to or requested by workers and managers. Safety professionals often lack the legitimacy to intervene in the tools and tasks of people performing work in which the safety professional has no direct experience (Weber, MacGregor et al. 2018).
The safety profession broadly lacks purpose and vision (Provan, Dekker et al. 2017) and a generic statement of ‘ensuring safety’ doesn’t count – safety professionals need to position themselves as goal-directed agents that proactively reduce safety risk. To do this, the findings of this study suggest that safety professional work needs to change significantly. The safety profession has evolved from having a clear compliance goal in the past (Provan, Dekker et al. 2017), to supporting management at present, and needs to continue to evolve to proactive safety risk reduction. One of the most important parts of a safety professional role is to be informed about real-time safety risks in the organisation and be informative to decision makers in response (Woods 2006). Safety professionals need to become sharp-end operators, focused on physical safety work at all levels of the organisation.

4.6.9 Utilizing industry and professional experience

Safety professionals do not use a scientific narrative to justify the activities that they are performing. They claim safety expertise based on industry experience and safety work that they have performed in other organisations. Scientific evidence was not mentioned once in the 62 interviews in relation to the safety professional work activity. Given that no data was collected, we can only propose the following discussion and suggest that the relationship between safety science and safety practitioners be part of a future research agenda. The absence of a safety science empirical narrative associated with safety professional work may be due to a combination of the following:

1. Low levels of tertiary academic qualifications among safety professionals
2. Lack of relevant safety science research findings
3. An absence of effective mediums to disseminate research findings
4. Organisations do not demand scientific evidence concerning safety work

Safety professionals desire professional status, yet largely reject the idea that tertiary degree qualifications should be minimum professional entry criteria (Smith and Wadsworth 2009). Safety professional’s claim that expertise comes from experience on the job or experience gained in the workplace outside the safety profession (Provan, Dekker et al. 2018). Safety is a complex socio-technical discipline, and we do not have an agreed understanding of the knowledge and skill requirement for safety professionals (Provan, Dekker et al. 2017),
nor a clear boundary around the safety science discipline. Current attempts by professional associations and organisations to standardize the role of safety professionals is narrowing the focus towards demonstrated, social, administrative safety work. Alongside this focus, is the widening of contradictory empirical findings in relation to these types of work, for example safety cases (demonstrated), safety culture (social), and safety management systems (administrative) (Rae and Provan 2019).

Safety professionals determine and undertake safety work drawing on, personal experience and direction from management, rather than on current safety science research. Safety professionals have expert status within the organisations, such that their advice carries the weight of that perceived expertise, and stakeholders should expect it to be based on scientific evidence where it exists (Almklov, Rosness et al. 2014).

The absence of an empirical safety science narrative driving safety professional work contributes to the inability of the safety professional to exercise agency and challenge their alignment with the needs and decisions of management. Personality and authority will prevail over absent, or poorly presented empirical evidence (Peters and Peters 2006). Empirical safety findings help reduce the institutionalization of the safety professional role and reduce safety work that does not contribute to operational safety – safety clutter (Rae, Provan et al. 2018).

Contemporary safety theories and emerging empirical evidence (Dekker 2017) are dismantling some of our historical ‘truths’ on which we have built our existing safety work. This is particularly true in relation to social and administrative safety work which currently dominates the roles of safety professionals. One such truth is the contribution of the safety profession to improving safety in organisations, for which there is very little empirical evidence (Borys 2015). Safety professionals need to establish a closer connection with the current body of safety science research, as one way to address the findings of this research, that limit their contribution to proactively reducing safety risk in their organisations.

4.7 CONCLUSION

Safety in contemporary organisations is an emotional, value-laden, subjective topic, that invokes paternalistic leadership behaviour, fear, and anxiety. Safety professionals alone will not be able to reshape the socio-political factors surrounding safety work. While much of the existing literature focusses on, and suggests that safety professionals need to develop
improved interpersonal skills and influence, the results of this research raise a broader need – how safety work in organisations can be re-orientated, to enable safety professional work activities that serve safety risk reduction purposes?

The safety performance of the safety-critical industries in the developed world, as measured by occupational fatality rates, has not improved in the last ten years. During this time, we have seen significant growth in the number of safety professionals per organisation, as well as a more recent considerable decline in numbers due to macroeconomic cycles. Organisations may have noticed this lack of impact that safety professionals are having on safety performance. This research suggests that safety professionals are serving other organisational purposes, that may not be impacting on the reduction of safety risk in organisations. It is currently in the interest of safety professionals to carve out their professional space in organisations through demonstrated, social and administrative safety work. These categories of safety work: are more straightforward to undertake, aligns their role with line management political power, provides personal security and career progression, and create ongoing institutional safety work to practice and monitor.

It is crucial for us to be clear, that we are not suggesting that safety professionals are immorally choosing not to perform safety work that proactively reduces safety risk. We think that the opposite is true of their beliefs – that they believe that each type of safety work does contribute to operational safety. They mostly believe that the role they are performing is what their job should be, i.e. supporting management and institutionalizing safety activities. Experience throughout their careers provides safety professionals with a strong professional ‘evidence base’ (Provan, Dekker et al. 2018). Others within organisations rarely, if ever, consider the empirical basis for safety, and nor do safety professionals themselves.

The findings for RQ2 regarding the contemporary role of safety professionals lie in stark contrast to a possible role inferred from contemporary resilience engineering, safety-II and safety differently literature, being:

1. Challenging the objectives and decisions of line management
2. Enhancing operational practices and processes
3. Supporting safety risk reduction and front-line safety needs
4. Utilizing safety science research to determine safety direction
4.7.1 Practical Implications

The following practical implications from this research deserve urgent consideration by safety professionals and their organisations: independence, autonomy, risk, and knowledge.

4.7.1.1 Independence

Safety professionals should consider their cognitive, social, and structural role independence from management. While it is necessary for safety professionals to maintain close involvement with operational activity, they need to balance this with challenging and reframing the organisation's core work, decisions, and understanding of risk. Currently, the work that line management directs them to perform, is consistently prioritized ahead of work that they should perform based on their professional opinion.

4.7.1.2 Autonomy

Safety professionals should consider the level of autonomy they have in their role to be proactive towards understanding and responding to emergent ‘weak signals’ in the organisation. Safety professionals cannot have their tasks predetermined and administratively prescribed, at the expense of the ability to roam the organisation for vulnerabilities. The greatest possible variety of safety professional activities is best.

4.7.1.3 Risk

Safety professionals should consider the links between their safety work and the safety of core operational activity in their organisation. They should be clear on the purpose of all safety work and seek to minimize or transfer safety work that is required, but not reliably linked to operational safety. Priority should be re-balanced towards physical safety work, making safety professionals sharp-end operators, not blunt-end administrators.

4.7.1.4 Knowledge

Safety Professionals should consider the currency of their safety science knowledge and its relationship to the decisions about their safety work. The safety profession and industry should work to bridge the gap to safety researchers and safety educators. Safety
Professionals are managing safety in an objective world, and while there are many things that we don’t empirically know about safety – there are many things that we do.

4.7.2 Summary

The findings of this research should create concern for organisations through their implications for workplace safety. The safety profession needs to urgently reflect on these issues and challenges and chart a deliberate future direction for safety professional practice. The current practice of the profession has evolved and adapted, in response to its organisation context, rather than as a deliberate collective effort to position themselves as a pivotal and crucial resource in shaping organisational safety outcomes.

Safety performance, as measured by fatality rates in safety-critical industries, has not improved over the past decade. Could the current practice of safety professionals be contributing to this outcome? Together with their organisations, safety professionals should critically reflect on their: independence from the objectives of management, institutionalization and autonomy of professional work, focus on the link between safety work and physical safety risk reduction, and learning from advances in safety science.

This is not a simple problem, and we can’t address the role of safety professionals separate from the nature of safety work within organisations. This paper provides an understanding of how broader organisational context directly influences safety professional work and provides us the insight to develop organisational strategies to re-orientate the safety profession towards the understanding and management of safety risk. Safety professional practice in-effectiveness is a joint problem of the profession and the organisations that house them.

4.8 OUTCOME FOR THE RESEARCH AIM

Chapter 4 provides one answer to the primary research question (RQ1) and specifically answered two of the research sub-questions as follows:

SQ3: What are the objectives of safety professional work activities?
SQ4: What is the current role of safety professionals within organisations?
The conclusion in relation to RQ1 from the safety professional practice research reported in chapter 4, is that the role of a safety professional can be described as:

“to support line management to implement safety processes and practices that meet organisational safety expectations”

This thesis, and specifically the research reported in chapters 3 and 4 replace the traditional linear thinking about the role of safety professionals: i.e. tasks, job titles, education, interpersonal skills, business understanding, etc. with insights leveraged from complexity theory, sociology, psychology, and organisational science.

The largest epiphany during my time as an embedded researcher was identifying and exploring the gap between the ‘work of safety professionals’ and the ‘safety of work’. The existing literature reported in chapter 2 purports that the objective of a safety professional is to ‘prevent incidents and harm to people’, even though the existing literature fails to demonstrate a compelling link. This moral motivation for safety was reflected in the research finding on professional identity reported in chapter 3.

However, the research reported in this chapter suggests that a moral and physical safety objective is not the driver of the specific work tasks of safety professionals. Despite the safety professionals in this study having vastly different beliefs about safety, and practicing in vastly different operating contexts, their approach to practice was remarkably consistent. This suggests that the institutional (‘structure’) factors that shape safety professional practice, and specifically the role of line management largely determine the what, and the how of safety professional practice. The research reported in this chapter reveals how hard and complex the role of a safety professional is between the politics and operational dynamics of their organisations and their professional knowledge and beliefs.

Appendix 1 proposes that physical safety work is the only type of safety professional work that contributes directly to operational safety risk reduction. However, it also proposes that demonstrated, social and administrative safety work can contribute to risk reduction indirectly via a physical mechanism. This would follow Rasmussen’s framework of causal factors, in that safety professional work activities would create conditions that spread outwards into higher system levels enabling or frustrating the functioning of lower levels. The scope of this study did not collect evidence to support or dismiss this possibility, however it
remains an important future research question given the volume of safety professional work activities that are not categorised as physical safety work. The indirect mechanisms by which non-physical safety work may influence safety are proposed in more detail in Appendix 1.

The most important conclusion from this chapter for safety professional practice is that improvement in the effectiveness of the role of the safety professional lies less in safety professionals as individuals and more in the organisation more broadly. There is a nice synergy with this complex system finding relating to safety professional practice as there is with the evolution of safety theory for complex systems. Contemporary safety theory describes safety as an emergent property of work and the functioning of organisations, and similarly, safety professional practice is an emergent activity in response to the operational context of line management needs.

For much of my career, and even as I commenced the safety professional identity research reported in chapter 3, I believed that if we just worked on fixing the broken component, i.e. the safety professional, then we would improve safety professional practice. We should no longer take the reductionist approach to safety professional practice that the existing literature has for the past 25 years. Safety professional practice is a complex phenomenon and to improve it we need to work purposefully on the duality of ‘structure’ and ‘agency’ – the organisation and the individual. This thesis provides the language and evidence to enable safety professionals and their organisations to critically reflect on safety professional practice in relation to operational safety and their organisations more broadly.
CHAPTER 5: THE FUTURE OF THE SAFETY PROFESSION

5.1 STATEMENT OF CONTRIBUTION OF CO-AUTHORED PAPER

This chapter includes a co-authored paper submitted for publication. The bibliographic status of the co-authored paper, including all authors, is:

5.2 RATIONALE FOR THE STUDY

The research project reported in chapter 5 was specifically designed to address the following primary research question and sub-question:

RQ1: What is the role of a safety professional?

SQ5: What is the future role of a safety professional through the theoretical lens of resilience engineering, safety-II, and safety differently?

The research reported in chapter 5 was designed to develop a proposed role of a safety professional through the theoretical lens of resilience engineering, safety-II, and safety differently. Despite these theoretical advances and emerging empirical evidence for a different approach to organisational safety, the implications for the role of a safety professional were previously unexplored.

This chapter was envisioned when I first discussed undertaking my PhD with Sidney Dekker and Drew Rae. Given my personal beliefs about the efficacy of contemporary safety theory for improving safety, I felt from the start that we needed to re-shape the role of safety professionals to enable this approach in their organisations. However, I held off writing this chapter until I had completed the literature review reported in chapter 2, and the research reported in chapters 3 and 4. I wanted to deeply understand the current reality of safety professional practice before proposing a role for the future.

The research findings reported in chapters 2, 3 and 4, all suggest that significant change needs to occur across the safety profession, if they are to change the way organisations approach the management of safety, and by extension, directly improve operational safety outcomes. The research presented in this chapter provides a new theoretical contribution to the body of resilience engineering, safety-II, and safety differently literature, as well as practical direction for willing safety professionals to evolve their role.

During the literature review reported chapter 2, one of the more prospective contributions in this direction that I identified, was a chapter written by David Woods in an early resilience engineering book titled ‘How to design a safety organisation: A test case for resilience engineering’. I contacted David Woods and he accepted my invitation to collaborate on the research reported in this chapter.
5.3 ABSTRACT

The safety management literature describes two distinct modes through which safety is achieved. These can be described as safety through centralized control, or safety through guided adaptability. Safety through centralized control, labelled by Hollnagel as ‘Safety-I’, aims to align and control the organisation and its people through the central determination of what is safe. Safety through guided adaptability, or ‘Safety-II’, aims to enable the organisation and its people to safely adapt to emergent situations and conditions. Safety-II has been presented as a paradigm shift in safety theory, but it has created practical difficulties for safety professional practice in real organisations. In this paper, we define the two safety modes and explain the challenges in changing the role of a safety professional to support Safety-II. When should safety professionals re-enforce alignment, and when should they support frontline adaptations? We outline specific activities for safety professionals to adopt in their role to move towards a guided adaptability mode of safety. This will move the safety professional further towards their fundamental responsibility – ‘to create foresight about the changing shape of risk, and facilitate action, before people are harmed.’

5.4 INTRODUCTION

Safety management, as it is frequently described in the literature and applied in practice, involves standardization and compliance. Safety management systems, behavioral safety, and safety culture are all attempts to align individuals with organisational safety requirements and ideals. This ‘centralized control’ mode of safety, labelled by Hollnagel as “Safety-I”, begins with central determination of what is safe, and then implements mechanisms to align operational work with this plan through prescribed roles, requirements, and procedures. Accidents and near misses are believed to be the result of deviations from prescribed work, and therefore remedies focus on further increasing pressure for compliance with the prescriptions. Safety management then focuses on identifying deviations from prescribed work which need to be detected and eliminated.
Over the past fifteen years, this view of safety has been increasingly challenged by theories of Resilience Engineering (Hollnagel, Woods et al. 2006), Safety Differently (Dekker 2014), and Safety-II (Hollnagel 2014). These theories suggest a focus on ‘guided adaptability’, through understanding and supporting how complex systems usually succeed, but sometimes fail. This alternative mode has been labelled by Hollnagel as “Safety-II”. Organisational systems succeed despite the basic limits of predetermined plans, in a complex, interdependent and changing environment, because responsible people adapt to make the system work. Safety-II focuses on how work is done, looking for the different ways people adapt to gaps, challenges, and surprises, and how they synchronize activities to resolve conflicts and achieve shared goals. The challenge for safety management is to guide and facilitate how people adapt to handle complexities and to provide the resources for coordinated joint activity. Safety-II enables people to dynamically align the pursuit of both safety and effectiveness because there are always multiple conflicting goals, limited resources, and pressures to achieve more (i.e. industry’s ‘Faster, Better, Cheaper’ imperative). Safety management focusses on guiding how to, and when to trade-off and re-prioritize across multiple risks and goals when operating in the midst of uncertainties, changing tempos and pressures.

In the authors’ experience, safety professionals are confused (a) by this divergence in contemporary safety management theory, and (b) by the contrast between the Safety-II literature and the safety management practices used within their own organisations. The existing literature exploring safety professional practice concludes that the current profession believes in, implements, and performs activities in support of a centralized control mode of safety (Provan, Dekker et al. 2017). Therefore, the safety profession largely operates inconsistently with, and often counter to, a safety mode of guided adaptability. Historically, the Safety-I literature, for all its theoretical shortcomings, has provided a strong practical reference for what it means to “do safety work”. Since the safety literature sometimes views the two modes of safety as incompatible, safety professionals do not have a practical reference about how Safety-II can be used to steer their activity in professional practice.

We propose that the fundamental responsibility of safety professionals can be best described as: creating foresight about the changing shape of risk, and facilitating action, before people are harmed (Woods 2005). Such that, if we get to count the bad things that have happened to people, then we have already failed. Thus, safety must be proactive, not
reactive, but how do safety professionals achieve this and identify problems before there are obvious failings? This paper answers this question by presenting an outline of the activities and tasks of safety professionals in support of a guided adaptability mode of safety, which has not previously been attempted in the resilience engineering, safety differently or safety-II literature. We do this by: outlining the role of a safety professional in a mode of centralized control, describing the breakdowns of the safety professional role when operating in this mode, and then providing direction for how the role can be reframed to support a mode of guided adaptability.

5.5 SAFETY MODE OF CENTRALIZED CONTROL

Since the early 1900’s, organisations have viewed accidents as undesirable outcomes from unplanned variation of work. Under this view, safety is achieved by reducing the likelihood or consequences of deviation from planned safe work practices. Early ‘centralized control’ approaches were derived from Taylor’s ‘Scientific Management’ (Taylor 1914). Taylor suggested that there was “one best way” to perform any task. Whilst Taylor was primarily concerned with efficiency and productivity, companies such as DuPont adapted Taylor’s approach for safety, documenting and standardising safe work practices (Stabile 1987). More recent approaches – including Safety Management Systems, safety culture, and behavioural safety – make greater allowance for human variability than Taylor, but preserve the idea that safety arises from preventing unsafe variation. The fundamental premise for Safety-I and a centralized control mode of safety is the belief that the plan for work and safety is substantially complete, and that all will be well if everyone works to the plan and follows the safety requirements. The organisation exerts pressure to ‘work to plan, work to role, and work to rule’.

5.5.1 Organisational capacities for a safety mode of centralized control

In order to create centralized control for safety, organisations focus their effort on developing their capacity to: analyse hazards, implement controls, monitor conformance, delegate authorities, and standardize safety culture (see table 10).
Table 1: Organisational capacities for a safety mode of centralized control

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyse Hazards</td>
<td>Analysis of the factors that could cause operations to become unsafe</td>
</tr>
<tr>
<td>Implement Controls</td>
<td>Implement Controls (physical and behavioural) to manage hazards</td>
</tr>
<tr>
<td>Monitor Conformance</td>
<td>Control performance is informed by proactive and reactive information</td>
</tr>
<tr>
<td>Delegate Authorities</td>
<td>Line management and safety professionals make safety decisions</td>
</tr>
<tr>
<td>Standardize safety culture</td>
<td>Promote leadership and front-line commitment to prioritize safety</td>
</tr>
</tbody>
</table>

5.5.1.1 Hazard analysis

The starting point for controlling safety is to perform hazard analysis. Hazard analysis combines our understanding of the probabilities, uncertainty and consequences of event scenarios in a way that enables the organisation to prioritise resources for monitoring and risk reduction activity (Aven 2010). Organisations invest significant resources expanding their hazard analysis processes and therefore hazard and risk understanding. Through processes at both a task (e.g. Job Safety Analysis) and system level (e.g. Hazard and Operability Study), hazards are identified, categorized, assessed and prioritized for action and monitoring. These processes consider known internal and external factors that could cause work to operate outside a tolerable level of safety risk.

5.5.1.2 Controls

Following the identification and assessment of hazards, controls (both physical and behavioural) are put in place to manage the hazards to an acceptable level of risk. There is an established hierarchy of controls for individual hazards: elimination, substitution, isolation, administrative, and personal protective equipment. These controls will often manifest themselves in engineering changes to systems and equipment, management systems, and procedures. Non-physical controls such as procedures and business processes are documented in Safety Management Systems, supplemented with training programs (Robson, Clarke et al. 2007). Organisations and teams within organisations establish behavioural norms, expectations and rules in relation to work and general safety conduct – often termed behaviour-based safety. Behaviour-Based Safety (BBS) seeks to identify and prescribe safe behaviours in the workplace following the model of - define, observe, intervene, and test (Geller 2005).
5.5.1.3 Monitoring

Organisations focus on the monitoring of the controls that are put in place to manage the identified hazards. These monitoring activities include: inspection and testing of equipment, behavioural observations, audits, and other routine surveillance activities. Corrective actions are devised where these monitoring activities identify deficiencies in the application of, or compliance with the controls. The ‘Swiss Cheese’ model of accidents shows how accidents occur when the protective layers or barriers in place to prevent an incident fail (Reason 2004). In addition to the monitoring of controls, safety incident reporting occurs at all levels of the organisation. These incidents are events that represent breakdowns in the safety controls and therefore knowing how often they are happening, and where, is important to prioritize additional safety effort. Organisations identify and hold accountable managers and workers who are responsible for control breakdowns.

5.5.1.4 Authority

Management are ultimately accountable for safety and therefore have the over-riding authority on safety decisions within their areas of responsibility within the organisation (Mullen and Kelloway 2009). Line management and safety professionals make safety decisions and communicate and implement these within their operations. Front-line employees are responsible for following procedures and requirements to safely conduct their work. Management accountability for safety and safety decision-making is complimented with all workers having an ‘authority to stop’ their work due to safety concerns (Nordløf, Wiitavaara et al. 2015).

5.5.1.5 Safety Culture

To align and motivate the organisation to prioritize and commit to safety, safety culture improvement programs support the hazard analysis, control, and monitoring activities. This aligned safety culture is based on the principle that all incidents are preventable. Leaders create cultures through what they systematically pay attention to (Schein 1990) and their actions aim to reinforce the organisation’s priority for safety and care for its workers. This in turn influences workers and teams collectively to prioritise safety themselves, comply with safety requirements, and report any incidents so that the organisation can rectify problems. Although there are a number of ways to define and
describe culture (Hopkins 2006) the most well-known safety culture model describes five stages of maturity: pathological, reactive, calculative, proactive, and generative (Hudson 2007).

5.5.2 Safety Professional role under a mode of centralized control

The current role and activities performed by safety professionals within organisations are aligned with a safety mode of control (Provan, Dekker et al. 2017). There is a reciprocal relationship between the organisation’s mode of centralized control and the role of safety professionals – the safety mode drives activities and tasks, and these in turn re-enforce the safety mode.

The following safety professional activities have been synthesized from the literature and the organisational capacities outlined in section 2.1, to support the centralized control mode of safety (See Table 11):

Table 11: Safety Professional Activities to support a mode of centralized control

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Support the task-based identification of hazards (e.g. take-5) and assessment of risk (e.g. JSA)</td>
</tr>
<tr>
<td>2</td>
<td>Facilitate the identification and assessment of system level hazards (e.g. risk registers, HAZOP)</td>
</tr>
<tr>
<td>3</td>
<td>Develop controls for tasks (e.g. working at heights) and processes (e.g. contractor management)</td>
</tr>
<tr>
<td>4</td>
<td>Monitor controls proactively (e.g. inspections) and reactively (e.g. incident investigation)</td>
</tr>
<tr>
<td>5</td>
<td>Provide safety incident and compliance reporting to line management and regulators</td>
</tr>
<tr>
<td>6</td>
<td>Support line management decision-making and arbitrate between stakeholders as necessary</td>
</tr>
<tr>
<td>7</td>
<td>Promote an ‘authority to stop work’ for safety across the frontline workforce</td>
</tr>
<tr>
<td>8</td>
<td>Develop and promote safety culture improvement programs</td>
</tr>
</tbody>
</table>

5.5.2.1 Facilitate task hazard analysis

Safety professionals develop and facilitate processes that enable the safety hazards associated with individual tasks and activities to be analysed and managed. These processes can include: pre-start safety assessments, job safety analysis (JSA), safe work method statements (SWMS), and permit-to-work (PTW). The objective is to ensure that front line employees understand the hazards associated with their work.
5.5.2.2 Perform system level hazard analysis

Organisations need to understand the hazards at a technology, system or business level that may or may not be associated with individual tasks of the front-line workforce. The hazards are assessed using advanced hazard and risk analysis methodologies, including; hazard and operability studies (HAZOP), layers of protection analysis (LOPA), hazard identification (HAZID), failure modes and effects analysis (FMEA), fault tree analysis (FTA), and pre-start up safety reviews (PSSR’s), etc. Safety professionals facilitate these hazard assessments and maintain the outputs.

5.5.2.3 Develop safety controls

Safety professionals develop safety controls to manage safety hazards and the regulatory compliance requirements of their organisation’s activities. These controls can be physical, procedural, and behavioural. Safety professionals document and operationalize these controls through safety management systems, safety plans, safety procedures and safety rules. Legal regulations, based on diligent work practices, provide a useful framework on which organisations can model their controls.

5.5.2.4 Monitor safety controls

Organisations monitor compliance with safety controls to prevent safety incidents. The safety professional conducts proactive monitoring activities, including safety audits and behavioural observations. Safety professionals also conduct incident investigations to reactively identify controls that were not complied with. Corrective actions are identified as outputs of these monitoring activities to improve the safety controls or organisational compliance with them. Safety professionals implement and track the completion of corrective actions.

5.5.2.5 Provide safety reporting

Organisations generate, communicate and review safety reports to make decisions to improve safety. These reports include information about compliance with safety requirements, completion of safety actions (e.g. observations, action closure), and safety incident descriptions, severity, and frequency. This information allows safety professionals to identify the parts of their organisation that require additional attention and improvement.
5.5.2.6 Influence and arbitrate decisions for safety

Safety professionals have the technical expertise and safety experience to facilitate and if necessary, arbitrate safety decisions between stakeholders. This arbitration can be required at times between the workforce and management of the organisation, and with third parties (customers, contractors or regulators). Safety professionals understand the safety risks and compliance requirements that apply to work activities and locations, and they can use their authority to make safety recommendations and decisions.

5.5.2.7 Promote an authority to stop work

Organisations enact their commitment to safety by providing employees with authority to stop work when confronted by an unsafe situation (Weber, MacGregor et al. 2018). Safety professionals promote this authority across the workforce and develop processes to support its enactment. If situations arise that are not adequately managed, they are investigated and resolved by adjusting work to conform to existing safety controls or developing new controls for the situation.

5.5.2.8 Develop safety culture

Safety professionals promote and support a safety culture that aligns the organisation on common principles. A safety culture promotes the belief that all safety incidents are preventable by prioritising safety, identifying hazards, complying with safety requirements, and improving through reporting and understanding safety incidents. Safety needs to be very visible across the organisation through ongoing communication, visual material and management behaviours.

5.5.3 Organisational responses to a mode of centralized control

Front-line work needs to adapt and deviate from plans, rules, roles and procedures because of the dynamic and emergent nature of complex systems. In a mode of centralized control, this need is not acknowledged or supported by the organisation, causing tensions and conflict. The resulting adaptive cycles of front-line work to the emphasis on a safety mode of centralized control is destructive for maintaining safety and achieving organisational goals. (see figure 4).
**Figure 4:** The adaptation of front-line work to a centralized control mode of safety

<table>
<thead>
<tr>
<th>Adaptation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plan</strong></td>
<td>Existing strategies, plans, roles, requirements and process that should be applied to activities (‘work as imagined’). To an insider, the expectations and understanding of work never match the reality of what it takes, and how work gets done.</td>
</tr>
<tr>
<td><strong>Fluency</strong></td>
<td>Well adapted activity (‘work as done’) that smooths over contradictions and challenges to make things work. To an outsider, the work seems well coordinated which hides the difficulties that they had to work around to make things work.</td>
</tr>
<tr>
<td><strong>Discounting</strong></td>
<td>Problems and issues with front-line work are discounted by management and safety professionals if they are outside of work as imagined. Uncertainty around degraded operational conditions are rationalised to align with existing plans, production goals, and models of risk. Resources aren’t made available to explore or adapt to the issue until there is definitive evidence of a problem (i.e. accident), which is too late.</td>
</tr>
<tr>
<td><strong>Double binds</strong></td>
<td>Managers, front-line workers and safety professionals face irreconcilable decisions between two simultaneously necessary but incompatible choices. For example, Authority-Responsibility (Woods), follow the procedure or survive (Dekker), or production and safety. Neither decision resolves the other issue.</td>
</tr>
<tr>
<td><strong>Role retreat</strong></td>
<td>Front-line workers retreat to just performing their role as defined – ‘work to role’. They meet only the specifications of their job – which undermines collaboration (degrades reciprocity), especially when things are difficult. When you need collaboration across role and team boundaries the most, they collaborate the least.</td>
</tr>
<tr>
<td><strong>Covert work systems</strong></td>
<td>Work as done is hidden from outsider’s due to the fear that it will be stopped or changed, making work more difficult from front-line teams. The greater the gap between work as done and work as imagined, the greater the effort that goes in to keeping the shadow work systems underground. Work has the illusion of alignment with work as imagined through teams dutifully meeting outside expectations through surface compliance activity (i.e. tick and flick, lip-service).</td>
</tr>
</tbody>
</table>
5.5.4 Practical challenges and tensions for safety professional work

In the same way as there are adaptive cycles for front-line work (see section 2.3), there are adaptive cycles for safety professional work as it navigates and responds to the pressures of a centralised control mode of safety. A number of these adaptations are not desirable for safety in the organisation.

5.5.4.1 Safety Professional activities are ‘Reactive’

Due to the inevitable gap between work as imagined and work as done, there is a constant need for reactive activity to “correct” covert work systems and double binds. Management asks safety professionals to explain and address incidents and non-conformances. This level of reactive activity prevents proactive exploratory activity to understand and support the current functioning of operations. Safety within the organisation becomes slow and stale, and unresponsive to the changing shape of risk. Warning signs of trouble are discounted until there is definitive information (i.e. an incident), at which time it is too late to prevent harm to people.

5.5.4.2 Safety Professional activities are ‘Fragmented’

Safety professionals are focussed on safety activities that are created and performed separate to the core functioning of the organisation’s system of work. The safety activities are determined as a result of linear oversimplifications of safety problems where the response is either specific local action imposed on operating units, or over-generalised conclusions that are impossible to action effectively (e.g. “communication” and “teamwork”). The ever-increasing safety expectations and programs on the side-lines of the operations create more pressure and more goal conflict (i.e. time and resources), without addressing issues with the overall functioning of the organisation. Safety professional work retreats and fragments in a similar way to front-line work.

5.5.4.3 Safety Professional activities are ‘Defensive’

Safety professional activities are defensive, in the sense that they seek closure on behalf of the organisation. In order to avoid being overwhelmed and uncertain about safety, safety professionals need to “tick off” tasks faster than they generate new tasks. An activity that raises more questions than it answers generates more new work than it ticks off. Each
open item is a threat to management and the organisation, since it will be seen by outsiders as a shortfall in safety. Therefore, there is a strong need to seek closure – ticked boxes, simple answers, and strict processes with well-defined stopping points. Inevitably this leads to blaming operational units or front-line workers, because broader, less-defined answers require broader, less-defined solutions.

Despite these three destructive adaptations, we recognise that safety professionals may also currently perform valuable work. However, the theoretical limitations of the Safety-I approach mean that even when the role is practiced closely aligned to the Safety-I theory, it will not be sufficient to manage safety in a modern complex organisational system.

### 5.5.5 The need to redesign the role of safety professionals

The unintended consequences of anchoring safety professionals in reactive, fragmented and defensive activity, ironically intensify as the organisation increases its efforts to improve safety through centralized control; more safety problems are identified to react to, more fragmented solutions are implemented, and more defensive activity is created. The pressure to conform exerted on front-line work teams, create these adaptive responses, and drives a greater distance between work as imagined and work as done.

These consequences have negative impacts on safety: blame culture, inappropriate resource allocation, increased goal conflict, mismatched responsibility to resourcing, non-value-adding safety clutter, stale models of risk and operations, adversarial relationships, lack of systemic interventions, single focus on worker compliance, investment in protecting the organisation, and manipulated safety reporting metrics.

Are these problems caused by the limits of Safety-I theoretical approaches, or are they practical consequences of poor application of those approaches? We suggest that there is an inevitable link between the two. Safety-I theory does not account for the social and political complexity of organisations and the work of practitioners in the field. So, when the management and safety theory we describe in Sections 2.1 and 2.2 are extrapolated into front-line work and the role of the safety professional, pressures and tensions inevitably arise. This has been empirically demonstrated in the safety literature over the past 30 years (see table 12).
### Table 12: Practical challenges of safety professionals in a mode of centralised control

<table>
<thead>
<tr>
<th>Activity</th>
<th>Intent</th>
<th>Pressures and tensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilitate task level hazard analysis</td>
<td>Identify and evaluate the known safety hazards associated with tasks</td>
<td>- Compliance processes that become more about ‘tick &amp; flick’ than supporting decision making (Hollnagel 2009, Amalberti 2013)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The process has a negative impact on the time and resources for every work task adding to goal conflict (Dekker 2014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Creates a fixed model of risk for tasks that reduces ability to identify changing circumstances (Woods 2006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Shifts accountability away from management to the front-line workforce to manage safety for themselves (Dekker 2017)</td>
</tr>
<tr>
<td>Perform system level hazard analysis</td>
<td>Identify and evaluate system threats and vulnerabilities to assist in design and operation</td>
<td>- Creates a fixed model of risk for the system that is not revised as new information emerges (Woods 2006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Provides unjustified comfort that the system is safer than it is in reality (‘Probative blindness’) (Rae and Alexander 2017)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Process focussed on demonstrating and proving safety to external parties (Regulators) (Rae and Provan 2019)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Results in the production of ‘Fantasy Plans’ that describe an unrealistic safety status and response (Hutchinson, Dekker et al. 2018)</td>
</tr>
<tr>
<td>Develop safety controls</td>
<td>Develop physical and behavioural controls for specific hazards and risks</td>
<td>- Specific controls to cover all individual risks generate large and bureaucratic Safety Management Systems (Dekker 2014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Ever increasing volume of controls creates safety clutter in organisations (Rae, Provan et al. 2018)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Safety controls are applied to specific situations and the overall functioning of the organisation is not addressed (Woods 2006)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Safety controls focus on the behaviours of frontline workers, specified in rules and procedures (Dekker 2001)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Continually adding safety controls does not improve the safety of the system (Amalberti 2001)</td>
</tr>
<tr>
<td>Monitor safety controls</td>
<td>Monitor conformance with the defined safety controls proactively during normal operations and reactively following safety incidents</td>
<td>- Conformance and compliance activity (audits, investigations) creates adversarial relationships (Provan, Dekker et al. 2017)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Incident Investigations, through hindsight bias, create oversimplifications and focus on human error (Dekker 2017)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- The focus of control monitoring shifts from understanding and fixing the system to protecting the organisation (Dekker 2014)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Discipline, sanctions, and blame are applied to individuals that deviate from the specified controls (Dekker 2012)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Focusing on conformance and compliance reduces open communication and organisational learning (Woods 2006)</td>
</tr>
<tr>
<td>Activity</td>
<td>Intent</td>
<td>Pressures and tensions</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>---------------------------------------------</td>
<td>----------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Provide safety reporting                     | Provide safety performance reports to management. | - Actions pulls operations towards a generalized standard that is not sensitive to local safety practices (Almklov, Rosness et al. 2014)  
- Control monitoring activity creates excessive time and resource burden on workers and management (Dekker 2017)  
- Responding and reporting to minor and frequent incidents is a misallocation of time and resources (Woods 2006, Dekker 2017)  
- Increasing demand creates new safety metrics that become ever-further removed from risk (Dekker 2017)  
- Targets and objectives set at perfect safety performance (zero injuries) creates activity to ‘manage the metric’ (Dekker 2014)  
- Focusses the discussion about safety on minor individual events rather than the functioning of the system (Dekker 2016)  
- Creates the same pressures and tensions as described in ‘monitor safety controls’ (Dekker 2017, Provan, Dekker et al. 2017) |
| Influence and arbitrate decisions for safety | Reconcile differences of opinion on the safety issues associated with individual tasks. | - Safety Professional role defaults to line management objectives rather than front-line perspectives (Provan, Dekker et al. 2017)  
- Safety Professional monopoly on safety expertise marginalizes expertise of practitioners and experts (Almklov, Rosness et al. 2014)  
- External perspectives on safety evaluated based on relationship rather than expertise (regulators over contractors) (Dekker 2017)  
- Safety Professional decisions become binary compliance requirements, not revised with new information (Woods 2006)  
- Safety judgements focus on the safety issue alone and are not-sensitive to the broader operation (Weber, MacGregor et al. 2018) |
| Promote Authority to Stop Work               | Promote the ability of front-line workers to stop any task for safety. | - Focus on the front-line workforce to detect vulnerabilities shifts responsibility from management (Dekker 2014)  
- Relying on authority to stop work creates goal and work conflicts when problems arise (Weber, MacGregor et al. 2018)  
- The authority to stop work doesn’t consider broader organisational considerations – ‘cold water and an empty gun’ (Woods 2005) |
| Develop safety culture                       | Promote consistent beliefs and mindset about safety. | - Safety Professionals promoting cultural deficiency creates adversarial relationships with managers (Provan, Dekker et al. 2017)  
- Attempts to change behaviour generates emotional responses to events that dismisses information (Weick, Sutcliffe et al. 1999)  
- Promoting a strong cultural message (i.e. Zero Harm), creates fear and performance anxiety that increases fatality risk (Dekker 2017)  
- The words and actions of management are incongruent in different |
In this section, we outlined the centralized control mode of safety and the role of the safety professionals, as well as how this approach can create unintended destructive adaptations for safety professionals and front-line work. We showed that Safety-I, at the theoretical level, and certainly in practice, is not sufficient to deal with the complexity of safety in modern complex systems. Safety-I theory cannot compensate for the necessary integration of safety into the core operations, and decision-making of the organisation. Safety-I has limits, and the linear oversimplifications become relevant due to the modern trends in organisations, technology and systems. Therefore, the solution is not to add further centralized control in an attempt to prevent these breakdowns, but to complement control with adaptability, and transition towards guided adaptability as a strategy that considers the increasing complexity of modern organisations. The safety professional role can be redesigned consistent with the theoretical developments in managing safety in complex systems if we can reframe the control-adapt paradox that presently exists between Safety-I and Safety-II.

5.6 REFRAMING THE CONTROL – ADAPT PARADOX

There is no domain within an organisation where it is more challenging and important to balance the control-adapt paradox than in safety management. The paradox did not begin in safety, though. Contradictory modes of managing organisational performance have been discussed in organisational psychology, management and safety literature for more than 50 years.

*The great paradox of a social organisation is that it must not only reduce human variability to insure reliable role performance but that it must also allow room for some variability and in fact encourage it* (Katz 1964)

Katz (1964) went on to describe that organisations need both dependable and
predictable role performance as well as innovative and spontaneous role performance. Organisations desire predictability and an uniform approach to work, however spontaneous ‘protective, cooperative and constructive’ actions are required to respond to emergent conditions and maintain organisational performance, which cannot be planned for or defined in a role or task description (Katz 1964). Friedman (1977) extended this idea by suggesting that organisations need to constantly balance ‘direct control’ over the labour process, with providing workers with ‘responsible autonomy’ over their work tasks with minimal supervision. Within the safety literature Amalberti (2013) agrees, and proposes that safety is best managed by organisations finding a balance between bureaucratically controlling safety, and worker self-managed safety – deference to protocol versus deference to expertise. In Section 4, we outline the solution to the control-adapt paradox as ‘guided adaptability’ for safety and detail the enabling role of the safety professional.

5.7 SAFETY MODE OF GUIDED ADAPTABILITY

During the 1990’s, through authors such as Rusmussen, Woods, Hollnagel, Cook, Dekker, Amalberti and Leveson, there were increasing calls to pay attention to adaptability as a key ingredient for safety. These authors acknowledged the importance of control, but since they were writing at a time when safety by centralised control was entrenched in organisations, they often positioned their work in contrast to existing practice. This reinforced the popular perception that control and adaptability could not co-exist. There appeared to be a stark choice between Safety-I and Safety-II. The mode we present here, ‘guided adaptability’, is not a new idea, but clarifies the principle that safety comes neither from preventing or encouraging variation, but from recognising that variation is inevitable. The goal of safety is to facilitate safe variation. It is people, and only people, who are the ones able to adapt to a complex and changing world, and bridge the gaps in technology, processes, and information to maintain safety. The safety mode of guided adaptability understands that plans, procedures, roles, and requirements are inherently flawed and unable to cater for the complexity of work as done. Therefore, it understands that all systems operate in degraded modes, and people and operations will adapt to meet the challenges, pressures, trade-offs, resources scarcity, and surprises that they face. Rather than pressuring front-line operations to conform with stale plans, the organisation and safety professionals should provide support and facilitation to constructively guide these adaptations.
As we have shown, the safety mode of centralised control in practice within organisations creates challenges and unintended breakdowns that increase as organisations increase their safety effort. It was these observations of safety modes of centralized control in practice in organisations that created the need for a diametrically opposed alternative, namely a safety mode of guided adaptability (Cook, Woods et al. 1998, Hollnagel 2014).

5.7.1 Organisational capacities for a safety mode of guided adaptability

In order to create guided adaptability for safety, organisations focus their effort on developing their capacity for: anticipation, readiness to respond, synchronization and proactive learning (see table 13).

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anticipation</td>
<td>Create foresight about future operating conditions, revise models of risk</td>
</tr>
<tr>
<td>Readiness to respond</td>
<td>Maintain deployable reserve resources available to keep pace with demand</td>
</tr>
<tr>
<td>Synchronization</td>
<td>Coordinate information flows and actions across the networked system</td>
</tr>
<tr>
<td>Proactive learning</td>
<td>Search for brittleness, gaps in understanding, trade-offs, re-prioritisations</td>
</tr>
</tbody>
</table>

5.7.1.1 Anticipation

An important capacity for a mode of guided adaptability is being able to ‘anticipate’ and predict future failure paths (Hollnagel 2017) and to make trade-offs and sacrifice judgements accordingly. Anticipating future scenarios allows the organisation to monitor the conditions and threats associated with these scenarios, as well as to build resources and capacities to respond. Threats to safety are monitored through the detection of operating points within the system that signal where safety margins may be eroding. (Cook and Rasmussen 2005).

Within all organisations there is an omnipresent production pressure, which consistently exerts pressure towards reducing safety margins and therefore the resilience of operating units. Organisations maintain a commitment to safety in a way that enables safety to be an important consideration in all decisions, as well as actively making sacrifice judgments (trade-offs) when safety is compromised by operational and financial objectives.

5.7.1.2 Readiness to respond
Organisations maintain flexible capacities and resources to compensate for additional foreseen and unforeseen demands. The ability of organisations to absorb disruptions and maintain safety and operational performance has recently been termed ‘graceful extensibility’ (Woods 2015). Maintaining redundant capacity (slack) in an adaptive system is difficult, as organisations will aim to remove it to improve efficiency. Therefore, an organisation continuously monitors the resources that are able to be re-deployed to keep pace with the changing tempo and demands of work (Woods 2015). Sacrifice judgements temporarily relax these acute production or efficiency goals to reduce risks when operations are too close to safety boundaries (Woods 2006). The organisation supports the flexibility of operating processes to enable adaptive responses to local conditions. Workers have sufficient autonomy to make decisions about their work in real time. This requires employees to have the psychological safety to apply their judgement without fear of repercussion – a ‘just culture’ (Dekker 2012, Dekker and Breakey 2016).

5.7.1.3 Synchronization

To sense and respond effectively to emerging issues, data and information flows freely across boundaries both internal to the organisation (between departments) as well as external (e.g. original equipment manufacturers, contractors, regulators, etc.). This synchronization provides a constant opportunity to: understand the changing shape of the system, the extent to which operations remain within safe operating boundaries, and the opportunity for coordinated action in response to changing demands. This approach combats the structural secrecy, distortion, and deletion of information that can occur across internal and external organisational boundaries through a mode of centralized control (Vaughan 1999).

5.7.1.4 Proactive Learning

In all organisations, there is a gap between ‘work as imagined’ (WAI) and ‘work as done’ (WAD). Work as imagined is reflected in plans, systems, processes, metrics, and management actions. These do not align with work as it actually happens. Work as imagined, is exactly that, it is not a correct representation of what happens in practice. Rather than interpreting data to fit the existing concept of work and model of risk, proactive learning organisations aim to understand work and then informed by that create a better sense of
what it should be (Woods 2005). Organisations seek to understand where their operations are becoming brittle and take action to preserve safety margins. This ensures that the system as a whole provides on-going support for people on the front-line to be successful (Hollnagel 2014). Organisations adopt a systems view for understanding and managing the safety of their people and technology (Leveson 2011). With the increasing complexity and interconnectedness of modern organisations, synchronization enables different parts of the organisational system to compensate for unexpected strain on one area of resources or activity (Kahn, Barton et al. 2017). To create proactive learning, organisations embrace and monitor the adaptive cycle of work.

5.7.2 Safety Professionals’ role under a mode of guided adaptability

A resilience engineering approach to the role of safety professionals was first considered by Woods (2006) following the Columbia Space Shuttle incident. He described the ‘4 I’s’ of a safety organisation as ‘involved,’ ‘informed,’ ‘informative’ and ‘independent’ and suggested that their activities should include: involvement in everyday decision-making, generating operational information of work as done, owning technical standards, understanding anomalies and emerging issues, and providing expert advice (Woods 2006). This framework provides the starting point for the development of safety professional activities under a safety mode of guided adaptability.

The following safety professional activities have been synthesised from the resilience engineering and Safety-II literature and the organisational capacities outlined in section 4.1, to support the creation of an environment to guide the safe adaptation of work (see table 14). Table 15 at the end of this section, provides further examples of potential specific tasks under each safety activity.

<table>
<thead>
<tr>
<th>No.</th>
<th>Activity Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Explore everyday work to understand the gap between work as done and Work as Imagined, and facilitate updates to the organisation’s models of risk</td>
</tr>
<tr>
<td>2</td>
<td>Support local practices and balancing the job demands of front-line teams</td>
</tr>
<tr>
<td>3</td>
<td>Generate action to reduce goal conflict between production, cost, and safety, and negotiate the redistribution of operational resources</td>
</tr>
<tr>
<td>No.</td>
<td>Activity Description</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>4</td>
<td>Facilitate the free flow of data and information across organisational boundaries</td>
</tr>
<tr>
<td>5</td>
<td>Generate future operational scenarios through monitoring internal and external threats, and system vulnerabilities</td>
</tr>
<tr>
<td>6</td>
<td>Facilitate the making of sacrifice judgments for safety</td>
</tr>
<tr>
<td>7</td>
<td>Facilitate learning processes from both daily organisational life as well as from unexpected events</td>
</tr>
</tbody>
</table>

### 5.7.2.1 Explore everyday work

Safety professionals observe everyday frontline work through their independent safety lens, combined with their organisational understanding, and domain safety knowledge. Woods (2006) proposed the role of the safety professional as being ‘informed’ and actively generating information about how the organisation is currently operating. Through performing everyday work observations for safety (Havinga, Dekker et al. 2017) the safety professional acts as a ‘learner’, seeking context and understanding about what is needed to support safe adaptation and success on the front line. The safety professional engages with operational units, not to make judgments about the safety of their work, but rather to update their own and the organisation’s mental models of work, risk and organisational life. Through their role as an inside-outsider, safety professionals can identify the gap and what is occurring within it and bring this to the attention of all stakeholders. A large gap between work as imagined and work as done signals a breakdown in the coordination of the organisational system.

Safety professionals amplify the voice of the frontline and domain experts to compensate for the impact of power, hierarchy and production pressure within organisations. Woods (2006) also described the role of a safety professional as ‘informative’ referring to providing information about system vulnerabilities to reframe and direct interventions. Safety professionals are uniquely placed in the organisation to provide this information, as they have knowledge of the system as a whole, as well as the functioning of local operating units. The safety professional has experience of life at the ‘sharp-end’ of the organisation as well as with ‘blunt-end’ decision-making.

### 5.7.2.2 Support local practices and guide adaptations

Woods (2006) described the role of a safety professional as being ‘involved’ in the
organisation’s operations by having constructive and targeted involvement in everyday decision-making. The safety professional provides support to frontline teams to dynamically balance job demands, resources and other work organisation factors. Supporting the local practices of frontline teams enhances resilience (Savioja, Norros et al. 2014). Rather than passively observing, safety professionals facilitate action through mindful cooperation with the frontline workforce. The safety professional can facilitate planning and communication processes, facilitate alignment between the workforce and management, and enable the making of trade-offs and sacrifice judgments on behalf of safety. The safety professional supports front-line teams to establish their operating norms and processes to create dependable task performance. This co-creation of work methods provides a common direction for work that enables effective and efficient team performance and task interfaces – constraints that de-constrain, a very different perspective on rules (Alderson and Doyle 2010).

To collectively cooperate, the safety professional models and supports open communication that elicits the expectations of line management and the concrete experiences and needs of the frontline workforce. The safety professional promotes an environment of trust, co-operation, and reciprocity (Ostrom and Walker 2003). Safety professionals start to guide adaptations by understanding how front-line teams are currently adapting in the gap between work as imagined and work as done. The safety professional identifies where work adaptations are increasing risk and facilitates action to revise work practices. Safety professionals, at the sharp-end of organisations, guide adaptability by deciding which adaptations they support and which they undermine – when to do which – support change or require conformance. This challenge should not be underestimated, as it requires the safety professional to create change, in responses to information that is not as definitive, as it would seem in the case of an incident.

5.7.2.3 Reduce goal conflict and negotiate the re-distribution of resources

The safety professional initiates system-wide action to respond to threats. These actions relate to decisions concerning: continuing operations, reducing goal conflict, and the dynamic reallocation of resources. The safety professional facilitates the adjustment of organisational and operating unit goals when they threaten to trade off safety margins. These goals include: production targets, financial budgets, resource levels, contract requirements,
project schedules etc. The safety professional should aim to build safety into the organisational system and the way that it continually operates (Leveson 2011).

Safety professionals are able to directly influence the resource allocation within and across operating units. They create and maintain an understanding of the organisations total deployable reserve resources. The safety professional can claim, negotiate and re-distribute human, financial and technical resources. Investing in safety is most important when management of an operational unit believes they cannot afford to (Woods 2006), such that the safety professional and local operating units have the authority to requisition additional resources to absorb unexpected demands.

5.7.2.4 Facilitate information flows and coordinate action

The safety professional provides a useful resource to actively facilitate communication across organisational boundaries and therefore limit structural secrecy between departments. The safety professional through their interactions and understanding of all parts of the organisation can identify communication needs and gaps across operating units, technical departments, and support teams. The safety professional directly facilitates this information and data flow in the interests of safety, from where it is known, to where it needs to be understood. Not only within the organisation, the safety professional identifies and facilitates the organisational understanding of external knowledge about technology (original equipment manufacturers), safety science (academia), safety practices (regulators and industry partners), and specialist activities (contractors). Ensuring that information and data is in the right place in the organisation at the right time, enables better decision-making for safety.

Safety professionals establish intelligence-gathering lines of communication to key people and data systems across the organisation. This intelligence includes: people changes, resources scarcity, operational shifts, goal conflict, or changes in the external operating context of the organisation. This real-time information provides the safety professional with insight for where risk may be increasing, trade-offs occurring, and safety margins eroding. The safety professional validates this system level information with local operating units.

Repeated observations of front line activities enable the safety professional to identify operational changes and probe the potential for normalization of deviance (Vaughan 2004). Monitoring these adaptive cycles of workers and teams embedded in the larger organisation
also provides local data to compare and contrast with system level data. Safety incidents are easy to see, however operational performance is about normal work where the people, technology, and processes within the system sense and respond within safe system boundaries therefore not resulting in incidents. Safety professionals provide fresh insight and actionable suggestions to maintain safety and improve system performance.

The safety professional organisation in part, operates like a shadow, parallel, or redundant communication and coordination network throughout the organisation. Safety information can be exchanged between safety professionals in different departments with a minimal level of distortion due to their consistent safety vernacular. Safety professionals translate information into ways that their local operating units and functional departments understands – be that operations, project management, engineering, procurement, finance, etc.

5.7.2.5 Generate future operational scenarios

The safety professional provides information about the changing vulnerabilities of the system gathered through monitoring activities. However, more than providing information, the safety professional creates risk foresight from this information using their domain safety knowledge and their intimate understanding of the organisation (Provan, Dekker et al. 2017). Safety professionals facilitate analysis methods to understand the resilience of the organisation, that might include: systems-theoretic accident modelling and processes (STAMP), resilience analysis grid (RAG), and functional resonance analysis method (FRAM).

Safety Professionals generate potential future operating scenarios and the safety risks associated with them. Safety professionals model and predict the short, medium and long-term effects of line management decisions and adaptations within the organisation. This is much broader activity than safety hazard assessments, and involves sophisticated scenario modelling that plots interdependencies and potential cascades (Woods, Branlat et al. 2015). Creating safety scenarios relating to the current decisions and actions of people and the trajectory of the organisation will likely challenge conventional assumptions of line management about safety risk (Woods 2006). For this reason, Woods (2006) suggested the safety professional needs ‘independence’ to perform their role effectively. This cognitive, social and organisational independence allows the safety professional to challenge models of risk, bring this perspective to the organisation through an independent voice, and have the
dedicated resources to perform monitoring activities, and facilitate change.

Safety professionals are constantly looking for information about where the boundaries are in the system and therefore where brittleness is present. To monitor the organisation the safety professional operates and is informed at both the system level as well as the local operational level. The safety professional keeps a discussion about risk alive even when everything looks safe (Dekker 2014) and supports the organisation to revise models of risk as new information emerges and evidence accumulates (Woods 2006).

5.7.2.6 Support and facilitate the making of sacrifice judgments

Safety professionals enable and maintain a commitment to supporting operational performance and safety at the very top of their organisation. Their role is to provide a safety lens over the entire system, in a way that promotes a ‘devotion to safety’ alongside other system and organisational goals (Hollnagel, Woods et al. 2006). This commitment to safety is maintained alongside the organisation’s production and financial objectives and compensates for the ‘faster, better, cheaper’ imperative of modern organisations. The safety professional directly influences the adjustment or cessation of critical operational activity where safety margins are not sufficiently understood. To be effective, this commitment needs to be reflected in all the actions and behaviors of the organisation and supported by the creation of a ‘just culture’ (Dekker and Breakey 2016). The safety professional has a critical role in facilitating the understanding of, and role modelling the behaviors present in a just culture.

Safety Professionals create, support and share experiences where safety is prioritized over production and financial objectives. This can be a situation where workgroups have adjusted their work due to emergent safety concerns, or additional unbudgeted resources have been provided to preserve safety margins. Celebrating sacrifice judgments as a success encourages managers and employees across the organisation to do the same. Safety professionals celebrate the tender that was lost because safety was priced in, and the project team that went over schedule and over budget to maintain safety margins that were required for unforeseen and therefore not planned for issues. The organisation sees these as successes for safety, and this is very different to other organisation’s models of success.

5.7.2.7 Facilitate learning

The safety professional facilitates organisational learning processes at a system, team
and individual level, from both normal work as well as from unexpected events. Continuous learning enables the organisational to keep pace and the maintain organisational alignment on a shared model of risk (Woods 2006). To understand an unexpected situation that occurred within the organisation the safety professional facilitates an open, unstructured inquiry with the people involved first-hand. The safety professional enables an exchange of perspectives on the situation amongst the stakeholders that can evolve towards a shared picture of risk and action (Provan, Dekker et al. 2017). What needs to be learned and changed within the system is a judgment of the individuals closest to the point of risk, or experts in the situation, and is not be made by the safety professional and line management alone. The safety professional through their understanding of how the system functions, and how work is done, can own and facilitate these organisational learning processes. The direction of this learning process is ‘up and out’ (Dekker 2014), taking information from the frontline and interpreting it in a way that enables the system as a whole to learn and adapt.

Safety professionals are constantly communicating with and supporting the education of others in respect of safety and operational performance. To do this effectively, safety professionals have an advanced understanding of many disciplines, including: resilience engineering, systems theory, complexity theory, cognitive psychology, and sociology. They are able to share this knowledge effectively with others in applied situations.

<table>
<thead>
<tr>
<th>Table 15: Safety Professional activities, intent, and example descriptions of tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity</strong></td>
</tr>
<tr>
<td>Explore everyday work</td>
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<td></td>
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<tr>
<td>Support local practices and guide adaptations</td>
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<td></td>
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<tr>
<td>Activity</td>
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</tbody>
</table>
| Reduce goal conflict and negotiate redistribution of resources | Monitor goal conflict and create action to alleviate it. Facilitate the reallocation of operational resources. | - Monitor organisational pressures; change, cost, production, schedule, resources, etc. Understand where discounting of safety risk and safety trade-offs might be occurring due to production, cost and other goal pressures. Identify actions to intervene.  
- Create system wide action to reduce goal conflict through facilitating adjustments to cost, schedule and production goals.  
- Maintain an inventory of internal and external deployable resources (technical specialists, key roles, critical equipment).  
- Monitor the needs and gaps in resourcing (people and equipment) across the organisation. Identify and facilitate the redistribution of organisational resources to support changes in operational demands. |
| Facilitate information flows and coordinate action | Create mechanisms to transfer information and coordinate action across organisational boundaries. | - Create formal and informal mechanisms to receive information about the current functioning of teams across the organisation. Facilitate the transfer of this information across organisational boundaries where it can enhance decision-making.  
- Coordinate action and operational support to keep pace with emerging demands across organisational boundaries. |
| Generate future operational scenarios           | Utilise current understanding of the organisation to predict possible future conditions. | - Facilitate the development of possible future operating scenarios and the associated safety risks based on a multi-disciplinary understanding of the organisation. Facilitate the implementation of contingency plans to detect and respond to these scenarios.  
- Probe front-line workers and technical specialists to identify the uncertainty associated with current operations and safety risks. |
| Facilitate Sacrifice Judgements                | Support the understanding of trade-off decisions and the resolution of acute goal conflict. | - Facilitate the development of contingency plans, including flexible deployable resources for high-risk activities to enable justified sacrifice decisions to be made  
- Identify sources of operational uncertainty and use this as a definitive signal that work needs to be closely supported and implement mechanisms to gather more information to understand and respond to the changing shape of risk. |
| Facilitate Learning                            | Create organisational change based on current conditions                | - Continually monitor the culture of the organisation detecting any sources of blame and sanctions in relation to safety and operational performance and implement actions to restore trust and openness. |
Activity | Intent | Example Descriptions of Tasks
---|---|---
and future scenarios. | - Develop and conduct training in dealing with anomalies and surprises, to enhance the organisational capabilities for: anticipation, revision, initiative, and reciprocity.

### 5.7.3 Organisational responses to a mode of guided adaptability

In section 5.5.3 we outlined the adaptive cycles of front-line work from a mode of centralized control. There are adaptive cycles of front-line work as it responds to the new pressures of a guided adaptability mode of safety (see Figure 5).

*Figure 5:* The adaptation of front-line work to a guided adaptability mode of safety

<table>
<thead>
<tr>
<th>Adaptation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plan</td>
<td>Existing strategies, plans, roles, requirements and process that should be applied to activities (‘work as imagined’). To an insider, the expectations and understanding of work never match the reality of what it takes, and how work gets done.</td>
</tr>
<tr>
<td>Fluency</td>
<td>Well adapted activity (‘work as done’) that smooths over contradictions and challenges to make things work. To an outsider, the work seems well coordinated which hides the difficulties that they had to work around to make things work.</td>
</tr>
<tr>
<td>Revision</td>
<td>Using emerging and current information to revise the models of risk and organisational patterns</td>
</tr>
</tbody>
</table>
of action to ensure that the continually changing shape of risk and operations is understood.

<table>
<thead>
<tr>
<th>Keeping Pace</th>
<th>The ability to continually match organisational resources, activities, and responses, to the changing nature and tempo of demands that are faced by the system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reciprocity</td>
<td>Well-coordinated activities and resources across the organisations that create ongoing exchanges for mutual benefit. The contribution of each operating unit meets the needs and expectations of the other.</td>
</tr>
<tr>
<td>Initiative</td>
<td>The opportunity and ability to assess emerging situations and independently initiate action to maintain safety and operational performance.</td>
</tr>
</tbody>
</table>

5.8 THE WAY FORWARD FOR SAFETY PROFESSIONALS

It is important for us to acknowledge that ‘safety differently’ professional practice is in its infancy, and hence the descriptions proposed in section 5.7.2 and specific tasks in Table 15 are not a reflection of current practice. In this section, we outline how safety professionals can start to re-position their role, and move towards the activities described in section 5.7.2, to guide adaptability.

5.8.1 Safety professionals are sharp end operators

Safety is something that you do, it is not something that you have (Hollnagel 2017). The tensions and challenges described in this paper remain in the organisation, and the safety professional role needs to become the focal point between the pressure for centralized control from above, and the need to guide adaptability below. The safety professional becomes a key facilitator of action – they help plans and adaptation to co-exist rather than to compete.

If we now think of safety professionals as sharp end actors, they are positioned locally, not hidden in back offices. They are close to: front-line operational environments, decision making processes, and sources of data and information. Safety professionals understand the conflicts and trade-offs in the operational environments, they interpret the emerging signals, and they anticipate problems. Safety professionals require management support for guiding adaptation at the sharp end, as in different situations they will sometimes require compliance, and sometime sacrifice production.

5.8.2 Safety professionals study adaptations

Safety professionals focus their attention on studying the adaptations in the gap
between work as imagined and work as done. Through understanding, tracking, and analysing these adaptive and co-adaptive cycles of connected teams in the organisation, the safety professional identifies sources of resilience and brittleness. Safety professionals understand how teams are adapting, the sacrifices, trade-offs, resource allocations, and re-prioritisations. They understand what teams are adapting to, the procedures and resources that don’t work, aren’t sufficient, stale and out-of-date. Informed by this, they coordinate action to respond. Safety professionals resist the pressure from management for work as done to conform with work as imagined, as this only drives the gap further apart. Instead, safety professional role addresses the gap by understanding what is happening and providing paths to move forward. They consider which adaptations they re-enforce, and which they undermine. The safety professional positions themselves at the sharp end of decision-making about the adaptation of work and, facilitates stakeholder alignment through cross information.

Safety professionals ensure that the organisation is able to sense the early signs of trouble. All systems are operating under degraded conditions, some of which the organisation knows a lot about, and some of which are emerging and uncertain. The pressure and tension in the organisation in a safety mode of centralised control often discounts these ‘weak’ signals, in the belief that the existing plans and requirements are comprehensive. In a mode of guided adaptability, increases in ‘uncertainty’ become a definitive signal of emerging risk. The safety professional takes action to understand the issue, sacrificing production as necessary and probing management and technical expert confidence in the organisational understanding of the situation.

Guided adaptability preserves the idea that planning and proactive coordination is useful. However, always understands that it isn’t complete and so the organisation constantly searches for new and emerging information. All plans and models of risk are only partially correct, and while work to plan is reasonable in the first instance, organisations have to be able to recognise and adapt as things change. Guiding adaptation is helpful for achieving safety and other organisational objectives. Safety professionals understand, and have their organisations understand the shift from, ‘plan and conform’ to ‘plan and revise.’

5.8.3 Safety professionals contribute to organisational success

The safety professional role evolves to be part of helping the organisation be
successful, not just a ‘detect and repair’ mechanism for safety compliance problems. The role shifts where it sits in the world, from being an agent on behalf of management’s formal authority, towards being a participant at all levels. In a safety mode of centralised control, there is no genuine participating, no collaborating, and safety professionals are telling the front-line teams what to do for safety. In safety-I, together with management they are part of processes that always result in new injunctions or demands – “we are the safety authority who speaks to the front-line about how it should work”. In a mode of guided adaptability, the safety professional is part of what makes the organisation successful, that is effectively adapting to emerging situations, and overcoming challenges where things didn’t work as planned or imagined. Safety professionals help their organisations be successful in a changing, complex world. The safety professional looks for signs of fragmentation and provide support where problems cross-over and break-down at organisational boundaries. They identify and work to resolve the things that are undermining collaboration, which builds the potential for coordinating in response to future events that are different to those experienced in the past. The safety professional becomes part of making the system work by highlighting where coordination is breaking down, or how it can be enhanced.

In the safety mode of centralized control, learning about safety comes from significant safety failures (i.e. accidents) or near safety failures (i.e. near misses). The efficacy of improving the chance of safety success through learning from failure is often debated in the safety literature (e.g. Hollnagel 2008). The safety mode of guided adaptability instead learns from adaptations that create success. These are the situations where surprises and new information emerged, and the organisation was able to revise its plans and models, and successfully adapt to the situation (Woods 2017). The safety professional supports the organisation to understand how this successful adaptation occurs, what information and resources are drawn on, how is it interpreted and deployed, and what further capacities are critical to these situations.

5.8.4 Safety professionals are proactive, connected and open

In section 5.5.3 we described how the role of safety professionals breaks down in a safety mode of centralized control, becoming: reactive, fragmented and defensive. In a mode of guided adaptability, the safety professional is: proactive, connected, and open. Through re-allocating safety energy towards the practices described in this paper that guide
adaptability, the safety professional becomes proactive (Woods, Branlat et al. 2015). Safety Professionals coordinate and connect organisational activity through: focussing activities at the sharp end, understanding the gap between work as done and work as imagined, probing uncertainty as a definitive signal of pending trouble, and coordinating activity across organisational boundaries. Through being a participant rather than an authority, and balancing conformance with guiding adaptability, the safety professional is open to exploring emerging information and threats.

5.9 CONCLUSION

The central theme of centralized control is ‘plan and conform’, while the central theme of guided adaptability is ‘plan and revise’. Safety-II theory always specified guided adaptability, but often got misinterpreted as the opposite end of the control - vary paradox due to the entrenched Safety-I practice in organisations. Consistent with the origins of Resilience Engineering, Safety-II and Safety Differently, guided adaptability is not about choosing between control or variation, but about helping safe variations happen, and helping variations be safe.

Whilst sympathetic to the reality of Safety-I practice within organisations, we have shown the necessity for safety professionals to transition their safety practice towards enabling a mode of guided adaptability in the interest of improved organisational safety. This will move the profession closer towards its fundamental responsibility to create foresight about the changing shape of risk, and facilitate action, before people are harmed (Woods 2005). The important first step for the safety profession is to acknowledge that their role is presently trapped in a mode of centralized control, where they spend too much safety energy on reactive, fragmented and defensive activity. Alongside the recent theoretical, and empirical research developments in managing safety in complex systems, some safety professionals want to add activities aligned to a guided adaptability mode of safety, but they are not sure how to start – this paper addresses this problem.

Section 5.5 and 5.7 provided the two modes of safety, and the role of safety professionals. Whilst the safety professional role we described in a mode of centralized control (section 5.5.2) is strongly informed by current safety practice (Provan, Dekker et al. 2017), the role in the mode of guided adaptability (section 5.7.2) is more tentative based on the authors’ own interpretations of the implications of current safety theory for safety
professional practice. The role of any individual safety professional will also necessarily be shaped by the domain and operational context of their specific organisation. The safety professional needs to have the autonomy, flexibility and discretionary resources to reshape their role in response to changing needs within the organisation as they move towards guided adaptability.

The role of safety professionals in a mode of guided adaptability is very different than in a mode of centralized control. Whilst the implications for the mind-set and capabilities of safety professionals is outside the scope of this paper, they are considerable. Some safety professionals may find moving towards a mode of guided adaptability a tremendous burden – moving from setting rules, monitoring compliance, investigating incidents, and preparing safety reports, to – being a sharp-end operator, contributing to the success of the company, studying adaptations, making decisions on what to re-enforce or undermine, coordinating activity across boundaries, and openly probing and questioning technical specialists and management. Performing the role of a safety professional in a mode of guided adaptability requires good people, and a mind-set and capability that is different to that found among safety professionals currently performing their role in a centralised control mode of safety (Provan, Dekker et al. 2017).

Organisational leaders and line managers will play an important role in supporting safety professionals to move towards guided adaptability. The safety professional needs to be resourced and empowered to change, requiring: investments in inquiring and analysing problems that are not definitive, sacrificing production and other organisational goals to maintain safety margins, and questioning and probing technical specialists and all levels of management. Management will be resourcing roles to independently question their decisions and actions (Woods 2006). The key contributions of this paper are:

1. Articulating the two modes of safety – ‘centralised control’ and ‘guided adaptability’;
2. Explaining how the two modes creates tensions and adaptations to the role of safety professionals and front-line workers, and;
3. Enabling guided adaptability by providing a first specification for the safety professional role.
The next important step in the development of the safety professional role in a mode of guided adaptability is to develop role specifications and case studies for specific industries and levels of position (which will improve, change, and get more specific over time). By re-opening the discussion on the role of safety professionals and the alignment to their organisation’s mode of safety, this paper aims to personalise the Safety-I versus Safety-II dialogue within the safety profession. Are safety professionals supporting and reinforcing a centralized control mode of safety, or are they dynamically balancing the needs of people on the front-line to sense and respond successfully to emerging situations and changing context though guided adaptability? Are they the ‘controller,’ or are they the ‘guide?’

5.10 OUTCOME FOR THE RESEARCH AIM

Chapter 5 provides one answer to the primary research question and specifically answered one of the research sub-question as follows:

RQ1: What is the role of a safety professional?
SQ5: What is the future role of a safety professional through the theoretical lens of resilience engineering, safety-II, and safety differently?

The conclusion from the new safety differently professional theory reported in chapter 5, is that the future role of a safety professional can be described as:

“to create foresight about the changing shape of risk, and facilitate action, before people are harmed”

This chapter outlined a change narrative for safety professional practice grounded in the research previously conducted and reported in chapters 2, 3, and 4 and the body of contemporary safety theory within the current literature. The safety theory underlying current safety professional practice (safety-I) was described and a detailed description of the unintended destructive consequences was outlined. The case for change was clearly apparent within both the existing literature and the research findings as reported in this thesis.
Reflecting on this chapter now, upon completion of the thesis, I am satisfied with the way that I have been able to extend the theoretical work of others within the contemporary safety literature. There is an ever-greater need to continue to deepen the practical interpretation of safety and organisational theory, and this chapter is an important first step to re-define safety professional practice. Testing the validity of safety theories through practical application as proposed in section 6.5 is an important research priority.
CHAPTER 6: CONCLUSION

6.1 ACHIEVEMENT OF THE RESEARCH AIM

The contemporary safety science literature continues to vigorously debate the ontology and epistemology of safety. This thesis has positioned an equally vigorous debate about the role of safety professionals alongside this broad debate about safety. This thesis asked and answered the fundamental question for the existence of the safety profession: What is the role of a safety professional? To explore this question, individual research projects were conducted to understand the: existing literature, professional identity, current professional practice, and a possible future role of safety professionals aligned with new safety theory. The conclusion from this research, is that organisations expect safety professionals to perform their current role as reported in chapter 4, and that the contemporary safety science literature demands them to work vastly differently as reported in chapter 5.

This thesis achieved its research aim and provided two answers to the primary research question:

RQ1: What is the role of a safety professional?

The first answer is situated within current safety professional practice reported in chapter 4, where the role can be described as:

“to support line management to implement safety processes and practices that meet organisational safety expectations”

In this current role, the primary purpose of the safety professional is to support line management. Their work involves the development, implementation and administration of safety programs, processes and practices. Their objectives are to meet organisational safety expectations which largely relate to satisfying demonstrated, social and administrative safety
needs. The effectiveness of a safety professional can be measured through; feedback from management, and the volume and quality of ‘safety work’.

The second answer to the primary research question is situated within the contemporary safety theory and research reported in chapter 5, where the role can be described as:

“to create foresight about the changing shape of risk, and facilitate action, before people are harmed”

In this future role, the primary purpose of the safety professional is to understand the current and future safety risk in the organisation. Their work involves proactively learning about the current functioning of operations through open inquiry, and sensing safety problems before they arise. Their objectives are to challenge the decisions and actions of management, workers and technical specialists, in the interest of safety, and to facilitate action in response to emerging risk. The effectiveness of a safety professional can be measured through their contribution to enhancing the core operational functioning of their organisation and their performance of physical safety work.

This thesis concludes that there are two distinct and different answers to the primary research question. This presents a dilemma for safety professionals, as the two roles described above are not complimentary. In fact, safety professionals performing their role according to either one will mean largely not fulfilling the other.

The two roles described above are incompatible due to the nature of the drivers of the work of safety professionals. In relation to the first role, when organisational needs and the individual needs of line management are conflated with the safety needs of the organisation and front-line workers then trade-offs inevitably occur. Organisational theory informs us that these trades-offs will be made based largely on structural influences, in this case power and politics. The second role requires a clear and prioritised focus solely on the changing shape of safety risk, as unhindered and unfiltered by organisational and individual influences as possible.

In relation to the first role, if safety professionals are only able to influence safety practices and processes then they are unable to explore and intervene in other operational
activities and decisions within the complex organisational system. In the second role, the safety professional focusses attention and facilitates action within the core operations and decision-making of the organisation. These are challenges for organisations as much as they are for the safety profession. The four studies reported in this thesis, and the paper attached in appendix 1, combine to provide a comprehensive overview of the identity, practice and future of the profession.

The findings of this research can be applied to a broad range of generalist and specialist safety professional roles within organisations as the participants included a: health specialist, aviation safety specialist, process safety manager, safety engineer and several more generalist safety manager roles. There were no material differences in the research findings for different types of safety roles within an organisation.

A forward safety professional research agenda is outlined in section 6.5 which will enable a further enhancement of our understanding of the current and future role of safety professionals provided by this thesis. This in-turn will provide the opportunity to practically enhance the capability and effectiveness of the safety profession, which will enable safety professionals to support further improvements to their organisational safety outcomes.
6.2 SUMMARY OF FINDINGS

The results for the primary research question are further explored through the findings related to each of the five research sub-questions summarised below.

**SQ1: What are the institutional, relational and individual factors that shape the role of a safety professional?**

Chapter 2 reported the results of the systematic literature review of the role shaping factors of safety professionals. The key findings were:

1. There is a significant lack of research into the role of safety professionals despite the growing body of research on other aspects related to safety, for example, safety leadership, safety culture, etc. With the exception of a few key studies, there is a large gap in our empirical understanding of safety professional practice.

2. Social and organisational theory provides a useful theoretical lens to understand safety professional practice within organisations, specifically factors related to institutional (environment), relational (practice), and individual (person) themes.

3. Increasing goal-based regulation and the need for managing the personal liability of company officers, have driven growth in safety compliance activity and organisational safety bureaucracy that dominates the tasks of safety professionals. This type of ‘controlling’ activity (i.e. systems, reporting, investigation, and audit) negatively impacts relationships, and safety professional focus on safety risk understanding and reduction.

4. There is a significant range of safety professional job titles, job designs, and team structures, which leads to confusing individual objectives and impossible effective evaluation of their performance. Organisations lack clarity on their safety goals more broadly and the specific role of the safety professional in achieving them.

**SQ2: What is the professional identity of a safety professional?**

Chapter 3 reported the results of a study of the professional identity of safety professionals. The key findings were:
1. Professional identity is an important construct used to understand the thoughts and beliefs of safety professionals, and their professional identity can be described in terms of their experience, motives, attributes, values, and beliefs.

2. Safety professional identity is rife with contradictions and tensions not common in the study of ‘traditional’ professions, i.e. medicine, law, teaching, accounting.

3. Safety professionals do not believe that existing formal safety education programs effectively prepare safety professionals for their roles in organisations. There are diverse career pathways to enter the safety profession and this background experience is the largest determinate of professional identity.

4. The key contradictions that impact the consistent and effective performance of safety professional roles are: leadership vs safety professional accountability for decision making, enforcing compliance vs facilitating front-line autonomy, and role authority vs relationship influence.

5. Safety professionals have a strong moral and ethical motivation for the performance of their role.

6. Burgeoning safety bureaucracy in organisations is an encumbrance on the role and identity of safety professionals.

**SQ3: What are the objectives of safety professional work activities?**

Chapter 4 reported the results of a longitudinal ethnographic nested case study of safety professional work. The key findings were:

1. The ‘safety work vs the safety of work’ organisational safety model is a useful and practical safety professional work categorisation tool. The objectives of safety professional work activities can be described using this model of safety work.

2. This research tested and extended the safety work model and proposed a non-exhaustive list of 19 sub-purposes of safety work under the four main categories of: demonstrated social, administrative, and physical.

3. This research proposed two new kinds of institutional work that safety professionals perform in addition to safety work and their administrative role requirements, termed ‘management work’ and ‘interpersonal work’.
4. There is an important need to re-shape the role of safety professionals towards the understanding and management of safety risk within operational work, if safety professionals are to contribute to improvements in operational safety

**SQ4: What is the current role of safety professionals within organisations?**

The response to this sub-question is summarised in section 6.1 above in relation to the research aim and primary research question. Chapter 4 reported the results of a longitudinal ethnographic nested case study of safety professional work. The key findings were:

1. The role of safety professionals is intimately aligned with the line management of their organisations at the expense of the safety needs of other stakeholders. This impacts the prioritisation of work and their ability to independently challenge organisational decisions and actions.

2. Safety professionals develop, implement and administer dedicated safety processes and practices alongside the operational work in their organisations. Safety work limits the ability of the role of safety professionals to impact the safety of operational work.

3. Safety professionals support their organisational safety needs, often at the conscious or unconscious expense of a focus on the real-time safety risk facing workers in their organisation.

4. Safety professionals rely on their experience to deliver on stakeholder safety expectations, rather than understanding and applying empirical safety science research findings to their work. Neither safety professionals nor others within their organisations regularly consider the current scientific basis safety work.

5. There is an important need for safety professionals and their organisations to consider: re-balancing their role alignment with organisational stakeholders including front-line employees to create independence from line management, increasing their autonomy to inquire and get involved with the safety of operational work, focussing on the understanding and reduction of safety risk as their over-riding work objective, and applying safety science to their safety work and decisions.
SQ5: What is the future role of a safety professional through the theoretical lens of resilience engineering, safety-II, and safety differently?

The response to this sub-question is summarised in section 6.1 above in relation to the research aim and primary research question. Chapter 5 proposed a description of the role and tasks of a safety professional through the lens of contemporary safety theory. The key findings were:

1. The safety literature proposes two distinct theories of safety management – labelled by Hollnagel as Safety-I and Safety-II. Safety professional roles are currently designed and performed almost exclusively aligned with Safety-I theory.

2. Front-line work in organisations adapts to a centralised control – ‘plan and conform’ mode of safety. A model was developed to demonstrate how front-line work destructively adapts under this mode of safety.

3. The role of a safety professional in a centralised control mode of safety is reactive, fragmented, and defensive.

4. The control-adapt paradox portrayed in the existing safety literature was reframed as a guided adaptability – ‘plan and revise’ mode of safety. A model was developed to demonstrate how front-line work constructively adapts under this mode of safety.

5. A first description of the role of a safety professional was proposed through the lens of contemporary safety theory: resilience engineering, safety-II, and safety differently. Eight core activities with supporting tasks were developed based on a review of the literature and the findings from current practice reported in this thesis.

6. The way forward was proposed where the role of a safety professional in a guided adaptability mode of safety is to be: a sharp-end operator, studying adaptations, contributing to organisational success, and proactive, connected and open.
6.3 SCIENTIFIC CONTRIBUTION

This thesis makes four significant theoretical and empirical contributions to the scientific literature on the role of safety professionals and safety more broadly, namely:

1. The first exploration of safety professional identity
2. The empirical testing and expanding of the model of ‘safety work’
3. The most extensive ethnographic case study of safety professional practice
4. The first practical description of the future role of a safety professional consistent with resilience engineering, safety-II and safety differently theory.

6.3.1 Safety Professional Identity

This thesis included the first empirical study conducted on the professional identity of safety professionals. The findings reported in chapter 3 provide new insight into how safety professionals identify with safety and their role. The newly discovered tensions and contradictions provide an opportunity for safety professionals, and their organisations to consider how their roles are designed and interfaced with other roles in their organisations. Additionally, safety professional associations and safety educators should consider how their current curriculum and accreditation programs meet, or do not meet the practical needs of safety professionals and industry.

6.3.2 Expanded model of ‘Safety Work’

Although this thesis does not claim the development of the model of ‘safety work’ reported in Appendix 1, it does provide the first practical application of the model and extend it by identifying 19 sub-purposes of safety professional work activities under the 4 categories of: demonstrated, social, administrative, and physical. The study reported in chapter 4, established 2 new types of institutional work performed by safety professionals alongside safety work, namely: management work and interpersonal work.
6.3.3 Safety Professional Practice

This thesis reported on the most extensive ethnographic case-study conducted to date into safety professional practice. The study reported in chapter 4 detailed the objectives of the individual work tasks of safety professionals. The study provides new insight into the gap between safety professional work, and safety risk in organisations. Empirical evidence is provided for the model of safety work presented in Appendix 1 and the application of institutional work theory at the practitioner level. This study is the first to empirically report the negative safety implications associated with the professionalisation of the safety professional role, and its close alignment with line management stakeholders. This is in contrast to the literature reviewed in chapter 2 which largely argued for the role to be shaped in this direction. This study also importantly highlighted the lack of a relationship between safety professional practice and the expanding body of safety science knowledge. Due to the deliberate research design of the professional identity and professional practice studies, this thesis reported on the first empirical research into the duality of structure and agency in relation to safety professional practice.

6.3.4 Future role of safety professionals

This thesis developed the first description of the role of a safety professional through the lens of contemporary safety theory, namely: resilience engineering, safety-II, and safety differently. The study reported in chapter 5 developed new models for the adaptations of front-line work and the safety professional role under an existing safety mode of centralised control. The popular interpretation of contemporary safety theory as being an unresolvable paradox between control and adaptability was reframed consistent with its theoretical origins as a mode of guided adaptability. The future role of a safety professional was determined, and supporting objectives and tasks were proposed.
6.4 PRACTICAL IMPLICATIONS

This thesis outlines numerous practical implications and considerations for safety professionals, organisations, safety professional associations, and safety educators. The most important practical implications are:

1. The literature review reported in chapter 2 provides a summary of the practical implications from the existing literature for safety professionals and their organisations
2. Organisations and safety professionals should work together to better define and align on the role of a safety professional. An organisational environment needs to be created to support the role of safety professionals to challenge management decisions and actions, and perform physical safety work
3. Safety education curriculums and safety professional accreditation schemes should be reviewed against the findings reported in this thesis
4. Safety bureaucracy and compliance requirements within organisations are burdensome and have implications for safety professional identity, safety professional practice and safety work more broadly. Organisations should review their safety plans, rules and procedures for usefulness in understanding and managing their safety risks
5. The relationship between the role of safety professionals and the needs of management and the front-line workforce should be re-balanced to create a re-prioritisation of safety professional work against worker safety risk
6. Safety professionals should evolve their role to be: a sharp-end operator, studying adaptations, contributing to organisational success, and proactive, connected and open

This thesis reports on four studies that together suggest there is a considerable need and opportunity to improve the role of safety professionals within organisations to create a greater connection with and contribution to operational safety outcomes. Chapters 4 and 5 provide the details and practical direction to improve their role effectiveness in relation to their current and future practice.
6.5 FORWARD RESEARCH AGENDA

This thesis provided two answers to the following primary research question:

RQ1: What is the role of a safety professional?

Answers were provided to this question in relation to both a current and future role of a safety professional. The findings and implications reported above suggest there is a valuable need to invest further research effort in continuing to explore this research question and other questions related to safety professional practice. The following section outlines both a short-range and long-range forward research agenda.

6.5.1 Short-range research agenda

The following four proposed research questions (PRQ) would expand our understanding and application of the research findings presented in this thesis over the short-range:

**PRQ1: How does the relationship between safety professionals and line management influence safety professional work, risk understanding, and line management decisions?**

The most urgent research question regarding safety professional practice emerging from the findings reported in this thesis is to understand the relationship between line management and safety professionals. Specifically, it is critical that we understand how this relationship influences: the prioritisation and purpose of safety professional work, the dynamic understanding of safety risk between safety professionals, line managers and the frontline workforce, and the impact of safety professionals on line management decisions. This research question should be explored through ethnographic research methods. The design should involve multiple case studies in different organisations.
**PRQ2: What is the professional identity of the safety profession?**

The safety professional identity research reported chapter 3 involved a nested case study of mid-level and senior-level safety professionals within a single organisation. Understanding the mind-set and shared beliefs of safety professionals about safety and their role is critical to working with, and enhancing the effectiveness of the safety profession. The findings in chapter 2 of this thesis should be deepened and expanded. This research question should be explored through two types of studies:

1. Conducting a large-scale survey that tests the generalisability of the research findings reported in chapter 2 with a large and diverse sample of safety professionals.
2. Replicating the research design conducted in chapter 2 across multiple organisational case studies to deepen our understanding and test the reliability of the findings reported in chapter 2.

**PRQ3: How do stakeholders relevant to the safety profession, view the contribution of the profession to their needs, the organisation’s needs, and to safety?**

Safety professionals interact with and influence a diverse range of stakeholders. The study reported in chapter 4 draws the distinction between line management and front-line workers as core stakeholder groups. The current practice of safety professionals may only be serving line management needs at the expense of front-line worker safety needs. This research question should be explored through a large-scale survey of key stakeholders, including: front-line workers, supervisors, middle managers, senior managers, directors, regulatory inspectors. The survey questions should be based on the research reported in chapters 2, 3, 4 and 5 of this thesis. This study could be expanded to also sample safety professionals themselves to explore the nature of any difference or gaps in beliefs and understanding of both the theory and practice of the safety professional role.
**PRQ4: What is the relationship between safety science and safety professional practice?**

One finding of this research is that safety professional practice is not influenced by safety science. However, this finding was reported by its absence in the data collected in the research reported in chapter 4. We do not presently understand the relationship between safety professional practice and empirical safety science research, nor the mechanisms that shape it. As knowledge workers, there is a need for safety professionals to obtain and maintain a working understanding of contemporary safety science knowledge, and apply this in their work activities, decisions and advice. An important further question is to understand the mediating role of safety professional education in a reciprocal relationship between safety science and safety professional practice. This research question should be explored through a large-scale survey, and then based on the initial data analysis, conducting open ended interviews or focus groups to further explore the themes.

**6.5.2 Long-range research agenda**

The following two proposed research questions (PRQ) would expand our understanding and application of the research findings presented in this thesis over the long-range:

**PRQ5: How does changing the role of a safety professional to align with contemporary safety theory impact their objectives, tasks, relationships and role outcomes?**

Contemporary safety theory and recent safety science empirical findings confirm that the application of safety differently theory has the potential for improving work and safety outcomes within organisations. The future role of a safety professional proposed in chapter 5 should form the basis of a controlled experiment to change the role performed by safety professionals within an organisation. This question aims to evaluate the efficacy of the Safety I versus Safety II approaches in a wider range of safety professional tasks and contexts. The research design to explore this question should involve a controlled experiment. Baseline and post hoc measurement of their identity, practice and role outcomes should be understood. Key measurements relevant to organisational safety outcomes should be used, including: nature of safety work, relationships and communication, involvement in operational decision-making, etc.
**PRQ 6: What are the capability requirements for safety professionals?**

This thesis suggests that safety professional education requires considerable further research. The literature review reported in chapter 2 highlighted the diversity of ideas and approaches to safety professional education and the gap between formal safety education and safety professional practice. The identity research reported in chapter 3 outlined the diversity of career pathways, the variable levels of capability across the safety profession, and the primary role of personal experiences in shaping beliefs about safety and the role. The practice research reported in chapter 4 highlighted the absence of a safety science narrative informing safety professional practice. The future role of a safety professional reported in chapter 5 requires vastly different capabilities than the current role. In its entirety, the findings of this thesis suggest that understanding safety professional capability needs, and then how to develop them is a critical research agenda. There is an additional question of whether all of these capabilities can and should reside in a single professional, or whether organisations need to design multiple roles in a way to escape the contradictions particularly in relation to safety I and Safety II, and safety work versus the safety of work.

The research design for this should include: thorough analysis of the literature on organisational theory and the professions broadly, deepening of the job design of safety professionals reported in chapter 5, and extensive action learning research with safety professionals in practice. An action research approach enables the discovery, observation, interpretation and testing of capability in practice, rather than the passive design of a fixed curriculum extrapolated from normative task and process descriptions. Answering this research question requires establishing through research, an understanding of safety professional capability requirements, their application in context, and their impact on role and safety outcomes in practice.

It is acknowledged that there is an international safety professional capability framework recently published and adopted by the International Network of Safety and Health Practitioner Organisations (INSHPO) that may provide a starting point for continuing research into this question. It is also acknowledged that there are presently many universities internationally with vastly differing safety professional education curriculum. This research question should extend beyond understanding the capability requirements of safety professionals to identify the means and mediums of capability development.
7.1 STATEMENT OF CONTRIBUTION OF CO-AUTHORED PAPER

This appendix includes a co-authored published paper. The copyright has been transferred to Elsevier, however, authors have the right to include their article in a thesis or dissertation. The bibliographic status of the co-authored paper, including all authors, is:

Safety Work versus the Safety of Work

7.2 ABSTRACT

‘Safety work’ consists of activities, conducted within organisations, that have the primary purpose of managing safety. Safety work is distinct from operational work, which directly achieves the primary objectives of the organisation. Safety work is also distinct from the ‘safety of work’, which is the prevention of injury. In this paper, we argue that safety work is primarily a performance rather than goal-directed behaviour. It may contribute to the safety of work, but this is only part of its purpose. Our argument is presented in the form of a model for organisational safety activity that represents safety as a special case of ‘institutional work’. Evidence of the ‘safety work’ takes the place of evidence of the ‘safety of work’, which is extremely difficult to measure or demonstrate in its own right. Even where it does not contribute to the safety of work, safety work may be necessary for organisations to make sense of safety in an uncertain world. If organisations did not perform safety work, they would be unable to convince stakeholders that they were doing enough for safety, which would in turn prevent them from pursuing their core business.

7.3 INTRODUCTION

Managers and workers in modern organisations are asked to participate in many safety activities. They take part in “safety moments” and “toolbox talks”. They prepare or sign “Safe Work Method Statements” and “Job Safety Analysis”. They complete pre-task risk assessments such as “Take-5”, “STAR” or “HYDRA”. They perform observations, audits and “safety conversations”. They may also be asked to co-ordinate or contribute to larger scale analysis activities such as “HAZOP”, “Fault Tree Analysis” or accident and incident investigation.

Why do people participate in, or ask others to perform, these activities? The simple yet manifestly inadequate answer is “to keep people safe”. Gilbert (2018) describes activities that can be separated from everyday work as ‘extraordinary safety’, distinguished from the ‘ordinary safety’ that the activities ultimately try to create. Yet ‘extraordinary safety’ is at best two steps removed from the safety of work. Even in an ideal world, managers and safety
professionals perform safety work that controls and directs frontline staff in the performance of safety work, that in turn shapes the way operational work is performed. This raises serious doubts about whether safety work is necessary or helpful for the safety of operational work.

The practice of safety is a complex social phenomenon, where actions within organisations serve both instrumental functions (achieving goals) and expressive functions (revealing attitudes) (Islam and Zyphur 2009). This dual purpose might be called “ensurance” and “assurance” (Rae and Alexander 2017), “being safe” and “feeling safe” (Hollnagel 2015), or, as in the title of this paper, “the safety of work” and “safety work.”

People who perform safety activities describe their own actions as instrumental – they are trying to improve safety outcomes, and are selecting actions that they think will meet that goal (Provan, Dekker et al. 2017). The academic study of safety also usually interprets actions as instruments; even sub-disciplines such as safety culture, which recognise the importance of symbolism and expression, seek legitimacy through their ability to drive or predict safer outcomes (Cooper 2000).

As Hollnagel puts it (Hollnagel 2015):

“The efforts to prevent future accidents actually serve a dual purpose to be safe and to feel safe. But sometimes the latter stands in the way of the former”

Hollnagel’s words reflect a common understanding that safety research is primarily about improving safety outcomes, and that the expressive functions of safety action are uninteresting except as a driver or distraction from “actual” safety. We disagree.

Very few organisational “safety” activities – ranging from personal take-5 risk assessments to safety programs costing hundreds of thousands of dollars – have proven capability to measure or reduce the likelihood of accidents (Shannon, Robson et al. 1999, Rae, Nicholson et al. 2010). And yet there is constant growth in the number, size, and complexity of safety activities, safety programs, safety departments, and safety regulations. It is often hard to believe that this activity is competent, goal-directed behavior by benevolent actors. We suggest that in order to explain the activities it is necessary to expand our understanding of the purposes they fulfil.
In this paper, our central argument is that safety management is a form of ‘institutional work’ and that safety activity is as much ritual, routine, and dramatic performance as it is goal-directed. Actions are socially legitimised through their purported positive effects on safety outcomes but cannot be explained as strategic or tactical choices in pursuit of well-articulated goals. Safety performances are intentional, but their value comes primarily from the structures they maintain, and the beliefs and feelings that they reinforce, rather than from their ability to prevent accidents.

To understand this better, we divide safety work into four aspects, without suggesting that any one of these is automatically more “legitimate” or “real” than the others.

1. *Social safety* – affirming that safety is valued and achieved
2. *Demonstrated safety* – proving safety to external stakeholders
3. *Administrative safety* – establishing and following rules and requirements for safety
4. *Physical safety* – changing the work environment for safety

This safety work may contribute to, but is not the same as, the ‘safety of work’. The safety of work relates to the likelihood and consequences of accidents arising from the way operational work is performed. For readability, we will from here on refer to the ‘safety of work’ as ‘operational safety’.

Of course, most organisations and most safety practitioners profess operational safety to be their primary concern (Provan, Dekker et al. 2017). We do not doubt this claim. In fact, we think the preponderance of evidence supports an even stronger claim, that when organisations seek to address uncertainties due to shortfalls in safety work, they believe that they are actually addressing operational safety.

This confusion is similar to what Rae and Alexander refer to as “probative blindness” - safety activities that improve confidence in safety without revealing or changing the underlying operational safety (Rae and Alexander 2017). However, in this paper we suggest that it is unhelpful to consider demonstrated, social and administrative safety as distractions from “actual” or “real” operational safety. All types of safety work are important, but for different reasons. In order to understand demonstrated, social, administrative and physical safety performances, it is important for researchers to understand why the practices have
legitimacy for those who perform them, and refrain from assuming that operational safety is the only legitimate purpose of safety activity.

The different aspects of safety are interrelated in several ways. Firstly, they are not perceived as different within the organisation that performs them. Events that challenge faith in one of the performances will create a response across the other types of safety work. Secondly, the performances compete for attention and resources within the organisation. Thirdly, demonstrated, social and administrative performances derive legitimacy from purported causal connections with the other performances, in particular with operational safety. This legitimacy is reinforced through academic discourse that encourages readers to focus on the ‘organisational causes’ of accidents instead of the proximate physical causes - see in particular the ‘Swiss Cheese’ model (Reason 2000) and Hopkins’ analysis of the accidents such as the Esso Gas Explosion at Longford (Hopkins 2000). The lack of differentiation between types of safety creates defensive responses when the legitimacy of any safety activity is challenged. “Why are you saying taking-5 s are a waste of time. Don’t you care about safety?”

It is possible to argue about whether organisations should or should not be concerned with demonstrated, social and administrative safety. As researcher-practitioners, we are ourselves frustrated that within most organisations safety work has importance disproportionate to its proven influence on operational safety. However, it is necessary to understand why safety is managed the way it is if we are to improve it.

Our paper is structured as the presentation of a new model that extends existing organisational theory. The model represents how and why safety activities are conducted. It is not intended to analyse or explain the causes of accidents – it complements other models that focus on how organisational structures and behaviors contribute to accidents. In the final section of the paper we discuss the broader implications of our ideas and provide some avenues to test and refine the model.

7.4 BUREAUCRACY, INSTITUTIONS, AND WORK

The term “bureaucracy” has a rhetorical repugnance in safety literature. Representative titles include: “Safety learning and imagination versus safety bureaucracy in design of the traffic sector” (Jagtman and Hale 2007); “The safety anarchist: relying on human expertise and innovation, reducing bureaucracy and compliance” (Dekker 2017); and
“Bureaucracy, safety and software: a potentially lethal cocktail” (Hatton 2010). In each case, bureaucracy in opposition to a positive attribute such as learning, expertise, or adaptability.

The text is often less provocative than the titles, but still describes bureaucracy as at best a necessary evil, or as an initially positive phenomenon that has grown beyond control. In both the rhetoric and the content, safety theorists draw heavily on the work of Max Weber. Writing in post-Bismarck Germany, Weber (2015) viewed bureaucracy as necessary for the efficient exercise of power in a modern democracy. He also cautioned that once power was acquired by a democracy, it was virtually impossible to remove. Weber saw bureaucracy as secretive, impersonal, indispensable and indestructible.

Weber’s bureaucracy was inflexible. It changed only by growing and by consolidating power. Even a military conquest only replaced who was at the head of the bureaucracy – not the nature or power of the bureaucracy itself. It is understandable that safety theorists – particularly those who place emphasis on transparency and local autonomy as sources of resilience – would be sceptical of this type of bureaucracy.

There is, however, an under-appreciated and under-studied relationship between “bureaucratic” safety work and “real” operational safety. A promising direction to explore this relationship is to consider safety work as a type of “institutional work” (Lawrence, Suddaby et al. 2011). Institutional work theory suggests that institutions are grown, sustained, and transformed by the continuing work of those who operate within the institution (Lawrence, Suddaby et al. 2011). An ‘institution’ is “those (more or less) enduring elements of social life that affect the behaviour and beliefs of individuals by providing templates for action, cognition, and emotion”. ‘Work’ is intentional activity. Transforming the institution, responding to day-to-day demands, or even just working by habit are all considered ‘work’.

Lawrence, Suddaby et al. (2011) write:

“*The study of institutional work takes as its point of departure an interest in work—the efforts of individuals and collective actors to cope with, keep up with, shore up, tear down, tinker with, transform, or create anew the institutional structures within which they live, work, and play, and which give them their roles, relationships, resources, and routines.*”
Similar passages could be lifted straight from texts on Safety-II (Hollnagel 2014), Safety Differently (Dekker 2014) or resilience engineering (Woods and Branlat 2011). Institutional work brings the same curious respect to the investigation of management work that modern safety science brings to the study of front-line work.

Cloutier, Denis et al. (2016) represents institutional work in four categories. ‘Conceptual work’ creates, maintains or disrupts the normative ideals of the institution – it provides the collective understanding of what needs to be done, and why it is important. ‘Structural work’ organises roles, rules, systems and resources – it provides certainty and predictability. ‘Operational work’ is made up of concrete actions that influence the day-to-day lives of frontline workers. ‘Relationship work’ is the building of inter-personal trust, alliance, and collaboration – it allows individuals to co-operate in performing the other types of institutional work.

7.5 PERFORMING SAFETY WORK

7.5.1 Outline of the model

Our model is based on the Cloutier’s representation of ‘institutional work’ (Cloutier, Denis et al. 2016). We adapt the model by adding four types of safety work.

1. **Social safety** is a type of conceptual work aimed specifically at maintaining safety as a value, and the organisation’s belief in itself as a champion of safety.

2. **Demonstrated safety** is structural work oriented towards stakeholders outside of the organisation, showing that the organisation is meeting its safety obligations.

3. **Administrative safety** is structural work oriented inwards, providing a mechanism for safety concerns to influence operational work.

4. **Physical safety** is work that directly transforms the work environment in the interest of safety.

In our model ‘administrative safety’ includes some elements of Cloutier’s ‘Operational Work’. We reserve the category ‘Operational Work’ for non-institutional activity – typically carrying out the primary business of the organisation. Operational work would occur even in an organisation that had no regard for safety. Managers and workers perform both ‘Safety
Work’ and ‘Operational Work’ – they co-create the institution that governs their day-to-day lives.

We also define a fifth aspect of safety, ‘Operational Safety’, as the absence of harm arising from operational work. Operational safety is not itself a type of work – it is an emergent property of work. Our adapted model is shown in Figure 6. For clarity, this model does not show relationship work, which connects and facilitates the other institutional work, but is not bespoke to safety.

![Figure 6: Safety work and operational work](image)

The different types of safety work can be hard to tell apart. In fact, people inside organisations often see all safety activity as part of supporting operational safety. They may be offended or become anxious if the amount of safety work is reduced, because this is perceived as a reduction in operational safety. Breaking the causal link to operational safety, by suggesting that an activity doesn’t contribute to the prevention of accidents, de-legitimises administrative, social, and demonstrated safety work. This can be seen in language such as “Focussing on compliance” (performing administrative safety), “paying lip service to safety” (performing social safety), or “just trying to cover their backsides” (performing demonstrated safety).
From outside the organisation, dividing lines between the aspects can be more obvious, particularly in hindsight. In the aftermath of an accident, for example, an organisation may be accused of focussing too much on demonstrated safety, social safety, and administrative safety activities at the expense of paying attention to operational safety. Until such accusations are made explicitly though, questioning institutional safety actions is likely to be viewed as denying the importance of operational safety.

In the following sections, we provide more detail for each aspect of the model, and then discuss the dynamic relationship between the aspects.

### 7.5.2 Social safety

Social safety is the creation of an internal organisational narrative that puts safety in a special position. The organisation displays a collective commitment to the wellbeing of everyone involved with the company’s operations.

Unless an organisation ceases business altogether, safety cannot actually be the constant top priority. Safety is constantly in a state of tension and trade-off with other values and goals of the organisation (Amalberti 2013). Social safety is therefore continuously challenged by the operational work of the organisation and requires reinforcement by communal acts of affirmation. Organisations have an acute need to reinforce social safety when they must justify actions inconsistent with their safety narrative, or for example, when they set safety targets and fail to achieve them.

A typical example of social safety performance is a “safety share”. A safety share (also referred to as a “safety moment” or “safety start”) is an item at the start of every meeting where one participant describes an experience, tells a story, or relates an item of information relating to safety. Safety shares are sometimes mandated by custom, and sometimes formally included as a standardised agenda item.

Hugh Heclo, in his book “On thinking institutionally”, refers to “respect-in-depth” or “to honour something through your own participation in its practice” (Heclo 2011). Thoughts and feelings become habits of action, which reinforce and sustain the thoughts and feelings.

Social safety is discussed in terms of values and progress: “Safety first”, “Zero harm”, “Safety is our number one priority”, “Safety journey”, and “Next Gear”. The enactment of social safety meets Islam and Zyphur’s definition of ritual within organisations. Ritual is “a form of social action in which a group’s values and identity are publicly demonstrated or
enacted in a stylized manner, within the context of a specific occasion or event” (Islam and Zyphur 2009). The symbolic and stylized nature of social safety can be seen in:

- safety slogans (“everyone goes home safe every day”, “every accident is preventable”, “safety is no accident”)
- branded safety programs (Safety First, Zero Harm, Next Gear)
- safety logos distinct from company logos
- specific times and places for safety (safety shares, safety moments, safety as a prescribed first agenda item in meetings)
- “safety” as an adjective to mark objects and occasions as special (safety conversations, safety requirements)

To say that social safety is symbolic and ritualistic does not diminish the importance of social safety. Rituals are an important type of work, necessary for individuals to reconcile their individuality with a greater purpose – to “think institutionally”. Organisational rituals, amongst other functions: signal commitment, communicate important values, exemplify and reinforce the social order, and manage anxiety (Smith and Stewart 2011).

Social safety is a challenging topic for organisations, because the causal connection between social and operational outcomes of rituals is an empirically open question. Most constructions of “safety culture” assume that there is a link between strong cultures and positive outcomes. The validity of this assumption is probably dependent on the nature of the rituals and the nature of the operations and should not be assumed to hold in every case.

7.5.3 Demonstrated safety

Demonstrated safety work consists of activities that ‘assures’ safety to stakeholders outside of the organisation. To flourish, a business needs regulators, communities, and customers who believe in the safety of the company’s products and activities. Without such approval, an organisation cannot sustain business.

Stakeholders pose a threat to demonstrated safety when they create alliances and institutions that demand safety assurance from the organisation. The primary institutions by which communities and customers exert influence over the activities of hazardous industries
are safety regulators (Walker and Wellock 2010). Workers may also organise to undertake industrial action or create unions to exert influence on their behalf. The organisation must respond to demands for assurance with a performance of safety activities that is even sometimes described in theatrical terms. They must “jump through hoops” or “put on a dog and pony show”. Depending on the history of the particular industry, safety demonstration may be improvised, or tightly scripted by regulations. This demonstration usually involves producing and presenting ‘evidence’ that confirms the activities and products of the organisation are safe.

Negotiation is a type of institutional work (Helfen and Sydow 2013). Institutions form part of larger ecosystems, containing other institutions with their own normative ideals, rules, systems and practices. When institutions interact, this creates pressure for change towards greater alignment. We chose the term “demonstrated safety” rather than “negotiated safety” because for most organisations there is an unequal relationship with stakeholders such as regulators. Managers and staff perform work to protect existing beliefs and practices, by demonstrating that they meet external expectations, or they perform work to change beliefs and practices to better align with external expectations.

Demonstrated safety deals in absolutes – an organisation must demonstrate safety to an acceptable standard or face an external conclusion that they are unsafe. Demonstrated safety uses language hybridised from legal processes and mathematical proofs – “evidence”, “demonstrate”, “assurance”, “reasonably practicable” and “acceptable” (Menon, Hawkins et al. 2009).

A representative example of demonstrated safety is preparation of a “Safety Case”, common in railway, defence, and major hazard facilities. A safety case is “a structured argument, supported by evidence, intended to justify that a system is acceptably safe for a specific application in a specific operating environment” (Kelly 1999). Safety Cases are prepared during the design of a system or facility. Operation of the system or facility in these hazardous industries is contingent on approval of the safety case by a regulator or a third-party assessor.

Safety case production involves the conduct of many “assurance” activities - including hazard analysis, design modelling, risk assessment, software testing, and human error prediction. These activities are ostensibly dual purpose - they are intended to increase the operational safety of the design and to provide evidence that demonstrates safety but the
language of the activities is directed at their demonstration rather than their operational purpose, and “success” is commonly framed as achieving approval rather than finding and resolving operational safety problems (Rae and Alexander 2017).

Demonstrating safety through producing safety evidence is a form of structural institutional work. Professional and government standards are embedded in company processes, forms, and templates. Organisations may voluntarily adopt these standards even where they are not demanded by external stakeholders, and may create internal stakeholder approval systems that mirror the external bodies (Gunningham and Johnstone 1999).

Because approval is usually an all-or-nothing event, demonstrated safety is measured by the achievement and maintenance of regulatory approvals and third-party certifications.

7.5.4 Administrative safety

Administrative safety is the enactment of controllable, repeatable and measurable safety routines. As with demonstrated safety, administrative safety activities are a form of structural institutional work. To manage day-to-day activities, organisations needs to translate goals and objectives into concrete plans, with clear expectations for what is required of everyone within the organisation (Katz 1964).

Academic and theoretical discourse creates nebulous boundaries of time, space and category that must be considered in order to understand the causes of accidents (Dekker, Cilliers et al. 2011). The more we understand about how accidents come about, the less claim we have to definitive knowledge and solutions. Administrative safety, in contrast, creates a finite border around what should and should not be considered, and establishes well-defined categories and relationships within that border (Bahr 2014). The language of administrative safety reflects this: definitions, standards, rules, accountabilities, system boundaries, and role requirements. Goals and values are translated into practices that can be performed in a standardised way, and that are objectively checkable. Administrative safety is measured through internal compliance and external accreditation audits.

A typical example of administrative safety is a personal risk assessment, or “take-5”, process. It is considered good practice, before starting a hazardous task, to identify threats to operational safety and manage those threats before starting the main task (Rozenfeld, Sacks et al. 2010). This routine does not intrinsically require documentation – or indeed any physical artefact. In order to support reliable and consistent performance of the routines, some
organisations introduced take-5 reminder cards with lists of things to consider. To reinforce the process, records were kept and audited, and ultimately the take-5 itself became a form to be filled out, handed-in, and counted. The evolution from anxiety to practice to method to artefact is described by Wastell in his discussion of transitional objects – “the means to an end becomes the end in itself” (Wastell 1996).

Administrative safety grows by documenting and reinforcing the ostensive aspects of routines in progressively greater detail. Eventually the processes for documenting and reinforcing routines themselves become institutionalised as “Safety Management Systems”. Organisations were performing social safety, demonstrated safety and physical safety work long before the practice of documenting processes was widespread (Ingham, Winterbottom et al. 1843). Administrative safety provides repeatability and certainty. It makes clear who is expected to do what, when. This is important for organisations to function effectively, and to manage their own performance. It is an important and open question, though, whether and when administrative safety work supports or hinders operational safety.

7.5.5 Physical safety

Most operational work, even when it is performed with non-safety goals, has a bearing on the likelihood of an accident. There is some front-line work, though, that would not occur were it not for safety concerns. This work includes:

- Fitting and maintaining protective barriers, such as machine guards;
- Placing markers and signs, such as traffic cones or wet floor signs;
- Supplying and managing personal protective equipment such as gloves and glasses;
- Installing, testing and monitoring safety-specific alarms; and
- Conducting safety-specific tests, such as measuring atmosphere in a confined space.

Because physical safety directly changes the work task or environment, it has the potential for a more direct causal link to operational safety. All other types of safety work must first influence physical safety or operational work in order to change operational safety. This does not necessarily mean that any specific physical safety activity improves operational safety.
Physical safety is usually discussed using physical terms and metaphors – hazards, barriers, and controls. Physical safety is often intended to operate by reducing variability in operational work – i.e. by preventing unsafe actions but can also be thought of as providing extra capacity for workers to perform their work safely.

7.5.6 Operational safety

Operational safety is an emergent property of work. It is sometimes described as ‘freedom from unacceptable risk of harm’, but that definition poses serious problems for recognising safety. “Acceptable risk” is conceptualised through social safety, measured through administrative safety, and declared through demonstrated safety.

Except when a fatal or catastrophic accident occurs, operational safety can only be measured by performing administrative safety, social safety or demonstrated safety work. Even an apparently objective measure of safety, such as the number of injuries, requires administrative rules for identifying, screening, classifying, counting and reporting. In practice, it is hard to draw a clear line between safety work and operational safety.

One way to separate the two is to think about the mechanisms by which safety work could improve or degrade operational safety. Operational safety can really only be changed by altering the conditions or methods by which operational work is performed. This means either performing physical safety work, or changing what workers think and believe in a way that influences the conduct of operational work.

Ultimately, operational safety can only be changed by eliciting a change in matter or energy at the point where an accident could happen. The following examples illustrate the distinction:

- Preparation of safety case documents for a regulator, by external consultants who have no influence over design or operations. This is safety work – specifically demonstrated safety – in pursuit of an organisational need. It has no mechanism to change the operational safety.
- Safety audits that check the presence of documents but not the quality of their contents. This is administrative safety work. Because the checks can be satisfied regardless of the operational reality, it does not change operational safety.
• Risk assessments prepared in support of decisions that have already been made. This is social safety work because the assessments can change how people feel about the decisions, but not the operational impacts of the decisions.

Another way to clearly distinguish safety work from operational work is to consider the effect of not performing the work. Whilst safety work activities (social, demonstrated, administrative and physical safety) have a purported mechanism by which they could affect operational safety, safety work is always discretionary. Even in the absence of the safety work, operational work could still continue. There is also always some empirical uncertainty about whether safety work causes operational safety – the weaker the evidence that a causal relationship exists, the clearer the distinction can be made between safety work and operational safety.

An example of a strong link is a workplace rule (administrative work) about wearing safety helmets whilst performing operational work in areas where objects might fall from heights. There is strong evidence for the efficacy of helmets (Long, Yang et al. 2015) and it is very obvious whether or not the rule is actually being followed. This is safety work that materially influences operational safety.

7.6 INTERACTION OF SOCIAL, DEMONSTRATED, ADMINISTRATIVE, PHYSICAL AND OPERATIONAL SAFETY

7.6.1 Mutual reinforcement

Each type of safety intersects and has a recursive relationship with each of the other aspects. Social safety intersects with administrative safety when formal programs are created aimed at increasing the level of care for safety within an organisation. Examples of this include DuPont’s ‘Felt Leadership’ program (Mottell, Long et al. 1995) and Shell’s ‘Hearts and Minds’ program (Hudson 2007). The emergence and popularisation of ‘safety climate’ and ‘safety culture’ in the 1990s provided an administrative way to measure social safety (Zohar 2010).

Social safety intersects with demonstrated safety when, even in the absence of explicit stakeholder demands, organisations seek external recognition for their internal safety narratives. A key example is nominating for safety awards. Safety awards require the deliberate crafting of a narrative of successful operational safety. Within a single industry, safety awards can be entirely a social safety performance – external to each individual
organisation, but for the industry as a whole, a ritual of celebration that reinforces norms and values. Social safety has the potential to motivate physical safety work, and to motivate operational work to be performed in safer ways.

Administrative safety and demonstrated safety are both forms of structural institutional work but are directed at different audiences. This results in hybrid roles, systems, and processes. The same document, for example a Safe Work Method Statement, may serve a demonstration purpose (to show that the work is being done safely) and an administration purpose (to explain how to do the work safely). Administrative safety maintains an organisation-wide ostensive (mental) model of other types of work. This can reinforce social safety through the promulgation of language and symbols, and support demonstrated and physical safety through established, repeatable and measurable patterns of work. Administrative safety can reduce the variability of operational work. To a certain extent, this is positive for operational safety.

Safety demonstration, being outward facing, does not intersect with operational work. However, external safety regulation is ultimately supposed to inform, guide, and enforce physical safety and operational work. To the extent that this is true, demonstrated safety activities first require social and administrative activities. If regulatory pressure results in the right administrative and social practices – i.e. activities that have instrumental functions (e.g. prohibited use of asbestos in building products), not just performative functions (e.g. perform risk assessment) – these practices will drive improved operational safety.

There is a trend in regulation away from instrumental ‘prescriptive’ requirements, towards performative ‘goal based’ requirements (McDermid and Rae 2012). This trend can be argued to be positive or negative for operational safety. On the one hand, goal-based requirements explicitly require more sophisticated demonstration performances, to the point where there is a sub-specialty of the safety profession dedicated to safety “assurance” (demonstrated safety work). This may create distance between safety demonstration and operational work. On the other hand, the flexibility of goal-based regulation may allow organisations to choose administrative and physical safety practices that are more effective in achieving operational safety.
1.6.2 Multi-aspect response to threats

If something threatens or creates uncertainty in any aspect of safety work, it demands an organisational response. Unless people can make an astute distinction between different types of safety work, the organisation will respond to the ‘safety risk’ with ‘safety activity’. This is likely to include social, demonstrated, administrative and physical safety activity, but will not necessarily change operational work.

A serious accident is an operational work event, that reveals a lack of operational safety, but the organisational response to accidents goes well beyond the physical workplace. Demonstrated safety activity increases as regulators and other external stakeholders need to be convinced that the company can continue to operate safely. The safety case, the argument and evidence that the system is safe - must be “repaired” by the production of new safety evidence to answer the concerns raised by the accident (Kelly and McDermid 2001). Social safety activity increases as the organisation tries to restore belief in its own goodness through rituals of exclusion, restoration, and value reinforcement (Smith and Stewart 2011). The sentence that appears in many accident reports “This accident was preventable” reveals that organisational actors believe they must reconcile their claim to put safety first with an accident that was not prevented. Administrative safety responds to accidents by creating new rules or by reinforcing existing rules through increased compliance activity (Amalberti 2001).

These demonstrated, social and administrative safety activities are all generalised responses to potentially a much narrower event or risk. In fact, it is possible that the threat to operational safety increases safety activity in the other dimensions of safety work but leads to no new physical safety work and no change to operational work.

In similar fashion, the creation of a fresh “school of thought” is a threat to social safety. Theorising is a type of disruptive conceptual work (Cloutier, Denis et al. 2016) at odds with the norm-maintaining rituals of social safety. A new school reinterprets concepts and symbols and establishes its own legitimacy by delegitimizing existing beliefs and rituals. If the institution is sufficiently disrupted, it must demonstrate that it is still committed to safety, by publicly embracing the new school and championing it to external stakeholders. It will search to find performance measures and standardised practices consistent with the new way of thinking. Examples of these disruptive ‘new’ schools of thought have included: behavioural safety, safety culture, and most recently, safety differently. Operational work may benefit
from the new perspectives and renewed attention to safety work, although not necessarily in proportion to the level of social and administrative safety activity.

Changes to legislation and regulation are structural threats, encompassing both demonstrated and administrative safety. They cause existing safety management systems to become non-compliant. Becoming compliant may change physical safety performance through a change to the workplace - for example mandatory roll-over protection on mobile plant.

### 7.6.3 Structural safety as a social and legal defence

As the social and legal expectations of safety have expanded, management and workers have developed an increased fear of the social and regulatory consequences of operational safety incidents. The social and legal consequences of accidents, for some, are seen to be as severe as the human consequences.

Organisations and individuals fear “not doing everything they should have done.” This is a very rational fear, because if an accident occurs the organisation will, by definition, not have done enough to prevent the accident. The best they can hope for is to have done everything that they could reasonably be expected to do.

The concern can be addressed by an appeal to methodology. The administrative construction of rules and responsibilities provides a way to be doing ‘the safe thing’ even if those actions did not prevent an accident. Wastell (1996) suggests that in complex organisational environments, methodology acts as a “social defence”. Individual decision making – with all of its attendant uncertainty and anxiety – becomes subordinate to structured methods and processes. The attractiveness of formally defined methods creates a strong feedback loop between administrative, social, and demonstrated safety. Rituals and values become metrics. Compliance evidence and cultural measurements are used in safety cases and public relations activities. Administrative procedures are given symbolic social value as “golden rules” and “safety essentials”. When there is a strong feedback loop between administrative activity and symbolic representations, it becomes socially and politically risky for an organisation to remove any of their administrative activity, even when provided with concrete evidence that the activity has no identified link to operational safety.

This feedback loop also goes in the other direction, for example when safety culture, as a representation of social safety work becomes administratively measured and audited.
(Reiman, Rollenhagen et al. 2014). This administrative ‘evidence’ of safety culture may then be used as part of demonstrating safety to external parties. Stakeholders such as regulators start to expect, or even to demand such evidence. Regulators make this demand explicit by providing information, tools, workshops, recommendations and even compliance activity (e.g. enforceable undertakings), and regulation (e.g. International Nuclear Industry), all aimed at reinforcing safety culture activity (Kerhoas 2013).

The use of structural safety as a social and legal defence mechanism allows safety work to become self-reinforcing and self-preserving institutional work irrespective of any link to operational safety.

7.6.4 Competition for attention

Woods, Branlat et al. (2015) introduced the term “safety energy” to discuss the way finite time, attention and expertise interacts with competing demands from different types of safety work. Woods was concerned with the difference between “reactive” and “proactive” activity, but the concept also applies to our four types of safety work. Whilst each type of safety work can drive improvements in other safety performances, and operational safety, it can also consume energy at the expense of other safety work.

This is not a strictly zero-sum trade-off, because the proportion of overall company resource devoted to safety can grow or shrink. Extra safety work does not have to come at the expense of operational safety. There are even authors who argue that safety bureaucracy is a net gain to both safety and productivity (Targoutzidis, Koukoulaki et al. 2014). Our model does not exclude this possibility. It is certainly the case, though, that organisations and individuals have limited attention.

Where there is a limited amount of safety energy, the different types of safety work cannot expand other than by competing for energy with the other types of safety work.

7.6.5 Negotiation of power

The four safety performances draw on and reinforce different sources of authority. Demonstrated safety performance provides authority by proxy; a manager or safety practitioner who is the source of information on what the customer, regulator or legislation requires can shape social, administrative and operational performance (Daudigeos 2013). Typical examples of this are a safety engineer who demands that a risk assessment is
performed in a particular way to comply with a standard, or a manager who demands that an injury is not reported to avoid upsetting a site owner or principal contractor.

Social safety performance uses rituals to channel group authority into particular symbols or words, calls upon the power of those symbols or words to demand particular actions. “We have to investigate the stubbed toe, because Every Accident Is Preventable and we are committed to Zero Harm”.

Administrative safety provides positional or “formal” authority. In heavily institutionalised organisations, written procedures can acquire formal authority that transcends traditional hierarchical authority. Power rests in the hands of those who write the rulebooks (Amalberti 2001, Almklov, Rosness et al. 2014).

Operational work is performed by the people with the least formal authority in an organisation. Physical safety improvements usually occur when authority can be drawn from elsewhere—unions, or legislation. A typical example is the introduction of a machine guard or personal protective equipment to meet regulatory standards.

The different sources of power provide some explanation for which safety activity gets priority when they compete for resources. Whilst all safety practice relies on a link to operational safety for legitimacy, anyone can call upon this link, so it does not help resolve resource contests.

7.7 DISCUSSION

7.7.1 Why distinguish between safety work and the safety of work?

When the same term is used for multiple concepts, it becomes hard to talk about the relationships between those concepts. “Safety” is a deceptively simple term that obscures a variety of purposes, activities, and outcomes. The main contribution of our model is to provide a way of distinguishing between the different institutional purposes of safety activities. This in turn allows for the framing of better questions about when and how those purposes are achieved.

The bureaucratisation of safety is one topic that can benefit from a clear differentiation between the safety work and the safety of work (operational safety). Bureaucratization refers to a growth in the breadth and depth of administrative safety activities. It is work performed to provide the organisation with confidence that it is taking the right actions to meet both external obligations and a value-based social commitment to
safety. Popularly, safety bureaucracy expansion is seen as a way for organisations to limit their legal liability risk resulting from a safety incident or non-compliance (Dekker, Cilliers et al. 2011). However, when administrative safety activities are viewed as a form of structural institutional work, it can be seen that they perform a general purpose in maintaining the institution regardless of the threat. Yes, legal liability is a threat to demonstrated safety, and does elicit an administrative safety response, but this is just one specific case.

Any threat to safety will often generate activity across all aspects of safety work, regardless of whether it is:

- a threat to social safety, such accusations of having a ‘poor safety culture’;
- a threat to demonstrated safety such as failing to obtain a regulatory safety approval;
- a threat to administrative safety such as failing a safety audit; or
- a threat to physical safety such as a ‘near miss’ incident.

An organisation manages, co-ordinates and measures this activity through administrative work. Structural work is a precondition for other types of institutional work, including operational improvements, but is unhelpful if it requires so much time and attention that the organisation never gets around to the other work (Cloutier, Denis et al. 2016).

The complex relationship between structural work and operational work has been extensively examined in other fields (Katz 1964) but in safety is usually represented as a binary choice between structure (Safety I) and agency (Safety II). This is unhelpful, as it leads to ontological debates about whether different types of safety work count as safety, instead of empirical investigation of which safety work activities best support operational safety. Institutional reform such as safety improvement is not a choice between conceptual, structural and operational work, but requires work of all three types.

Distinguishing between the different aspects of safety also assists in discussing the relationship between safety and assurance. Confusion between safety work and operational safety leads to false alarm (where someone holds undue concern about non-existent or insignificant risks) and “false assurance”, where there is misplaced confidence in the management of safety risk (Rae and Alexander 2017).
False alarm and false assurance are not automatically dangerous, but they interfere with the ability of organisations to concentrate on the possibility that they might not be safe, and to guard against overconfidence and misdirected attention (Turner 1976, La Porte 1996, Vaughan 1997, Snook 2000).

Our model suggests that unless organisations can differentiate between demonstrated safety, administrative safety, social safety, physical safety and operational safety, they may be performing institutional safety work without achieving operational safety. Although the different aspects of safety are usually correlated, they are capable of moving independently. If an organisation perceives the total safety performance rather than each aspect separately, a strong performance in one aspect can conceal poor performances in the other aspects.

In the absence of serious adverse events, operational safety is only measured through the other dimensions. Organisations measure operational safety through:

- risk assessments, which are usually demonstrated and administrative safety;
- compliance, which is usually physical and administrative safety;
- leading indicators, which are usually measures of administrative and social safety;
- lagging indicators, which are operational safety interpreted through administrative safety work; or
- Safety culture surveys, which are a measure of social safety

Organisations can hold a collective belief that safety is important, demonstrate safety to external stakeholders, and function in accordance with their safety systems - and this may give little insight into whether or not they are likely to experience a major accident. On the night before the Deepwater Horizon accident, a ceremony was held to celebrate exemplary safety performance (Deepwater Horizon Study Deepwater Horizon Study Group 2011). In hindsight, it will be obvious that there was a disconnect between safety work and operational safety – a myriad of “missed opportunities”, an accident “just waiting for its release” (Rasmussen 1997) – but it doesn’t currently appear that way from within the organisation before an accident.
A third discussion where it is important to distinguish between the different types of safety is ‘psychological safety’. The term originates from outside engineering or safety science, and so ‘safety’ means something different, but psychological safety is still relevant for achieving operational safety. Prevention of accidents relies on individuals who share ideas, express opinions, raise concerns, and provide warning of where there may be safety problems (Kewell 2006). This depends on an environment of psychological safety. Psychological safety is a shared belief that the team is safe for interpersonal risk taking (Edmonston 1999); it allows the boss to hear bad news (Dekker 2012).

It is an open question whether psychological safety is created or harmed by a strong safety climate. This question is difficult to even investigate unless operational safety is differentiated from social safety work. It is certainly plausible that some performances of social safety, such as commitment rituals, make it hard to challenge the way safety is achieved and conceived. It is also plausible that some types of social safety work encourage an environment where divergent views on safety can be openly discussed.

7.7.2 Questions arising from the model

A good model explains currently observed phenomena, but also suggests avenues for further exploration. Our model explains existing safety practice in organisations, and some problems observed with that practice. It should be possible to test the model via targeted ethnographic investigation. There is also opportunity for comparative case studies between organisations.

Our discussion in this paper is primarily about different types of institutional safety work, rather than who performs the work. A key area for further investigation is the role of safety practitioners in the performance of different types of institutional work in particular, how do safety practitioners and non-safety practitioners explain how and why they perform safety work? Does legitimacy come primarily from the link to operational safety, or from other external and internal drivers of safety work?

Our model also leaves untouched the status of particular safety activities. For example, what type of work is a risk assessment? Is it primarily directed towards demonstrated, social, administrative, or physical safety? Most likely risk assessment is a different type of institutional work under different circumstances, but it is important to understand how and when it plays different roles. What type of work is a safety plan? The
word “plan” suggests that it is administrative work directed towards operational work, but then why are safety plans more often prepared, viewed and discussed by outsiders than by personnel performing the operational work described in the plan?

7.8 CONCLUSION

Our model presents each of the four types of safety work as legitimate activities for organisations. Other contemporary safety theories have attempted to de-legitimise non-physical safety work in order to reduce bureaucracy and increase organisational efforts on ‘actual’ (operational) safety. These approaches have had limited success due to their failure (perhaps ironic, given their complaints about the reductionist nature of bureaucracy) to acknowledge the social complexity of modern organisations. In contrast, our model explains how safety as a complex organisational performance gets enacted and reinforced. The model provides a way to talk about how and why types of safety work are legitimised and performed separately from discussions about their efficacy in creating operational safety.

Understanding that safety work is institutional work, that serves purposes beyond achieving operational safety, is important both for those who seek to understand why safety practice is the way it is today, and for those who seek to change safety practice to create a stronger link between safety work and the safety of work.


