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WORKING IN DANGEROUS CONTEXTS: CONCEPTUALISING LEADERSHIP IN EMERGENCY RESPONSE TEAMS

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PhD

2019

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A thesis submitted in partial fulfilment of the requirements for the award of Doctor of Philosophy of the University of Northumbria at Newcastle.

Research undertaken in the Faculty of Business and Law

April 2019

Abstract

This thesis explores processes of leadership in UK public sector Emergency Response teams. Leadership has received much attention as a field of study, predominantly in the standard organisational context with an emphasis on the functional approaches leaders use to manage situations. In conventional operation, the organisational context is characterised by relatively low levels of ambiguity, and where there is information, resource and time available to enable adaptive responses.

In comparison to this, few studies have focused on leadership in dangerous contexts, characterised by high levels of complexity, where ambiguity is high, and resources and time are constrained. Emergency response teams such as police, fire and ambulance, continuously face dangerous situations to their personnel and the public. The focus of this study is on specialist operational teams within the emergency services that particularly respond to dangerous incidents. Emergency response teams such as police firearms, hazardous area response and fire service teams are collectively tasked with understanding their environment and co-creating adaptive leadership response strategies.

This doctoral study contributes to leadership theory in dangerous contexts. This thesis is informed by a social constructionist epistemology, and interpretivist philosophy. The focus of the empirical study is on understanding the constructed meaning of leadership and leadership processes of individuals who operate in dangerous contexts, within emergency response teams. The data collection method used for the study is a series of focus groups, involving sixty-one participants, adopting a thematic analysis approach and applying the principles of progressive focussing.

This thesis contributes to leadership theory by conceptualising leadership as a complex dynamic and fluid process, specifically in relation to emergency response teams operating in dangerous contexts. This thesis proposes a new framework for understanding leadership for teams working in dangerous environments. It explores the complexity of leadership processes and highlights how fluid leadership as a core element can inform team training and team development.

List of Contents

List of Tables and Figures

Tables

Figures

Acknowledgements

To my supervision team, Dr Johan Coetsee and Dr Sandra Corlett, I give my utmost thanks for the support, encouragement and engagement with me throughout my journey. To Dr Rachael Thompson and Professor Ron Beadle, who took over in my final year, thank you for the support and guiding and challenging me when I needed it. I will always be grateful. Thank you to all for your knowledge, expertise and constructive feedback and all whilst continuing to smile and believe in me.

I am especially grateful to Newcastle Business School for the opportunity they have given me to complete my PhD and teach the subjects I love. I have been given valuable support in my development as a researcher and I want to thank all my colleagues in the business school for the cups of tea, useful corridor conversations and friendship you have given me over the last few years. To the Graduate Tutors on this journey with me, you are amazing people and friends. I look forward to working with you further as we move forward in our academic careers.

To the organisations and teams who participated in this research, thank you for your time, effort and engagement in my study.

I dedicate this PhD to my parents and my husband, who have provided much needed emotional support and endurance through the happy and the difficult times. You are always my inspiration. Thank you mum and dad for telling me 'to just get on with it'. I think it worked.

To Jonathan, for your unwavering support and devoted belief in my strength. This just would not have been possible without you. You are the reason I believed I could do this.

Declaration

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas and contributions from the work of others.

Any ethical clearance for the research presented in this thesis has been approved.

Approval has been sought and granted by the Faculty Ethics Committee on 18/11/2016.

I declare that the Word Count of this Thesis is 80,869 words.

Name: Merrel Knox

Signature:

Date: 29th April 2019

Chapter 1 - Introduction

This chapter provides an introduction, overview and outline of the structure of the thesis. Following this, the central concepts are contextualised and the focus of and motivation for the study is outlined. The research question and sub-questions are stated and the research objectives that guide the research are addressed. The next section outlines the structure of the thesis to help guide the reader through what is covered in each chapter.

1.1 Focus of the Study

A wealth of research and empirical studies has been conducted in the leadership field over the last few decades (Yukl, 2008; Day *et al*, 2014; Dinh *et al*, 2014; O'Connell, 2014; Baran & Scott, 2010). Much leadership research focuses on conventional contexts, with relative operational stability (Baran & Scott, 2010), where the emphasis is on the processes leaders adopt to manage and influence situations characterised by low levels of ambiguity; and where there is information, resource and time available to enable effective and adaptive responses. In comparison, few studies have focused on the leadership of those operating in contexts characterised by high levels of complexity, where ambiguity is high and resource and time is restricted, such as dangerous contexts (Marion & Uhl-Bien, 2001; Uhl-Bien, Marion & McKelvey, 2007; Hannah *et al*, 2009). Leaders operating in High Reliability Organisations (HROs) often face these contexts. Examples of HROs include the emergency services such as police, fire and ambulance services.

Although there are multiple levels of leadership in HROs, this study is specifically focusing on specialist operational emergency response teams that are sent to incidents as a result of a 999 call. The teams are already formed and working together within a range of emergency services. For example: hazardous area response teams in the ambulance service, police firearms units, fire service teams and mountain rescue teams. These teams face incidents that often have the greatest levels of complexity, either because they are over wide areas, have multiple agency attendance and/or have numerous variables that require risk assessment. These teams face incidents that carry the greatest threats and danger to themselves and others, such as terrorist threats, chemical spillages or shootings. These are specialist teams, highly trained to manage dangerous situations.

In recent years there has been growing societal focus on teams in the emergency services in the United Kingdom and their response to dealing with threats, internal and

external, to human welfare and property (Dealing with civil contingencies: emergency planning in the UK, 2017, p.3). Societies are becoming more unpredictable and volatile, with an increasing frequency of incidents, such as shootings and terrorist attacks, requiring effective responses from emergency response teams (Hannah, Campbell & Matthews, 2010). As a result, there is increasing complexity in the incidents that emergency services respond too. Incidents that emergency response teams can face include (but are not limited to): armed robbery or hostage situation, chemical and hazardous material or spills, large fires, rescue operations in remote locations, water rescues, off shore accidents, lost persons, large road traffic incidents and terrorist threats. Consequently, this is placing further emphasis on the necessity of inter-operative working between what Murphy & Greenhalgh (2018, p.2) refer to as "blue light services".

Teams in the emergency services can attend a number of different types of incident, for example: incidents that are long term (such as Covid 19), incidents that are spread over wide areas (such as natural disaster, terrorist/roaming firearms incidents), and incidents requiring multi-agency attendance (such as aircraft crash or multiple casualty events). For clarity, this study focuses on short term, single location incidents to which emergency teams respond. Studies addressing other types of incidents would be useful for future study and this is outlined in chapter 6.

Unison, the national union for NHS ambulance workers, stated in an article in the north east regional newspaper 'The Journal' in 2013, that those responding to 999 calls can face a wide range of unexpected and dangerous situations (The Journal, 2013). They explained that there is increasing threat on a daily basis to paramedics that respond to local calls, often facing violent, drunken behaviours from member of the public. Unison's head of health, said: "Paramedics are faced with a terrible dilemma when they arrive on scene and are faced with gangs of drunken thugs. We need greater co-ordination with the police to prioritise situations where ambulance crews may be walking into danger" (The Journal, 2013). This report was six years ago, and stories have continued to unfold. BBC news reported in 2014 that Police forces introduced cameras on their uniforms to enable interactions with perpetrators to be monitored, with one purpose being that the "mere presence of this type of video can often defuse potentially violent situations" (Metropolitan Commissioner, 2014).

The recent fire at Grenfell Tower in North Kensington, in 2017; a situation that was characterised by high ambiguity and complexity, posed an immediate danger to the public, the fire service and the interoperability with other emergency response teams involved. In the aftermath, the response to the incident "raised questions about how the emergency services, local authorities and other agencies plan for and respond to civil contingencies" (Grinwood, 2017, p.3).

Attention has focused on the command and leadership of teams in the responding agencies to rapidly and effectively address incidents, by sharing information and making decisions to effectively resolve the situation (Uitdewilligen & Waller, 2018). The Civil Contingencies Act (CCA, 2004) provides a statutory framework for emergency services, predominantly for planning for civil contingencies as stated by the Government. The Act focuses on response and recovery and is consistently evolving as lessons are learned, through examples like Grenfell Tower, and where new concerns emerge.

This study focuses on localised emergency response teams where planning and control is at a regional or team level, dependent on the extremity of incident. For example: the case of Raoul Moat in 2010 in the North East, involved a regional search for an armed and dangerous man, and a multi-agency response was co-ordinated by the regional command structure across all emergency services in the region. Local multi-agency major incidents use the Joint Emergency Services Interoperability Programme (JESIP) as procedural guidance to co-ordinate their efforts effectively. In comparison, a locally based fire-fighting team would more likely respond to a house fire where the procedures are team/station situated.

Both levels of extremity can potentially pose threat to the life and welfare of an emergency team responder. This study is exploring specific teams, and not multi-agency incidents or large-scale emergency planning of incidents. However, Government policy including the CCA and the JESIP framework contain role boundaries within each emergency service; and offer useful guidance to local emergency response teams for the purposes of managing incidents. Specifically, in their training and adoption of procedures in preparation for collaboration and leadership responsibility when working in dangerous contexts, co-ordinating larger scale responses and multi-agency working.

Although there are operational guidelines, the lack of empirical research in leadership means there is insufficient knowledge and understanding about how leaders operate in dangerous contexts and HROs (Hannah *et al*, 2009; Hannah *et al*, 2010), what constitutes effective leadership in dangerous contexts (Hannah *et al*, 2010) and the processes leaders enact in dangerous contexts (Baran & Scott, 2010). As a result, further research of leadership in contexts characterised by danger, threat and risk is required (Hannah *et al*, 2009), as such research could potentially inform preparation for leadership training within HROs.

In order to address these gaps in knowledge, this research seeks to examine how emergency response teams construct leadership and danger, how danger influences leadership, focusing on the social processes by which teams enact leadership in dangerous contexts. This study draws from theoretical leadership frameworks that speak

to leadership within contexts that are characterised by danger and threat and which have high levels of ambiguity.

1.2 Contextualising the Study and Key Concepts

Emergency services; such as police, fire and ambulance face situations dangerous to their personnel and those that they protect and serve. Leaders and their teams are tasked with making sense (Weick, 1993, 1995, 2005; Hannah *et al*, 2009) of these contexts, creating strategies and employing processes (Baran and Scott, 2010) to avoid potential threats and to resolve issues as they emerge (Uhl-Bien *et al*, 2007). Leadership is tasked in these contexts to ensure that, through social processes and interaction, team members make sense and have aligned understanding, and produce an effective response (Hannah *et al*, 2009). This is challenged by situations characterised by high ambiguity, weak information, rapidly unfolding risks and threats to life.

Dangerous contexts - Campbell & Hannah (2010, p.3) defined dangerous contexts in a similar way to extreme contexts as "those in which leaders or their followers are personally faced with highly dynamic and unpredictable situations and where the outcomes of leadership may result in severe physical or psychological injury (or death) to unit members". This definition identifies 'extreme' contexts as being unpredictable and having potentially severe outcomes. This study adopts the term of '*dangerous context'* and understands a dangerous context as, *an ambiguous context in which there is significant immediate threat, physically, psychologically or materially to individuals or organisations and which falls outside the expected normal way of working.*

Dangerous contexts characterised by ambiguity and uncertainty (Hannah *et al*, 2009), are examples of where the perception of the world changes, events often unfolding quickly which are unexpected, disrupting the sense making of teams. Throughout this study, Weick's concept of Sense Making will be deployed. This materialises as a process of people extracting cues from the social context, retrospectively developing plausible understanding (or sense) from the context and enacting (through action) to restore order in the context (Weick, Sutcliffe & Obstfeld, 2005).

Leadership and Social leadership processes - It is important to clarify how leadership and processes of leadership are conceptualised within this study. This study views leadership as the interplay of a multiplicity of social processes. By this, it is meant that the study focuses on leadership as it is jointly enacted across the leader and the team, rather than individual leader cognitive processing (Bardis, 1978). In the context of danger, emphasis is placed on the effectiveness of leadership in producing adaptive responses,

and team processes that promote effective leadership, such as team integration and interaction (Zaccaro *et al*, 2001). Lichtenstein *et al* (2006, p.2) concurs with leadership as social, finding leadership to be a process which is "a dynamic which transcends the capabilities of individuals alone … product of interaction, tension and exchange rules".

Leadership is constructed by this study to be a series of social processes. Bardis (1978, p.148) described social processes as the "observable, repetitive patterns of social interaction that have a consistent direction or quality". This study interprets this definition, suggesting that social processes are ongoing interactions between person to person, person to group (or vice versa) or group to group, with an identified purpose and expected level of reciprocation in quality of interaction. Although this is a definition from forty years ago, the concept of 'social' has retained an interactive basis based on communication between individuals.

There are constraints (Colville *et al*, 2013) to the effectiveness of social processes such as Sense Making and the alignment of understanding of leaders and teams working in dangerous contexts (Combe & Carrington, 2015). Such constraints arise from situations with high ambiguity and complexities that are open to multiple and potential conflicts between interpretations of the context (Weick, 1993). Contextual ambiguity, created by limited information, failing role structures in this context (Weick, 1993), and the failure of leaders and their teams to create a shared understanding (Weick, 1993) and collectively make sense of and provide adaptive responses to the situation, is often the cause of a situation to become worse, potentially disastrous (Kayes, 2004).

Mistakes are made when people are not able to make sense of their situation (Kayes, 2004). Situations become even more difficult when information about the situation is distributed amongst the group members, and each member of the group has interpreted the situation differently (Weick, Sutcliffe & Obstfeld, 2005). A problem arises for leadership in this situation as, in order to take effective action, leadership is tasked with reconciling these views (Maitlis,2005; Weick, Sutcliffe & Obstfeld, 2005) and ineffective leadership in these instances can result in death or injury (Kolditz, 2007).

In conventional leadership studies (Day *et al*, 2014; Dinh *et al*, 2014), leadership is viewed as a social process which enables coordination of efforts across teams to resolve problems and deliver organisational objectives. The role of the leader in dangerous contexts is especially important to address. This is because leader(s) are the people relied upon to provide adaptive responses to problems (Mumford *et al*, 2007). Military combat leadership literature suggests leaders need to adapt to the "environmental, physiological, cognitive and emotional stressors experienced in a life-threatening environment" (Fisher, Hutchings & Sarros, 2010, p.91). Fisher *et al*, (2010) offer a differing

perspective of leadership in dangerous contexts by describing it as leadership 'in extremis'. In extremis leadership is defined as "giving purpose, motivation and direction to people when there is eminent physical danger, and where followers believe that leader behaviour will influence their physical well-being or survival" (Kolditz & Brazil, 2005, p.347).

There are also legal parameters which differentiate the context of civil emergency organisations and the military, especially when in a state of 'armed conflict'. Examples of this include, 'proportionality' and 'distinction' (MoD, 2004); wherein distinction refers to the categorising of combatants and non-combatants, and proportionality refers to the acceptable loss of civilian life to achieve specific military strategy. This is fundamentally different to the context facing civil emergency organisations, which seek to protect all human life. Furthermore, in accordance with the Armed Forces Act 2006 (HM Government, 2006), a soldier who refuses to undertake orders can be arrested for desertion. Wherein civil response organisations, it is the choice of the individual whether to risk their own life in responding to danger. This is a key differentiating factor. This additional contextual factor of the legal parameters under which the military and civil emergency organisations operate is a further reason why the military context does not form part of this study.

Although this study is not focused on military contexts, there are similarities within the concept of facing danger, whereby at the critical point of crisis, the leader role and leadership provided is pivotal to the outcome of the event. Hence in a situation where the outcome can be the difference between life and death of the group members, groups that have established common goals, a shared understanding of threats and have a clear understanding of process and what is expected from each group member will have increased chance of survival (Weick,1993). Hannah, Matthews and Campbell (2010) support these leadership processes stating that where group members identify with the collective, and they have similar values, they will be "better buffered" from the negative elements of the dangerous context or threat (p.173). Addressing calls for further research in this context (Burke *et al*, 2018; Baran & Scott, 2010; Hannah *et al*, 2009), the next section outlines the research questions of this study.

1.2.1 Research questions

This study seeks to respond to the under researched area of leadership, which questions how individuals lead in extreme contexts (Hannah *et al* 2009). The overarching research question that this study seeks to explore is:

How is leadership enacted in dangerous contexts?

The four additional sub-questions below relate to the overall research question, and will be addressed through the study:

- How do teams working in dangerous contexts construct leadership?
- How do teams working in dangerous contexts construct danger?
- How does danger influence leadership processes?
- What are the leadership processes of teams working in dangerous contexts?

1.2.2 Research Objectives

In order to address the research questions above, the study has set six research objectives which will guide each chapter in the thesis.

- To critique and build on existing theory of leadership by developing the concept of leadership in dangerous contexts.

- To explore the theoretical area of leadership in dangerous contexts by identifying existing leadership processes in the literature.

- To adopt a relevant qualitative methodological framework for data collection and analysis to capture the participant voices.

- To conduct thematic analysis of data to generate in depth understanding of leadership in dangerous contexts through the lens of teams**.**

- To add to the existing theoretical area of leadership in dangerous contexts by identifying leadership processes.

- To develop a theoretical framework to contribute to theoretical and practical bases for enacting leadership in dangerous contexts.

1.2.3 Motivations for the study

I am undertaking a doctoral study as a Graduate Tutor, a role I began in December 2013. Leadership has always been a topic of interest to me and was the reason I began my Undergraduate studies in 2004 focusing on leadership and management. I worked as a manager in a utilities company with a team of twelve staff looking to me for leadership. After my Undergraduate studies, I began working in education and managed a team of professional support staff. My knowledge of leadership was limited so I also focused on

leadership and human resource management for my Postgraduate studies and staff development for my Master's degree. I wanted to understand people, learn how to lead, develop staff and explore and develop my personal leadership style.

Just prior to starting my current role, I was involved in a full organisational professional support staff re-structure. Through the re-structure, I was exposed to the raw emotional, personal and professional impact of such a large change and the ambiguity the change process created in the teams, such as reduced staffing and scarce information sharing. The restructure process was long, intense and difficult for team members and proved challenging for leadership of the team. I was tasked with managing and supporting a team experiencing this and, as a result, my interest in leadership developed, specifically in times of crisis.

When researching a suitable topic for PhD study, this experience was fresh in my mind and I was concerned at the lack of understanding in the field. My initial thoughts focused on organisational change. However, the concept of crisis was of higher interest and related more closely to my experiences. My team were plunged into personal and professional crisis and my knowledge of how to lead through this level of difficult change was limited. An initial exploration of crisis literature soon led me to literature of those working '*In Extremis'* (Fisher *et al*, 2010).

These studies relate closely to extreme sports in comparison to taking an organisational approach and therefore were not directly relevant for the scope of this study. They were, however, useful in providing in-depth knowledge about the nature of challenges faced by teams in these environments. My review of the literature finally led me to focus on emergency services contexts. These teams presented as a purposeful sample as they face danger on a daily basis and the way leadership is enacted was of particular interest in order to answer my research question. This also worked well as I felt access to these teams would be possible.

1.3 Potential theoretical contributions

Creswell (2013, p.129) proposes, "good qualitative study begins with the identification of a clear problem to be studied". The review of the literature, in the following chapter (chapter two), demonstrates that there is insufficient knowledge about how leadership is enacted within teams operating in dangerous contexts (Hannah *et al*, 2009; Campbell *et al*, 2013). It is useful to recall at this point how dangerous contexts are conceptualised for this study: as having high levels of complexity (Marion & Uhl-Bien, 2001; Uhl-Bien, Marion & McKelvey, 2007; Hannah *et al*, 2009), where situational ambiguity is high and resources,

information and time are restricted or limited. This study responds to gaps in knowledge of leadership in dangerous contexts by identifying current contributions in the literature and acknowledging where further knowledge is required to explore leadership in teams, in order to understand and respond to a dangerous and complex situation (Hannah, Campbell & Matthews, 2010). As discussed in chapter two, there are calls from recent studies to explore leadership in extreme contexts, more specifically "non-traditional leadership structures" (Hayes & Foti, 2013, p.47) where leadership is emergent, thereby moving away from more formal leader-centric structures of leadership.

The literature review establishes that there are limited studies that address teams working in dangerous contexts, particularly studies that focus on emergency response teams. The most recent study (although differentiated from this study in that they explore extreme teams) conducted by Burke *et al* (2018) acknowledges that there is significant work required to unpack leadership in teams; specifically, how leadership manifests in extreme environments and the relationship between leadership processes and their importance throughout stages of an incident. To answer these calls is to explore leadership in real world settings by designing rigorous empirical studies that set out to extend the limited current theoretical base (Barnett & McCormick, 2012; Hannah *et al*, 2010).

Grint (2005, p.1479), in his exploration of the social construct of leadership, acknowledges that there are leadership processes "already tried and tested". For example, adopting a contingency approach to leadership in the training of police cadets. However, he acknowledges that new processual frameworks need to be developed in the leadership and management of what he constitutes as 'wicked problems' or novel, unanticipated and potentially unique environments such as dangerous contexts. This study seeks to build on leadership in teams working in dangerous environments through empirical investigation of emergency response teams. The study seeks to examine leadership emergence and processes within emergency response teams; to develop a theoretical framework which addresses the importance of processes identified across the stages of incidents.

Additionally, methodologically, this study looks to address this gap in knowledge by conducting focus groups with the teams that work in dangerous contexts. Focus groups are a popular method for gathering qualitative data in studies primarily exploring team dynamics (Morrison-Beedy *et al*, 2001, Zaccaro *et al*, 2001). Due to limited studies in emergency response teams, focus groups with these teams and the unique antecedents of a dangerous context can contribute to methodology in this area. To support this claim, recent studies have stated that a shift in focus of studies would be useful, from the leader of a group or team to the emergence of leadership within the team and shared processes of leadership (Burke *et al*, 2018; Hayes & Foti, 2013). Current studies on teams working in

dangerous contexts do not focus on the team but on the team leader, and therefore this study seeks to shift the level of analysis.

1.4 Structure of the thesis

Chapter One – Introduction: The chapter outlines the theoretical focus of this study and contextualises this, considering the gap in the current literature regarding leadership in dangerous contexts and addresses the motivations for undertaking study into leadership and the issues facing operational emergency response teams. The research question, sub-questions and objectives are outlined.

Chapter Two – Context of team leadership and leadership processes in dangerous contexts: This chapter provides a critical review of the literature in three parts. The first part provides a process for the review of the literature. The second part seeks to contextualise leadership as it pertains to dangerous contexts. The third part focuses on leadership and social leadership processes in dangerous contexts and highlights the limitations of current studies. Key categories from the literature include social processes of leadership, adaptive leadership, leadership complexity and shared leadership/sensemaking.

Chapter Three – Methodology: This chapter addresses the methodological approach, study design and methods used to undertake the study. The researcher's philosophical position of social constructionism is discussed and justified, and the process adopted for analysis, namely thematic analysis of the outputs of eight focus groups, is outlined. The ethical considerations of this study are also addressed.

Chapter Four – Findings: This chapter presents the findings of the study. Findings are presented as a template of categories, themes and sub-themes which emerged during the focus groups. Key categories include participant perception of danger, influence of danger on leadership and leadership processes. These are discussed in detail with verbatim comments to ensure the participant voice is accurately represented.

Chapter Five – Discussion and contributions: This chapter highlights where the findings of this study challenge, extend or add to the existing knowledge base, and provides theoretical contributions. This is undertaken through synthesis of the key categories emerging in the findings chapter and current literature in chapter two. Key contributions of this synthesis are presented, including conceptualisation of leadership in dangerous contexts as being fluid, social leadership processes during the stages of an incident and a new process identified of predicting team member actions.

Chapter Six – Conclusions and reflections of the study: This chapter outlines how the study has addressed the research question, sub-questions, and objectives. Areas for future research are also proposed, such as comparative studies between emergency response and the military context. The chapter discusses the evaluative framework adopted in the study, namely Lincoln and Guba (1995), to ensure the credibility, reliability, and validity of the research. Finally, the researcher undertakes a reflective analysis of undertaking this study and highlights lessons learned throughout the process.

1.5 Chapter Summary

This chapter has introduced the areas of focus in this study. The study is contextualised, and the researcher has addressed the motivations for the study. Potential theoretical and methodological contributions of the research have been addressed. The research question, sub-questions and research objectives have been outlined and will be referred to throughout the thesis. In the next chapter, the context of leadership, team leadership and leadership processes will be explored in more depth as part of the critical literature review.

Chapter 2 - Context of team leadership and leadership processes in dangerous contexts

2.1 Chapter Introduction

This chapter provides a critical review of literature in three parts. The first part frames and outlines the scope of the literature review. The second part seeks to contextualise leadership as it pertains to this study. The third part focuses on leadership and team leadership processes. The chapter as a whole addresses the following two research objectives:

- **To critique and build on existing theory of leadership by developing the concept of leadership in dangerous contexts.**

- **To explore the theoretical area of leadership in dangerous contexts by identifying existing leadership processes in the literature.**

The second part of the literature review contextualises leadership, specifically focusing on the dangerous contexts in which emergency response teams operate. This sets the scope of the research of leadership within the boundaries of this type of working environment. Constructions of dangerous contexts are explored, followed by an analysis of the components that underpin this understanding. This includes the contextual nuances of working in dangerous contexts, and the potential adaptive challenges that dangerous contexts elicit. These components will help to determine a provisional conceptualisation of dangerous contexts and draw parameters that are used to frame the research of leadership and team leadership processes.

The third part of the literature review is focused on leadership and team leadership processes. This section focuses on and builds a provisional conceptualisation of how leadership is constructed and how it is enacted through the social processes in dangerous contexts. The review of empirical studies in dangerous contexts enabled identification of relevant leadership processes.

Key empirical research studies investigating emergency response organisations working in dangerous contexts are analysed. Specifically, team-based leadership styles are identified, and leadership processes analysed. Finally, the theoretical implications and potential contributions of this study are proposed and discussed. The next section discusses how the literature review is framed and how the scope of the literature review is outlined.

2.1.1 Framing the literature review

Research into leadership has been vast in recent decades with a wealth of empirical research on established and evolving theories (Battilana *et al*, 2010; Day *et al*, 2014; Dinh *et al*, 2014; Hannah *et al*, 2014 & O'Connell, P. 2014). There is research on leader effectiveness (for example; Yukl, 2002), largely focused in conventional organisational contexts which are more stable with lower ambiguity (Baran & Scott, 2010). Despite the wealth of research identified on leadership, there has been limited research in extreme and dangerous contexts; "leadership in extreme contexts may be one of the least researched areas in the leadership field" (Hannah *et al*, 2009, p.897). There have been some studies in this area, for example Uhl-Bien *et al* (2007) and Baran and Scott (2010). However, there has been little focus on how leadership is enacted in dangerous contexts.

Many studies of conventional leadership discuss the concept of effectiveness (Campbell *et al*, 2010) and "fostering team success" (Morgeson *et al*, 2010, p.5). The focus of these studies is to measure effective leadership, developing models and frameworks for a range of situations and contexts (Battilana *et al*, 2010; Day *et al*, 2014; Dinh *et al*, 2014; O'Connell, P. 2014). Today's fast paced complex work environments (Marcy & Mumford, 2010, p.1) are challenging, meaning that "Leaders working in complex systems need to personally master the capacity for absorption or learning, adaption or change, and change management". In support of this, Randall and Shullman (2010, p.94) state that "organisations are increasingly complex, and their operating environments are increasingly ambiguous and demand faster solutions". This requires adaptive responses from leaders and their teams. Research in the last decade acknowledges that leaders are operating in a "new environment" (O'Connell, 2014, p.184).

Not enough is known about dangerous contexts, with Hannah *et al* (2009, p.898) stating that dangerous contexts have characteristics that create "unique contingencies, constraints and causations" that will influence leadership, in comparison to more conventional situations. Campbell (2010) concurs, suggesting that context directly influences leadership and, even more significantly, that there is a correlation between the extremity of the context and the impact it has on leadership. Osborn *et al*, (2002) suggests it is perhaps dangerous contexts where adaptive leadership is needed the most.

Understanding how leadership is enacted in dangerous contexts is important because the adaptive responses of teams can mean the difference between life and death. Adaptive leadership is discussed in the literature (Lord and Hall, 2005; Nelson *et al*, 2010) in terms of its importance to conventional leadership. Authors cite the lack of studies of adaptive leadership in dangerous contexts, proposing this theory needs to be broadened into the dangerous context (Yukl and Mahsud, 2010; Norton, 2010).

Exploring current constructions of dangerous contexts is useful to this study as the process of analysing recent studies will provide further contextual parameters for the study. Current leadership literature has little empirical research in contexts (Hannah, Campbell & Matthews, 2010) characterised by risk of severe physical, psychological or material harm. Military based studies, which investigate a specific type of danger, unsurprisingly state that these contexts are where leadership is most critical (Yammarino, 2010; Campbell *et al*, 2010).

The literature review began with a broad range of conventional leadership studies and narrowed as the scope became increasingly refined to the most relevant contemporary studies of leadership in dangerous contexts. A limitation of extant studies is the ability to observe leadership within dangerous contexts. Campbell *et al* (2010) state the challenge involved in achieving observation of those working in dangerous contexts, as researchers would possibly face danger by doing this.

Burke *et al* (2018) concur with this, stating there are challenges due to contextual ambiguities, and acknowledging that there are few primary sources of data emerging from studies. This therefore limited the sources of primary insight into dangerous contexts. The literature instead appeared to be drawn retrospectively from secondary sources such as government or organisational reports and inquiries into large, extreme incidents or multi-casualty events.

A limited number of primary sources of data, can potentially limit researcher understanding of responding teams, specifically leadership processes guiding decision making, and the contextual influences. This is a potentially significant theoretical gap as although theory can be generated from logical induction (Whetten, 1989) it is acknowledged that stronger contribution to theory is generated by accessing the constructed reality of the participants directly (Lee, 2014).

In setting the boundaries of this research, there are military studies which are referenced and discussed within the review, as they address the concept of leadership, danger and responses to danger. The study is not focused on military contexts, however, as there are contextual differences between the nature of operational combat and emergency response teams, and differences between the relationship of rank, command and control between military and public sector organisations. It is acknowledged in the final section of the review that investigation into the differences between emergency response teams and the military may warrant future study.

Similarly, although it is acknowledged that individual leader behaviours and traits contribute to the enactment of leadership processes and they are therefore referred to, these are not the primary focus of this study, which has the team as the unit of analysis.

Finally, the study does not address leadership in conventional working contexts; for example, a marketing team working in a conventional (non-dangerous) office environment. Leadership processes identified in conventional team leadership literature are analysed to provide a baseline to inform investigation into leadership processes in dangerous contexts. The review, however, concentrates on providing analysis of studies conducted in dangerous contexts and focuses primarily on empirical studies of emergency response teams.

The next section discusses the contextualisation of leadership. It discusses the role of emergency response teams working in context, addresses understandings of dangerous contexts and sets the scene and the parameters of leadership in teams working in dangerous contexts.

2.2 Contextualising leadership

A first step to contextualising leadership in this study is to view it through the lens of leadership as enacted within an emergency response team. In doing so, the research boundaries stated above become clarified. This section discusses the importance of context in leadership research, the place of emergency response teams in high reliability organisations and explores constructions of dangerous contexts in contemporary literature.

Context is of specific importance to the consideration of leadership. Leadership response is broadly dependent on the nature of the context, situational requirements and contingencies, as will be shown. Campbell *et al* (2010) state that leadership literature has somewhat neglected the *'context'* of leadership stating that there is still not enough empirical data to show how leaders assess situations. This is with specific reference to all leadership literature, not only dangerous context literature. Leadership is contextualised when confronting danger "such that specific causations and contingencies occur that are not present in non-dangerous contexts" (Hannah *et al*, 2010, p.157). Leadership research in dangerous contexts places emphasis on contextual influences and adopting contextual approaches to leadership. In such environments, there is difficulty in removing leadership from the context and when discussed from a social constructionist perspective, the context is inseparable from the phenomenon (Crotty, 1998).

Despite this, a contextual view of leadership has often been '*neglected*' in the current leadership literature (Osborn *et al*, 2002, p.797). This study supports Osborn *et al* in suggesting that leadership is inherently contextualised: "socially constructed in and from a context … change the context and the leadership changes" (Osborn *et al*, 2002, p.798).

Although this study does not seek to contribute to emerging contextual leadership theory, this theory is relevant to the way that the term leadership is conceptualised. For example, Osborn *et al* (2002, p.797) conceptualise leadership as not being only found within the individual leader and intrapersonal processes but as a social and interpersonal process, influenced inherently by the situation.

If this study adopted a situational approach to leadership, this would present limitations, as the situation in a dangerous context is dynamically changing and therefore resistant to efforts to provide a specific set of prescribed responses for leaders and followers. Studies of dangerous contexts note that each situation has its own "unique attenuators and intensifiers", such as time and levels of complexity (Hannah *et al*, 2009, p.898). There have been calls for further research into contextual factors influencing leadership in an effort to enhance leadership theory and "operational definitions of leadership" (Hannah *et al*, 2009, p.898; Fisher, Hutchings & Sarros, 2010, p.116). In this regard, the nature of danger presents the argument that teams working in dangerous contexts require further in-depth understanding of leadership processes to be effective and therefore, this is where leadership is needed the most (Campbell *et al*, 2010). The following section addresses the contextual and situational challenges facing high reliability organisations and the emergency response working context.

2.2.1 High Reliability Organisations and Emergency Response Teams

Emergency response teams, such as police, fire and ambulance are teams working in High Reliability Organisations (HROs) (Sutcliffe, 2011). Those working in Emergency services do so in the knowledge that there is a potential to work every day in a dangerous context (Baran & Scott, 2010; Weick, 1995). Emergency services such as the Police, Ambulance and Fire Services (as well as military organisations) are described by Hannah *et al* (2009) as organisations that focus on safety and crisis prevention. Teams face the potential of threat to their lives and those to whom they are responsible every day. Teams often arrive at scenes that are disturbing, dangerous to them and others; have high levels of ambiguity, and are chaotic (Busby & Iszatt-White, 2014). Busby and Iszatt-White (2014, p.69) discuss dangerous contexts as highly demanding environments, where 'reliability' is a key construct central to effective working, describing the term as "an important competency made possible by organisation". There is significant focus on the process of organising, seeing the concept of reliability as fundamental to the purpose of organising.

The concept of the HRO, developed by researchers at the University of California, Berkley, focuses on providing safe and reliable performance in dynamic contexts (Sutcliffe, 2011). Building on this, the introduction of concepts such as 'safe' and 'performance' implies the existence of organisational processes in place to manage and

measure the dynamic context. Yet there are few studies which have attempted to measure these processes or the contextual influences (Weick, 1995). Hannah *et al*'s (2009) analysis extends this, suggesting a need for HROs to develop processes which can anticipate dynamic change. Previous research has explored how leaders exhibit influence over others (Yukl, 2002), by looking at leader behaviours, processes and antecedents such as experience and knowledge. Weick (1993) states that to ensure the creation and maintenance of coherent understanding in dynamic and turbulent contexts, it is important to maintain relationships and facilitate collective action processes.

Although the focus of this review is not at the organisational level and therefore does not seek to analyse HROs; it does acknowledge that these organisations have established cultures with idiosyncratic methods of operating, which influence team behaviour. For example, current literature suggests that HROs are organisations that demand perfection (Sutcliffe, 2011) because, as has already established, the consequences of getting things wrong can be disastrous for those that rely heavily on them. Klein *et al* (2006, p.616) support this claim, stating that a characteristic defining HROs is that "organisational members cannot adopt trial and error or experimental learning processes", as there can be consequences to the general public and to the teams for which designated leaders in this environment are responsible.

There is an expectation of dependability on HROs to do what others cannot and achieve what others will not (Busby & Iszatt-White, 2014, p.69). The expectation for the standards of performance in HROs is detailed in their internal documentation, performance targets. and regulation. Weick and Roberts' (1993, p.357) study of flight operations on aircraft carriers, for example, looked at situations which required continuous operational reliability, stating that "some organisations require nearly error free operations all the time because otherwise they are capable of experiencing catastrophes". Emphasis is also placed by Busby and Iszatt-White (2014, p.69) on the potential for errors to have "catastrophic consequences".

Baran and Scott (2010, p.47) support the need for adaptive leadership responses stating that HROs typically have "many formal procedures and guidelines intended to enable and constrain crisis responses" and support the notion that leaders need to embark on a process of negotiation to form a response. This suggests that it is necessary for the leader to account for all aspects of their environment to achieve the adaptive response required for a successful outcome. To achieve this involves individual, collective and shared understanding of all parties involved. Leaders working in dangerous contexts do not and cannot work alone.

The focus of this study, and the unit of analysis, is the team. This is because emergency responders working in dangerous contexts are organised and structured into teams, in order to be able to respond to the wide range of situations which can occur. Leadership in such teams needs to respond to contexts that have unknown and unexpected risk factors, where the actions of team members can have unintended consequences, and where there is significant potential for error. An effective leadership role in these circumstances is to create order from the chaos (Weick, 1995). Dangerous contexts have unique causes and contingencies which influence the ability of leaders to create order, due to complex and dynamically changing circumstances.

Campbell *et al* (2010, p.S2) support this by stating that work into teams facing danger is essential if "behavioural scientists are ever to generate ideas, theories and techniques to better prepare individuals to lead in such contexts and to overcome the leadership challenges such environments pose". For emergency response teams, this notion of developing leadership capabilities across team members is essential as their responses can make the difference between life and death. Having discussed the responding organisation context, the following section explores contemporary constructions of the nature of danger.

2.2.2 Exploring constructions of dangerous contexts

In this section, this study's definition of dangerous contexts, and how this differs from concepts such as extreme and crisis contexts, is discussed.

There is limited research that addresses leadership using the term extreme contexts (Hannah *et al*, 2009 & 2010; Yammarino *et al*, 2010; Samuels *et al*, 2010; Fisher *et al*, 2010) This section discusses literature which refers to extreme contexts, often used interchangeably with dangerous contexts. Distinctions between the two concepts are useful to this research as different components apply to make an incident extreme. As a reminder to the reader, dangerous contexts (primarily identified in military leadership literature) are where risks of severe physical harm to organisational members or their constituents exist (Hannah *et al*, 2010).

Although there are several similarities in the varying definitions of extreme contexts, leadership literature does not propose a definitive definition and instead authors have chosen to provide definitions and parameters which relate to their study's contexts. Common themes can, however, be identified which align with the focus of this study. Namely, that there is ambiguity and uncertainty, and that there are unique properties that influence leadership processes and therefore team adaptive capacity. As there is no firm definition that has the consensus from previous researchers in the crisis literature, this study draws from Hannah *et al* (2009) and makes differentiation between the term's crisis

and an extreme context by highlighting the variable of danger to oneself or others. This study is consistent in that it maintains that the context is non-routine, and out-with conventional operation.

Hannah *et al* (2009), contributes to leadership in dangerous context literature by distinguishing between extreme contexts, extreme events and crisis. This is to demonstrate that each term requires a separate but related definition. Hannah *et al* (2009) acknowledge that an extreme context or event can exhibit characteristics that can also align within the definitions of crisis. There is significant leadership literature that addresses the term 'crisis' as a specific context for understanding leadership; in particular, leader cognition; adaptive leadership and effective leader performance (Osborn *et al*, 2002; Baran & Scott, 2010; Vessey *et al*, 2011; Morrell & Brammer, 2014; Mumford *et al*, 2007 & 2015; Combe & Carrington, 2015; Partlow *et al*, 2015). For the purposes of this study, the term 'dangerous' is adopted as it describes the immediate potential harm facing emergency response teams.

There is limited literature defining a dangerous context and little consensus regarding the criteria that distinguish an extreme context from a crisis. This is highly subjective and influenced by the perspective of leaders in these contexts, and their interpretation of the event or situation. In response to this, the literature exploring perspectives of crisis and extreme contexts was explored to enhance the lens through which literature of leadership in dangerous contexts was analysed. Each term represents a different set of characteristics from which parameters were established for this study.

Extreme events are *"discrete events of 'intolerable magnitude, where the goals (life or safety) are not just of high priority but are imperative, and at that point unique properties bear on leadership that are not present at lower levels of threat or crisis"* (Hannah *et al*, 2009, p.898). This concept of extremity is closely aligned in this situation with danger, where life and safety are at risk, but this is not always the situation. An extreme event may not involve danger but could be of a significant magnitude. Extremity is interestingly distinguished from crisis, as potentially being on a continuum based on the potential for risk or harm.

Hannah *et al* (2009) further emphasise this distinction of the term 'Crisis', describing it as a lesser (in magnitude) event or context. They define a crisis as "an episode or event of low probability and characterised by ambiguity of cause, effect and means of resolution*"* (p.899). Similar definitions categorise crisis as an *'uncertain event'* (Coombs, 2012) and a "messy and paradoxical situation" (Holt & Cornelissen, 2014). Hannah *et al* (2009, p.899) additionally describe crisis as "a threat to high priority goals which occurs with little or no response time". Whilst some correlation between the characteristics of the terms Crisis

and Extreme contexts is relevant to this research, the literature acknowledges that Crisis is also used as a term to explain "relatively mundane contexts" (Hannah *et al*, 2009, p.899) and this is not where this research will be focused. Extreme contexts have a similar definition and are described as:

> *"an environment where one or more extreme events are occurring that may exceed an organisation's capacity to prevent and result in an extensive and intolerable magnitude of physical, psychological or material consequences to-or in close physical or psycho-social proximity to-organisation members"* (Hannah *et al*, 2009, p.897).

The definition provided by Hannah *et al* (2009) focuses on situations where there is a risk of severe physical harm to the leader and their followers. This does not mean that danger to life needs to exist to class a context as extreme, nor does it mean that a low level of extremity indicates less danger to life. Extremity is often judged on the scale and scope of damage or effect (Hannah *et al*, 2009). Police officers, doctors and emergency response teams may face extreme contexts on a daily basis, for example, road traffic incidents, house or commercial fires, but the risk may not be to them as individuals but to others, patients and members of the public. It may also not be the risk of life but injury, harm or threat either psychological or physical.

As a reminder to the reader from chapter one and based on the previous discussions, this study adopts the term of '*dangerous context*' and understands a dangerous context as, *an ambiguous context in which there is significant immediate threat, physically, psychologically or materially to individuals or organisations and which falls outside the expected normal way of working.*

There have been calls for further research into contextual factors influencing leadership to enhance leadership theory and "operational definitions of leadership" (Fisher, Hutchings & Sarros, 2010, p.116). Eberly, Bluhm, Guarana, Avolio and Hannah (2013) adopt a transformational leadership approach to examine follower turnover in extreme contexts. Their study emphasises that leadership effectiveness might be "amplified or attenuated" in extreme contexts, highlighting the importance of adopting a contextualised view of leadership. Hannah *et al* (2009) concur that leadership is contextualised in their examination of leadership in extreme contexts; providing a typology, shown below as Figure 2.1.

Figure 2.1 – Typology of leadership in extreme contexts (Hannah *et al*, 2009, p.899)
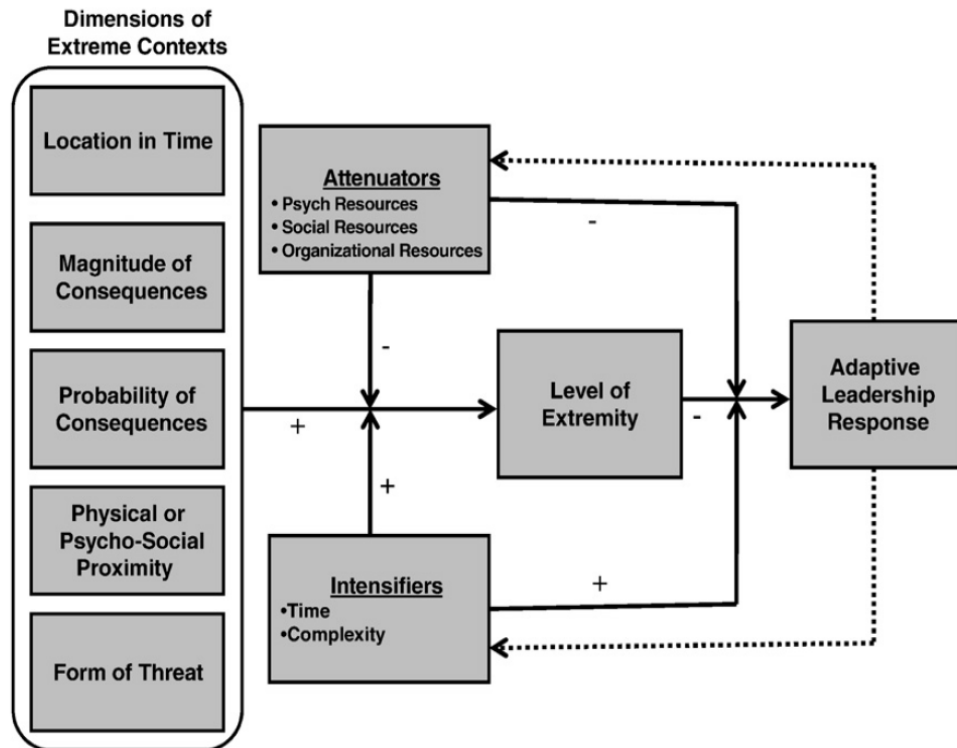
The typology is useful to this study as it is the first attempt by researchers to make sense of the concept of extremity levels and to conceptualise leadership differently, combining this with contextual causes and contingencies contributing to extremity levels. The focal point of the typology is the box titled 'level of extremity'. The level of extremity is the influencing factor on leadership providing an adaptive response to the incident. The typology proposes that there are several dimensions of consideration for constructing levels of extremity in contexts.

The location in time; Hannah *et al* (2009) propose that levels of extremity may not always be at their highest during an extreme incident. Using Chernobyl as an example, the level of extremity was highest in the aftermath of the incident due to radiation. The magnitude and probability of an extreme event or dangerous incident occurring is a consideration and dependent on the level of extremity anticipated or unanticipated which will influence adaptive responses. Hannah *et al* (2009) also highlight that this is also dependent on the team formation, for example the number of people in the team. Extremity will be perceived as higher to an individual than to a team, where an illusion of safety may be perceived.

Physical or psycho-social proximity is another dimension. Proximity in these two ways can assist leadership or hinder it, contributing to the level of extremity of an incident (Bass, 1998). For example, if a leader is open and shares information with the team and the team are socially integrated, they may be seen as more trustworthy. If the leader is

distanced physically or psychologically from the team, this may cause additional levels of complexity and extremity but also prove difficult for the enactment of leadership to provide appropriate adaptive response.

The form of threat is a dimension that contributes to levels of extremity; whether the threat is physical, psychological or to external material elements. In the case of physical threat to life as in dangerous contexts, leadership may be to enact processes that create decisive action and adaptive responses. The form of threat will change, and leadership needs to react to this change. This study seeks to explore forms of threat further because understanding these types of threat in emergency response can help with planning, preparation and training for leadership in these contexts.

Attenuators and intensifiers; the typology also addresses attenuators and intensifiers that add complexity to extreme incidents. Attenuators refer to the resources available to the organisation, the individual, such as resilience, and the team, such as their social network. Levels of extremity are impacted by the organisation, individual and team ability and capacity to respond to the evolving situation. Intensifiers, such as time and complexity, may involve immediate danger during an incident but an extreme context (large disasters) may involve time to compose an adaptive leadership response.

Level of extremity; As previously mentioned, Hannah *et al* (2009) note that each context has its own unique attenuators and intensifiers, and this will determine the adaptive leadership response. Although context influences leadership, we would expect those effects to be greater and perhaps different from context to context, but this becomes prominent when the context becomes more extreme or dangerous (Hannah & Campbell, 2010).

Based on the review of the typology of extreme contexts, leaders continually face competing goals (Weick *et al*, 2005). There is an inherent tension between the requirement to be efficient and timely against the goal of safety. Both goals are static in that they will not change as both are equally important in achieving high reliability but to achieve both requires the negotiation of differing parties responsible for each. De Meuse *et al* (2010, p.119) support this, stating that leaders are often faced with novel situations "that render existing routines" an inadequate way of working. The deviation from the norm then creates a new experience for the leader where De Meuse *et al* (2010) indicate that there is a potential to learn from these experiences, thus becoming "learning agile" and able to "perform in novel and first time situations" (p.120). For example: the importance of leader's sense making under extreme contexts becomes clear when it is understood that novel and complex conditions can be interpreted and understood in different ways (Wolbers & Boersma, 2013).

The next part of the literature review addresses leadership and team leadership processes. This literature addresses the process that was undertaken to identify the theoretical gap in the literature, for the purposes of justifying the contribution of this study, and to ensure a robust and systematic process of identifying relevant literature and leadership processes.

2.3 Leadership and team leadership processes

This next section critically reviews contemporary leadership literature, adopting a social process approach to leadership and considers the strengths and limitations of studies of teams in dangerous contexts and emergency response.

2.3.1 Leadership as a social process

Much recent leadership theory has focused on leader/follower relationships (Drath, McCauley, Palus, Van-Velsor, O'Connor & McGuire, 2008; Dechurch, Hiller, Murase, Doty & Salas, 2010) and the processes of interaction to achieve shared goals. Their research, however, often has an individual leader-centric focus. There is limited focus on the social, interactive processes of leadership as it is enacted in teams. Despite this apparent lack of focus, leadership is viewed as a *"process of social influence"* (Burke *et al*, 2018, p.717), for example, employing processes such as problem solving as social and interactive endeavours. Leadership is further conceptualised as a social process of influencing cognitive development through processes of sensemaking, problem solving, planning, and developing between team members (Fleishman *et al*, 1991).

Lichtenstein *et al* (2006) states leadership and leadership processes to be relational, inter-personal and inter-subjectively created. Social processes in this instance are generated in the interactions among team members and enacted in context. Hannah and Matthews (2010) also state that team processes are representative of social interactions and the result of these interactions are demonstrated in the emergent states of the teams. For example, cohesion can be viewed as a positive emergent state (Hannah & Matthews, 2010) for a team and an adaptive outcome. They conceptualise cohesion as a process that enables effective leadership and is also an outcome of effective leadership. Eberly *et al* (2013, p72) highlight the importance of "achieving higher order goals through communicating purpose", demonstrating social interaction through human communication (Bardis, 1978), in this case the integration and interaction between followers.

The elements of this discussion which this study adopts as forming a definition of leadership is that it is a social process, inter-subjectively created and enacted across the team, not simply focused on the individual leader.

Regarding the context of this study's scope, there are few studies within the context of danger (Burke *et al*, 2018); consequently, definitions of leadership in this context are also scarce. Adopting an overarching leadership definition is difficult based on the few studies investigating the context. To build a working definition, it is necessary to address studies that deviate from conventional contexts and focus on situations that are not perceived as normal. An example of this is the financial crisis, or 'credit crunch' of 2008 (McConnell, 2011). Studies of crisis define leadership as managing uncertainty, ambiguity, and levels of complexity, as variable factors that one can't control or eliminate.

Baran and Scott (2010) extend this definition of leadership. They adopt a complexity leadership lens, adding in the element of danger, in the context of the US fire department responding to 911 calls. Their research specifically discusses the concept of organising ambiguity, which is prompted by dangerous situations and its associated complexities. Their focus was on 'near-miss' reports from firefighters; specifically, the unexpected elements of the context that can suddenly pose danger. An example of this is where firefighters were sure a floor was safe to walk on, but where the only means of ascertaining this, and therefore managing the ambiguity, was to physically walk on the floor.

Litchenstein *et al* (2006, p2) discuss leadership as operating within complexity, stating that "Leadership theory must transition to new perspectives that account for the complex adaptive needs of organizations". They propose that leadership is a dynamic and interactive process, is contextually driven and responds to the adaptive needs and requirements of an organisation.

The definition adopted in this study utilises the key words that currently appear in definitions where the context of leadership is highly complex, the situation is ambiguous and requires an adaptive response, which may differ from procedure or a normal anticipated response.

Based on this discussion and drawing from the current theoretical literature, the definition of leadership that is adopted for this study is: *The social process of intra-personal and intra-group interaction to achieve goals, by reducing contextual ambiguity and generating adaptive outcomes* (A synthesis of Lichtenstein *et al*, 2006; Baran & Scott, 2010; Burke *et al*, 2018; Bardis, 1978; Eberly *et al*, 2013). This view sets the unit of analysis at the team level. As this study focuses on the relational dynamic, viewing leadership as co-constructed and inter-subjectively enacted, individual behaviours and traits are excluded from the concept of leadership processes. This aligns with the social constructionist approach of this study.

2.3.2 Team cognition

Recent researchers of team leadership have given more attention to the processes of leader cognition in comparison to social processes (Partlow *et al*, 2014; Marcy & Mumford 2010; Mumford, 2007; Combe & Carrington, 2015). This study focuses on teams and does not focus on individual leader cognitive processes. This study does however, include the concept of team cognition, as the unit of analysis is the team. The current status of the research that addresses processes is predominantly quantitative in nature, focusing on the interpersonal process of leader cognition (Partlow *et al*, 2015; Mumford, Watts & Partlow, 2015; Vessey, Barrett & Mumford, 2011; Marcy & Mumford, 2010). As a result, there is little focus into the lived experiences of those working in dangerous contexts; their insights of leading and sense making. These aspects are important to inform constructions of leadership and the enactment of leadership processes so that teams can learn from these experiences and insights.

What is unclear in the literature are the leadership processes employed during dangerous incidents. Campbell *et al* (2010) posed the query; *does the dangerous environment warrant a different type or kind of leadership*? Studies of leadership in dangerous contexts have not identified the processes that appear in these contexts in a way that forms a narrative of leadership through an incident. An example that demonstrates this is the case of Mr de Menezes in 2005, who was shot by an armed response police officer on the London underground and was later found to be innocent. The incident investigation report concluded how officers' shared sense making within the situation had collapsed earlier in the day as more and more information was interpreted by the team incorrectly. Yet the comprehension of this lack of *'*sense making', a process of generating knowledge and understanding a situation from the social interactions between team members, was not visible until the moment one officer fired the shot; the moment where it was too late to rectify the response.

The officers had experienced what was described as a "new organisational routine" (Colville *et al*, 2013, p.1201), implemented the day before, in preparation for events of that nature and had not enacted this new series of processes and procedures before. This incident is a useful example of how leadership influences teams facing disruption through lack of information, time and clear decisions and this incident is addressed further on in this chapter when the enactment of leadership in dangerous contexts is discussed.

Drawing from the example of Mr de Menezes in 2005, the influence of leaders and their thought processes are a primary source of data. However, research has tended to focus on the individual cognitions of leaders; for example, mental models, leader's vision formation and forecasting models (Marcy & Mumford, 2010; Partlow *et al*, 2015). Less attention

appears to have been given to the generation of meaning amongst groups and the influence this has on the current approaches to leadership and therefore team adaptive responses. In contrast, leader cognition research is useful to understand as its relevance is dependent on the approach that individual studies take to sense making and how the authors conceptualise and adopt the term sense making; for example, researchers identify sense making as either an individual or collective process. As a result, there has been some interest in "how leaders think" about disruptive and crisis situations (Mumford, Friedrich, Caughron & Byrne, 2007). Later in the chapter (section 2.3.11), sense making is addressed as a social, collective leadership process.

2.3.3 Process of reviewing the leadership literature

The approach adopted to identify leadership processes in the dangerous context literature was to identify general team leadership literature and extract these processes. The basis of the processes used for this study is Morgeson *et al* (2010), who provided a synthesis of the literature, identifying functions of leadership, albeit their conceptual paper was not relating to teams working in dangerous contexts. The processes were grouped into two phases of enactment, 'transition' and 'action' based leadership functions. I reviewed the current literature and mapped leadership processes against Morgeson *et al*'s (2010) typology of leadership functions, with the purpose of gaining a holistic picture of the processes discussed in the literature.

The purpose of this study's review was not to exhaust team leadership literature but to provide a mechanism that would filter studies from the vast amount of team leadership literature and enable comparison between the amount and type of leadership processes appearing in conventional context studies against those appearing in dangerous context studies. All leadership process definitions in each study were also collated using this method, in order to inform this study's leadership process definitions in the context of danger.

Categorisation of the studies was undertaken as both team type: conventional, emergency response, or military; and context: military, emergency, emergency response, or multi-disciplinary. Leadership processes were then identified in extreme and dangerous context literature, including military studies and studies that discuss leadership in extreme environments, such as polar expeditions and mountaineering teams. Leadership processes were also identified from current emergency response literature such as studies by Baran and Scott (2010) and Weick (1993).

As the process map has deepened thematically and systematically, the researcher began to extract studies that matched the research boundaries, namely;

- Articles that address '*Dangerous Contexts'*,
- Articles that focus on leadership in teams, whether as directive leadership or shared leadership,
- Articles that discuss leadership processes or functions.

These articles were then grouped as either empirical studies or conceptual articles and the definitions of the processes identified in the studies were extracted. The researcher therefore had two process maps, one for leadership in all contexts and one for leadership in teams in dangerous contexts, which is discussed later in the chapter.

To demonstrate the current status of the literature in dangerous or emergency contexts, table 2.1 below shows a summary of the conceptual articles and empirical studies that appear in the literature. The criteria for inclusion into this table was that the article would be in the context of danger or extreme environments (a range of team types was included, such as military or multi-disciplinary crisis response teams) and/or was focused on emergency response teams.

Table 2.1 - Summary of leadership and team leadership literature in dangerous or emergency contexts

Author	Year	Type	Focus	Team type	Context
Burke et al	2018	Empirical	Team leadership	Dangerous & Extreme teams	Extreme environments
Uitdewilligen & Waller	2018	Empirical	Information sharing and decision making	Multidisciplinary teams	Emergency & Crisis situations
Schmutz et al	2018	Empirical	Team reflexivity	Dangerous & Extreme Action Teams	Emergency Response
Ramthun & Matkin	2014	Empirical	Shared Leadership	Dangerous Military	Military
Veestraeten et al	2014	Empirical	Team Learning	Dangerous Military	Military
Colville, Pye & Carter	2013	Empirical	Leadership/ Sense making	Dangerous & Complex teams	Emergency Response
Wolbers & Boersma	2013	Empirical	Collective sense making	Dangerous ERT	Emergency response
Laurence	2011	Conceptual	Leadership Complexity & Culture	Dangerous Military	Military
Campbell et al	2010	Conceptual	Leadership Theory	Dangerous & Military	Emergency Response & Military
Baran & Scott	2010	Empirical	Leadership	Dangerous	Emergency Response
Fisher et al	2010	Empirical	Leadership competencies	Dangerous	Military
Hannah et al	2010	Conceptual	Leadership Theory	Dangerous Military	Military
Samuels et al	2010	Empirical	Leadership Theory	Dangerous Military	Military
Sweeney	2010	Empirical	Team Trust	Dangerous Military	Military
Yamarinno et al	2010	Conceptual	Team Dynamics	Dangerous Military	Military
Hannah et al	2009	Conceptual	Leadership framework	Dangerous/ All	All
Klein et al	2006	Empirical	Leadership/Leader	Extreme Action Teams	Emergency/ trauma
Kayes	2004	Empirical	Team leadership	Dangerous	Extreme environment
Weick	1995	Empirical	Collapse of sense making	Dangerous	Emergency response

Nineteen studies were identified, which fulfilled the criteria of focusing on either dangerous environments or emergency response teams. Ten of these studies were based on or included the military context, which, as earlier established is a dangerous context for teams, but with substantial differences regarding the nature of the danger facing teams. There are thirteen empirical studies in military, emergency and crisis response involving

emergency services. Of the thirteen studies, there are only four empirical studies that focus on emergency response in the context of danger, thus providing significant limitation to current understanding in this contextual and theoretical area.

This study focuses on the context of public sector emergency response in dangerous environments. As mentioned earlier, there is acknowledgement that there is overlap in the way emergency response teams and the military operate, and how teams may respond in the face of life-threatening situations, but the differences are significant enough to warrant specific focus only on emergency response teams. Campbell *et al* (2010, p.S3) acknowledge in support of this view that each type of dangerous or extreme environment makes "distinctive demands" on leadership and each context will therefore require distinctive leadership approaches and processes.

There have been two special issues of academic journals containing empirical and conceptual accounts of dangerous and extreme contexts. The first set of studies appear in a special issue by the Journal of Military Psychology (2010) focusing primarily on military contexts (Yamarinno *et al*, 2010; Sweeney, 2010; Samuels *et al*, 2010; Fisher *et al*, 2010 and Hannah *et al*, 2010). These studies address leadership competencies and processes such as team trust and shared leadership and team learning. The second set of studies addressed extreme and emergency contexts more relevant to this study because of their non-military focus, appearing in the Journal of Organisational Behaviour (Burke *et al*, 2018; Uitdewilligen & Waller, 2018 & Schmutz *et al*, 2018).

The most recent study specifically in dangerous contexts (Burke *et al*, 2018) highlights extreme contexts such as polar expeditions, mountain climbing, such as Himalayan expeditions, and ocean sailing, including the three capes. These are considered to be the most dangerous stretches of ocean sailing due to the size of waves and wind speed. All three expedition types are based on teams striving to succeed in highly dangerous and volatile conditions. These are very recent studies and important to address as they provide justification for further empirical work to be conducted in dangerous and dynamic environments, to enhance theoretical understanding (Burke *et al*, 2018).

All processes identified in successive empirical studies or conceptual articles reviewed were mapped against existing processes from those previously reviewed. If the process did not appear, a new process was created. This chosen approach was underpinned by a methodology of progressive focusing (Sinkovics & Alfoldi, 2012). The process of mapping leadership processes in the literature is further discussed during chapter three-Methodology.

Nine articles focusing on emergency response teams appear in the literature reviewed, of which only four contain the criteria of being focused on emergency response teams that were facing danger to themselves. Table 2.2 below provides a summary of these studies.

Table 2.2 – Summary of empirical studies conducted in Emergency Response Team context

Research	Topic	Context	Epistemology	Methodology	Findings
Information Management during Emergency Response – Wolbers & Kees Boersma (2013) - multiple incident dates -results first published in Stuurman (2011).	Development of Collective Sense Making from information – Common Operational Picture – Trading Zone	Disaster Exercises (Netherlands) Analysis of Collective Sense Making processes – Multi – organisational context	Ethnographic Study – Multi Qualitative Methods	1. Field work – Observation of lead emergency officers in command centres - 10 exercises - recorded interaction 2. Recorded 10 conversations 3. Interviewed 8 participants – based on recordings asked to reflect on the collaboration, communication, their actions and decisions 4. Document Analysis for broader operational context 5. Focus on 3 narratives for analysis	The methods adopted revealed first responder actions and interactions in the context of their professional routines. The findings demonstrate that 'it is not just the information that is important for coordination but the way in which the information is interpreted and subsequently guides the operations of the emergency responders' (p195). The study provided support for the metaphor 'trading zone' for information through 2 concepts – Actionable Knowledge and Reflexivity in action (p196). Issues arising; 1. Limited understanding in the trading zone of the consequences of information for the action and needs of other professionals 2. Often a dominant narrative which does not allow other interpretations to develop

Table 2.2 - Continued

Research	Topic	Context	Epistemology	Methodology	Findings
Organising Ambiguity – A grounded theory of leadership and sense making within dangerous contexts – Baran & Scott (2010) – multiple incident dates	Identification of Leadership processes in Dangerous contexts	Firefighters – Large metropolitan unit – South eastern United States	Grounded theory/approach – Qualitative – Inductive- coding strategy of reports	1. Participant Observation visits – observe in natural settings to assist the analysis of documents (40 hours) – Field notes 2. Ethnographic style interviews 3. Analysis of near miss reports (documents)	The results of the methodological coding strategy revealed 19 lower order categories of leadership. As an abstraction of this data, this collapsed into 8 secondary categories. Finally, 3 high order categories and leadership processes were proposed as enabling the organisation of ambiguity – Framing, Heedful Interrelating and Adjusting. The contribution of the study is that they identify "'a set of interrelated processes that help advance theory on leadership within dangerous contexts...processes that encourage collective sense making and ambiguity reduction" (p.64)
Organising to counter terrorism- Sense making amidst dynamic complexity – Colville, Pye & Carter (2013) –	Officers Sense making in highly complex situations	Shooting of Jean Charles de Menzes – London Underground – Independent Police Complaints Commission (IPCC)	Social Constructionist – Qualitative Case analysis	Incident report documents were analysed to provide data for this police report. These were collected as part of the investigation at the time of the incident. 1. Coding was initially done by 3 researchers independently. 2. 3rd Author (experienced police officer) developed the case and further cluster themes developed 3. Analysis of the relationship between themes	Analysis revealed that the police in this context, introduced a novel routine to respond to a novel situation. Doing so at the time relied heavily on officers interpreting the routine in the same way. However, "an extant frame does not necessarily break" (p.1213) with impact on the way people relate to the cues and frames they identify. The issue in this incident was the number of plausible interpretations for the novel situation. The focus of this case analysis was to provide lessons learnt during the incident and in the theorising of the data to inform future organisations working in these dynamic and fast paced contexts.

Research	Topic	Context	Epistemology	Methodology	Findings
incident date 22nd July 2005					
The collapse of sense making – Mann Gulch Weick (1993) – incident date August 5th 1949	A review and analysis of the Mann Gulch disaster	Firefighting teams	Social Constructionist	Review of documentation of inquiry and interviews of survivors as retrospective accounts.	Mann Gulch event was a collapse of Sense-Making; and fundamentally, a failure of leadership. The analysis that Weick (1993) conducted allows some important insight into the way's groups operate, the relationships between group members and the interplay between and social aspect of roles and role structure (Weick, 1993, p.636) or lack thereof. The nature of the context demonstrates a potential for the level of complexity. The amount and intensity of complexities increased as danger became more apparent and a direct threat to the team.

Referencing and analysing the studies identified in the above summary table, the next section sets out to frame how danger exerts influences on leadership, the processes of leadership and challenges understandings of leadership in comparison to other leadership concepts occurring in literature.

2.3.4 The influence of danger on leadership and team leadership processes

An account of the disaster of Mann Gulch follows and is discussed in order to provide an illustrative example to support understanding of the types of contingencies, attenuators and intensifiers present in the dangers faced by emergency response teams, in relation to Hannah *et al*'s (2009) typology of extreme contexts. The account is of the firefighting team that were dropped into Mann Gulch in 1949 to put out a forest fire, a fire that was common and routine as part of the job. This account is important as its subsequent analysis by Weick (1993) in a seminal article on sense-making prompted further investigation of the way leadership is enacted in teams facing these kinds of dangers. "Sense Making emphasises that people try to make things rationally accountable to themselves and others" (Weick,1993, p.635).

A storm passed over Mann Gulch at 4pm, August 4th, 1949. It is believed that lightning s*et al*ight a dead tree. At 2.30pm on August 5th, a team of sixteen 'smokejumpers' (Weick, 1993, p.628) flew out from Missoula, Montana in a C-47 transport aircraft in order to tackle the fire. At the time of Jump, this was a C class fire which did not pose a significant threat based on size and perceived extremity from the air. There were high winds and one of this crew suffered sickness on the aircraft and did not jump. They landed on the south side of Mann Gulch at 4.10pm along with their cargo. The parachute that was attached to their radio and therefore a vital tool of communication failed to open, and the radio was damaged. Ranger Jim Harrison had been fighting the fire alone for 4 hours when the group met up with him. They collected their supplies and ate supper. At 5.10pm the group began to make their way to the south side of the gulch in order to surround the fire. As leaders of the group, Wagner Dodge and Jim Harrison expressed concern that the thick forest that they landed near may be a 'death trap' (p.628) and instructed William Hellman to take the group across to the north side and work their way toward the river along the side of the hill. Dodge and Harrison quickly ate and re-joined the group at 5.40pm. At the head of the line, Dodge observed the flames to his left, on the south slope.

"*Then Dodge saw it*" (Weick, 1993, p.629). 200 yards ahead, the fire had crossed the Gulch and was heading straight for them. The flames were 30 feet high and travelling at 610 feet per minute. Dodge turned the group around and instructed

they headed for the ridge at the top of the hill. Moving through high grass the flames were catching up to them very quickly. Dodge yelled at the group to '*drop their tools'* (p.629) and watched as he then lit a fire in front of them and ordered them to lie down in the area it had burned (the ashes). None of the team followed this instruction and they all ran for the top of the hill. As a result of these actions, Dodge lived as he lay in the ashes of his '*escape fire'* (p.629), Two men, Sallee and Rumsey made it through a crevice in the rocks on the ridge unburned but the rest of the group all perished either at the scene or shortly after.

13 people died in this disaster, recorded at the time of 5.56pm which was the time that the hands on Harrison's watch melted. Sallee and Dodge walked into the Meriweather ranger station at 8.50pm to raise the alarm for help. The dead were found in a radius of 100 by 300 yards and it took 450 men five further days to get the fire under control. The Forest Service enquiry concluded that "there is no evidence of disregard by those responsible for the jumper crew of the elements of risk which they are expected to take into account in placing jumper crews on fire" (p.629). Despite this, the enquiry concluded that the group would have lived if they had followed Dodge's instruction and lay down in the ashes.

Weick (1993) conducted a re-analysis of the evidence presented initially by Norman McClean (1992) in this disaster, with the purpose of illustrating two areas: why organisations unravel and as a result, how can organisations be resilient? Although discussions about resilience specifically are not the focus of this study, this account is useful to this study in the following ways. Firstly, Weick (1993) concluded that the Mann Gulch event was a collapse of Sense-Making; and fundamentally, a failure of leadership. Although this study does not seek to answer the questions posed by Weick, the analysis he conducted allows some important insight into the ways groups operate, the relationships between group members and the interplay between and relational aspect of roles and role structure or lack thereof. Secondly, the nature of the context demonstrates a potential for the level of complexity. Essentially the amount and intensity of complexities increased as danger became more apparent and a direct threat to the team. This discussion starts by acknowledging that during the course of the afternoon events, several important decisions were made by the leader.

a. There was a 10:00 fire, meaning they would have it under control by 10am the next morning. The jump aircraft pilot had provided this assessment of the fire from above before the jump.
b. The group carried on without radios and therefore cut off from essential communication between themselves to services outside the Gulch (such as helicopter pilots or other emergency services).

c. The leader turned the group around and headed away from the river, which he had previously told the group was safe from the fire.

d. He lit an escape fire and instructed the group members to lie in the ashes

This account of Mann Gulch demonstrates a clear disruption to leadership and leadership processes within the group. There was significant disruption to the processes enabling the team to understand their surroundings, to understand the danger they were in (Holt & Cornelissen, 2013) and how to respond to the dynamic changing environment.

At the start of the incident, the information that was received by the team was not questioned or challenged, possibly as forest fires were a common or routine occurrence. However, this is also likely because there was trust between the team and the leader. The team trusted their leader to assess the situation and direct them as he normally would. They trusted his and their own experiences of how the job would go, having lunch whilst the fire raged on. When the unthinkable and unexpected happened, at the moment of crisis, when the team realised that they were not going to outrun the fire and were in mortal danger, the trust in the leader failed and they ran.

Although the leader had conducted a risk assessment of the situation, a lack of communication to the team based on time led to a lack of influence from leadership processes such as decision making. This example and analysis highlights issues of a breakdown in trust in leadership at the moment of facing danger suggesting that despite close working relationships and perceived trust, danger has a significant influence on the ability of teams to produce effective adaptive responses. Weick (1993) argues that the group's process of decision making, and loss of role system are important contributing factors to the problems faced at Mann Gulch. The structure included two leaders, one second in command and the rest as crew members. In the moment of crisis, when their leader (Dodge) yelled for them to put down their tools, this was the moment when it was effectively too late to do anything else to save themselves.

This study focuses on team enactment of leadership and does not focus on individual leaders and followers. Drawing from the Mann Gulch example, it is important to recognise the necessity of the leader role, and the influence that leaders have on situations which are accompanied by high levels of ambiguity. The next section discusses the role of the leader in dangerous contexts.

2.3.5 The role of the leader in dangerous contexts

The role of the leader in dangerous contexts is important to address as the leader or leaders are the people that are looked to and relied upon in order to provide the answers or solutions to problems. Focusing on the individual leader, Mumford *et al* (2007, p.521).

states that "leadership makes a difference under conditions of crisis". Fisher *et al*, (2010) offer a differing perspective of leadership in extreme contexts, describing it as leadership 'in extremis'. Their study is focused in a military context. In-Extremis leadership is defined as "giving purpose, motivation and direction to people when there is eminent physical danger, and where followers believe that leader behaviour will influence their physical well-being or survival" (Kolditz & Brazil, 2005, p.347). Military combat leadership literature suggests that in an In-extremis context, leaders need to adapt to the "environmental, physiological, cognitive and emotional stressors experienced in a life-threatening environment" (Fisher *et al*, 2010, p.91). Dangerous contexts can draw from these definitions for leadership in reference to threat or danger to life.

Another perspective on leadership in dangerous contexts, but focusing more on the leader than leadership, is that the leader is often the person who is deemed to have the most *'expertise'* (Nelson *et al*, 2010) and therefore is looked to in times of uncertainty to provide expertise in order to resolve a situation, or "know what to do and how to do it" (White & Shullman, 2010, p.96). Hannah *et al* (2009) raise the question of the influence of leadership in extreme contexts suggesting from their research that leaders can influence the group positively by increasing confidence levels or attenuating stress levels. Equally, leader errors or omissions can negatively influence the outcome and actions in response to the dangerous context (Dynes, 1974).

2.3.6 Social processes of leadership in the literature

This section explores the social leadership processes extracted from analysis of studies investigating leadership in dangerous contexts. Drawing from the key studies in emergency response teams that have been identified, the social processes of leadership are shown. Following this, the social processes of leadership are discussed in detail. Within the discussion of each process, the positive and negative influences of the context on each process will be identified.

In chapter one (section 1.2), this study highlighted what was meant by the term social leadership processes. However, it is important to clarify further how social leadership processes are understood for the purposes of this study. This understanding draws from conventional leadership theory to identify existing leadership processes and this is discussed below. The processes extracted from key studies as they appear in dangerous contexts are analysed in depth, with specific focus on the influence of danger on these processes.

2.3.7 Understanding social leadership processes

In this section, constructs of social leadership processes will be addressed and the definition of leadership processes is constructed for this study. Previous discussion of leadership identifies it as a social process (Day et al (2014), Litchenstein *et al* (2006), Uhl-bien (2006)) and the following section builds on this understanding by clarifying what is meant by social leadership processes and how they appear in conventional leadership literature and dangerous context literature.

To begin building a definition for this study, it is necessary to identify previous studies examining team leadership process and the address the terminology used in the current literature. Morgeson *et al* (2010) adopts a functional approach to team leadership processes. Leadership functions appears to be a term, which is often used interchangeably with leadership processes in current literature. For example, sense making is conceptualised as a social process (Baran and Scott, 2010) in a study of near-miss firefighter situational reports in a New York fire station. However, the functions defined by Morgeson *et al* (2010) are the same social interactions taking place as Baran and Scott's (2010) processes. In a further example, Hannah and Matthews (2010) discuss goal generation as a process of team leadership in dangerous military contexts, similar to "establishing expectations and goals" in Morgeson *et al*'s (2010) leadership functions.

Fleishman (1991) identifies leadership as influencing effective team performance and cohesion, specifically through the development of (i) team cognitive processes such as sense making, planning, solving problems and motivating team members, (ii) impacting team affecting processes, such as recruitment, monitoring personnel and resources and team motivational states are affected by processes such as planning, co-ordinating, directing and developing. Barnett and McCormick (2012) argue that this is not for the leader alone to accomplish but for the team, through shared or distributed leadership.

Yammarino *et al* (2010) identify processes of leadership in military contexts at the individual, dyadic and team levels. At team level, social processes such as "communication, face to face interaction and collaboration" were identified. These are discussed in relation to identifying shared cognitive structures with a view to "reduce variance in team performance, enhance cohesiveness, build positive team climate and promote successful goal accomplishment" (p.27). Yammarino *et al* (2010) demonstrate in their conceptual work how team processes can be differentiated from leadership functions. Social processes in this example, are enacted and are leadership enablers of leadership functions, in order to produce adaptive outcomes, such as a more cohesive team. Morgeson *et al* (2010) conceptualise the latter as a function of leadership and appears to be leader centric. The functions presented by Morgeson *et al* (2010) are broad

in nature. This has created calls for the need of researchers to focus on "the contextual influences that enhance the efficacy of some leadership actions and diminish others" (Zaccaro *et al.*, 2001, p.455).

This study and its processes definition draws from the definition of leadership adopted, previous studies of leadership process and a synthesis of leadership functions in conventional leadership literature, conducted by Morgeson *et al* (2010), who provided a taxonomy of leadership functions shown as figure 2.2 below. They developed fifteen leadership functions categorised as Transition and Action phases of enactment. The phases of enactment were adopted by this study as the basis to map the occurrences of processes in conventional and dangerous context literature. It is essential to highlight that processes identified in the literature were added as the review developed. The phases identified by Morgeson *et al* (2010) are discussed further on in this section.

Figure 2.2 – Taxonomy of leadership functions (Morgeson *et al*, 2010, p.10)

	Transition Phase	Action Phase
Leadership Functions	Compose team	Monitor team
	Define mission	Manage team boundaries
	Establish expectations and goals	Challenge team
	Structure and plan	Perform team task
	Train and develop team	Solve problems
	Sense making	Provide resources
	Provide feedback	Encourage team self-management
		Support social climate

Similar to this study, Burke *et al* (2018) explore extreme teams and adopt the processes and phases by Morgeson *et al* (2010) to discuss team leadership in extreme team environments. Their study, however, has several limitations. Firstly, they employed historiometry, examining archival documentation of the interactions of team members. This methodological approach, using secondary sources limits their insights into processes of leadership and the reasoning behind decision making processes by team members. Secondly, throughout their study and similar to Morgeson *et al* (2010), the focus is on the leader enacting leadership in the teams and the processes are viewed from a leader-centric perspective.

In contrast, this study views leadership as a social process and therefore these functions of leadership such as "*defining mission*" and "*training and developing team*" are social and interactional (Weick (1993), Uhl-Bien (2006) processes between team members and the leader, rather than leader/follower processes. For the purposes of this research leadership functions and processes are not used interchangeably; instead, this study conceptualises functions as social processes of leadership and based on the discussion above, the definition of leadership processes that is adopted for this study is: *Structured interactions generating outcomes adaptive to need. These include, directive/action-based, and inter-personal/social interactions, such as recruiting, planning, visioning, directing, sense-making, motivating, coordinating, monitoring and enabling* (A synthesis of Morgeson *et al*, 2010; Fleishman *et al*, 1991; Weick, 1993; Day *et al*, 2014; Lichtenstein *et al*, 2006; Uhl-bien, 2006; Barnett & McCormick, 2012).

Morgeson *et al* (2010) identifies two phases in their functional leadership typology: transition and action phases of enacting processes. The transition phase is described as a "period of time" where the teams' attention is primarily on formulating a strategy and mission planning (Burke *et al*, 2018). The action phase is again around a period of time when the focus is on a strategy to achieve their goals (Burke *et al*, 2018). Hannah *et al* (2009) previously introduced the concept of phases of an extreme incident: preparation stage, in-situ stage and post event stage. They state the demands on leadership and the quality of leadership will change with different stages of an incident. This is based on previous experience and exposure to incidents as planning and preparedness and levels of extremity within the context, motivate action. This supports Campbell *et al* (2010), who stated that the changing context means that the leadership will change to respond to the new context.

As previously stated, what is not clear in the review of literature addressing leadership processes is what happens to leadership when the context is dangerous. More specifically, it is important to understand how leadership will be enacted to resolve a situation with high levels of ambiguity and uncertainty. Hannah *et al* (2009) suggest that leadership may become more directive based on the level of extremity perceived, acknowledging that the answer may be "contingent" (p.905) on the context and suggesting the usefulness of further research on exploring the change in people as they move in and out of such situations.

Campbell *et al* (2010, p.6) build on this, posing the question *"what does danger do to leadership?"* However, they address this question from a physical science perspective, as opposed to a social science perspective, which limits the understanding of the influence of context on processes of leadership. The issue that they highlight is that identification of danger is often only at the exact point of crisis, where the outcome of decisions made in

that moment could be the difference between life and death. Hannah *et al*, (2009) and Hannah and Matthews (2010), primarily focusing on military studies, build on this concept and propose that processes are not static within one stage of an incident, and that a process may appear at a different stage. However, there is a lack of empirical studies investigating the differing stages within an incident. Adopting an approach of analysing processes that appear at different stages of an incident would increase understanding of leadership enacted at the point of danger. This study aims to address this.

The mapping of processes in dangerous contexts demonstrated that studies often mention a process in a conceptual paper, but do not discuss its meaning through empirical research. This limited discussion in the literature means that there is still little understanding of what and how social processes for leadership are enacted in different dangerous contexts. As previously established, leadership will change with the demands of the context and yet there remains limited understanding of how danger influences processes of leadership. The processes that appear in emergency response teams are now discussed.

2.3.8 Leadership approaches and processes in Emergency Response Teams

This section will discuss adaptive leadership, complexity leadership and shared leadership as theoretical approaches to leadership which appear in current emergency response team literature. These leadership approaches will provide a lens to navigate through the processes of leadership, showing how leadership is enacted, and how the processes influence leadership in the context of danger.

First, the context is re-addressed to clarify the purpose of discussing several leadership theories. This study of leadership is inherently embedded in the dangerous context and contextualising leadership in this way necessitates adopting more than one leadership theory (Osborn *et al*, 2002). For example, empirical studies often adopt one overarching leadership theory to define their research parameters. To demonstrate this, Baran and Scott (2010) adopt complexity leadership theory (which is discussed in the following sections) as a basis to frame their approach. Osborn (2002) argues that this poses a limitation, in that adopting one theory may inhibit the researcher from seeing all relevant features of leadership enacted.

An example of this is Klein *et al* (2006). They conducted a study of extreme action teams working in trauma departments. Their study is based on emergency response and although their study was not one of the four empirical studies directly germane to this study, as the criterion of working in danger was not present, the conceptualisation of leadership contributes to understanding leadership in complex and urgent temporal team contexts. Their study initially draws on four types or styles of leadership: contingent,

functional, shared and flexible. Despite not investigating this in the context of danger, the nature of the team dealing with trauma incidents posed similar unresolved questions to this study; *what does leadership look like? How is leadership enacted and by whom?* (Klein *et al*, 2006, p.593). In response to these questions, this study identifies the context specific influence on leadership and therefore, three leadership approaches are discussed.

A review of processes that appear in current dangerous context literature (including military studies), indicates that in comparison to normal/conventional contexts (Appendix A) in literature, there are fewer leadership processes appearing in dangerous contexts (Appendix B). Appendix A and B are tables summarising the processes that have been extracted from the processes in the literature. Definitions have been provided when they have been discussed in detail.

The summary table below narrows the scope of the processes further and identifies the leadership processes appearing specifically in emergency response team (ERT) literature. Table 2.3 provides a useful comparison with appendix B, showing the progressive focusing (Sinkovics and Alfoldi, 2012) of processes appearing in the emergency response team literature and overall in the dangerous context literature. Sub-processes appearing in the literature are also identified along with definitions of the processes from the literature.

Table 2.3 – Summary of leadership processes in ERT literature (Adapted from Morgeson (2010)

Process	Sub-processes	Definition
Define Mission	Ensures a clear team mission/purpose and direction to achieve goals	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*
Train and Develop Team	Ensures new team members are trained to carry out their duties; including task specific instruction	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*
Sense Making	Facilitates team understanding of events/situations and their implications	Leader sense making involves identifying important environmental events, interpreting these events given the team's performance situation, and offering this interpretation to the team (Zaccaro *et al*, 2001) (Morgeson, 2005)
	Framing/ help the team make sense of ambiguity	Use of formal and informal authority to influence adherence to policies and procedures, encouraging vigilance as a social norm and properly directing actions of those involved in the situation (Baran & Scott, 2010)
	Heedful interrelating/collective sense making	Personally enacting examples of mindful behaviour
		Believing in the reliability of co-workers and depending upon them when necessary
		Reducing ambiguity through behaving in accordance with expected roles and using the expected division of labour to anticipate others' behaviour
		Personally enacting examples of mindful behaviour (Baran & Scott, 2010)
		Collective mind is conceptualised as a pattern of heedful interrelations of actors in a social system. Actors in the system construct their actions (contributions), understanding that the system consists of connected actions by themselves and others(representation) and interrelate their actions within the system (subordination)" (Weick & Roberts, 1993)
	Adjusting/adaptability	Maintaining cognizance of surroundings and the environment

		Rapidly adjusting behaviour due to changing conditions (Baran & Scott, 2010)
Monitor Team	Monitors team and individual performance and interactions ensuring team stay focused on tasks/coordination	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*
Solve Problems	Implements or helps the team implement solutions to problems, task and interaction/inter-personal	Information use in problem solving refers to the use of information for problem identification, development of a plan, which coordinates team member expertise, and the communication of the plan to team members (Fleishman *et al.*, 1991), (Barnett & McCormick, 2012)
Support Social Climate	Responds promptly to team member needs or concerns	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*
	Develop trust in the leader	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*
	Develops a positive group culture/social cohesion	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*
	Team Cognition/Macro-Cognition/collective metacognition/mental models	Macro-cognition is "the interaction between intra-individual and inter-individual cognitive processes". Team-cognition is "knowledge representations and transformations on those representations which occur not only within an individual mind but also between individuals and between individuals and the environment" (Fiore *et al*, 2010, p.204) 2. A team mental model is the structural representation of an individual group members knowledge and level of expertise concerning key elements of his or her team environment...enabling them to anticipate one another's actions and coordinate these actions in complex, high pressure situations in which there is insufficient time for communication and planning". (McIntyre & Foti, 2013, p.47)

	Intragroup trust/shared belief	*Where the definition is blank, it is felt that the characteristics provide significant description and appropriation of meaning to the process/function stated*

This section identifies the collective processes of leadership mapped against current studies of emergency response teams, displayed in table 2.3 above. The following sections discuss these processes of leadership, beginning with adaptive leadership as both an approach to leadership and as a process of leadership appearing in dangerous context literature.

2.3.9 Adaptive leadership

Leadership, wherever it is positioned, either as the nominal leader of a team, or the team member temporarily adopting a leader role, must adapt responses to a multiplicity of complex and conflicting demands. Although this concept of adaption relates to individual cognition, it has direct influence to the social process of leadership in a team, especially where all the team members are similarly adapting and cognitively processing (Lord & Hall, 2005). Nelson *et al* (2010, p.131) support this by stating that there is a consensus in the literature that "adaptability has become increasingly important to leaders at all levels as the nature of work grows in complexity, change and ambiguity". As such, understanding the core principle of adaption, and how it relates to leadership as social processes, is a key element of understanding leadership in dangerous contexts.

Hannah *et al*, (2013) state that as a result, leaders must possess "a requisite level of complexity that allows them to perceive and assess these complex and changing dynamics" (p.393); manage complex and adaptive issues (Marion & Uhl- Bien, 2001) by adapting their cognitive capacities in decision making and adopt behaviours to produce an effective response.

Yammarino *et al* (2010, p.16), addressing leadership in the US Military, with a focus on working in dangerous contexts, support the view of a rapid changeable world requiring leaders to have the capacities to be adaptable. Norton (2010) concurs with the requirement for leaders to be able to adapt to today's working contexts and 'daunting challenges'. Norton (2010, p.143) places emphasis on the individual leader having "the skill to adjust, adapt and flex their response to unpredictable and potentially catastrophic changes". This suggests the necessity for leaders to be adaptable in a context where the outcome has the potential to be extreme or dangerous. The consequences of ineffective, non-adaptable leadership can have a catastrophic physical and psychological impact (Yammarino *et al*, 2010).

Yukl and Mahsud (2010) and Norton (2010), emphasise the importance of the leader and leadership adaptability in times of disruption. Kaiser and Overfield (2010) discuss the importance and necessity for leader adaptability with specific focus on disruptive contexts by stating "in the near-collapse of the global economy, crisis and disruptive change seem to be the order of the day. This puts a premium on nimble managers who can adapt on the fly". As a result, it has become essential to be able to adapt in response to change

(Dunford *et al* 2013; De Meuse *et al*, 2010; O'Connell, 2014; White & Shullman,2010; Kaiser & Overfield, 2010; Nelson, Zaccaro & Herman, 2010; Norton, 2010; Dai, DeMeuse & Tang, 2013).

The concept of adaptability is recognised in the literature by various interchangeable terms with the same meaning. Flexibility for example, Yukl and Mahsud (2010, p.81) state "Flexible and adaptive leadership involves changing behaviour in appropriate ways as the situation changes". Similarly, Dunford *et al* (2013, p.84) describe flexibility in its broadest term as "the capacity to respond to changing environmental conditions". The terms adaptability and flexibility have been recognised in Change Management literature (Good & Sharma, 2010). (Dunford *et al*, 2013) stated that since the early twentieth century "flexibility was identified as a key element of sustainable commercial enterprise" (Dunford *et al*, 2013, p.84). Table 2.4 below, sets out summarised criteria by which the term adaptability has been addressed in the literature.

Table 2.4 – Criteria for conceptualising adaptability

Criteria	Nelson et al (2010)	Good & Sharma (2010)	Yukl & Mahsud (2010)	Norton (2010)	Uhl-Bien et al (2007)	Kaiser & Overfield (2010)
Capability			x	x		
Cognitive Capacity				x	x	
Cognitive Function	x					
Behavioural Response	x		x		x	
Complex		x			x	
Multi-dimensional		x				
Skill				x		
Leadership Approach						
Leadership style						x
Leadership Process					x	
Social process					x	
Affective response	x					
Strategic			x			
Contextual			x	x	x	x
Interactive					x	
Informal					x	

Table 2.4 demonstrates there are numerous elements to adaptability, with definitions suggesting adaptive leaders modify their behavioural responses to meet the demands of situations (Yukl & Mahsud, 2010). Kaiser and Overfield (2010, p.106) adopted the definition of flexible and adaptive leadership as "adjusting one's leadership style, method or approach in response to different or changing contextual demands, in a way that facilitates group performance", thus responding to the contextual and social roles in which a leader must be effective. Colville *et al*, (2013) support this idea of adaption being an approach to leadership. Leader adaptation in contrast, offers a deeper level of focus on the cognitive dimension, defining adaption as "the level of reflection on, and restructuring of mental models based on changes in the internal and external environment" (Mumford & Marcy, 2010, p.12)*.

Similarly, Zahara and George (2002) draw from Cohen and Levinthal (1990), recognising the concept of absorptive capacity. This is the process whereby an individual is faced with new information as an external stimulus and seeks to assimilate the new stimulus as knowledge. This new knowledge is then used to produce innovative responses or innovative performance. This study acknowledges this concept in the wider literature of performance/innovation, and in the leadership context, as 'mental modelling' (Marcy & Mumford, 2010) and 'vision formation' (Partlow *et al*, 2015). This study does not, however, explore individual cognitive processes in depth, as the unit of analysis is the team and specifically social leadership processes.

Nelson *et al* (2010, p.132) view adaptability as a "functional change (cognitive, behavioural and/or affective), in response to actual or correctly anticipated alterations in environmental contingencies"*.* This view supports the notion that flexible leadership behaviour is the "product of cognitive and emotional or motivational factors" (Nelson, Zaccaro, & Herman, 2010, p.116) and this notion is strengthened by Norton (2010, p.144) who states that leader adaptability is referred to as the "the ability to think through the needs of the situation and design their behavioural response accordingly". A similar definition is proposed by Hannah *et al* (2013, p.393) who define adaptability as the "capacity of leaders to adjust their thoughts and behaviours to enact appropriate responses to novel, ill defined, changing and evolving decision making situations". Kaiser (2010, p.77) defines adaptability as a skill, suggesting that adapting is something that a person does to achieve a desired response.

There are several consistencies across the conceptualisation of adaptability/flexibility in the current literature. Consensus across the academic community on this topic is complexity and multi-dimensional (Good & Sharma, 2010) surrounding the exact meaning of the term *'*adaptability' as applied to Leadership. Therefore, few articles have attempted

to conceptually define the term, choosing instead to define how it is to be perceived contextually within a specific study.

The empirical and conceptual studies each conceptualise adaptive leadership differently and present a differing perspectives of how these contribute towards building a leader's adaptive capacity. Academic study on adaptability has been undertaken with focus on Adaptive leadership as a theory (Cojocar, 2008): Adaptable organisations, (Kaiser, 2010); Adaptive strategy (Heifetz & Laurie, 1998), studies in cognitive adaption (Taylor, 1983), Psychological and Neurological approaches to individual adaptation (Hannah, Balthazard, Waldman, Jennings, & Thatcher, 2013), Individual adaptive practices (Wamsler & Brink, 2014), development of leadership skill to respond to "unfamiliar situations'" (Lord & Hall, 2005, p.601), and aspects of change management (Glover *et al*, 2002; Raney, 2014). Studies that address adaptive leadership do so to enhance the agenda of leaders facing more complex challenges as they progress into more and more demanding roles (Norton, 2010).

Yukl and Mahsud (2010) address why adaptive leadership is important for organisational effectiveness, offering seven streams of theory and contexts in which leader adaptability can be conceptualised. They highlight the importance of developing a repertoire of behaviours, contingency theories, situational variables, essential roles and behaviours for different leadership roles and making transitions to different roles. It is the response of managers to immediate disruptions and crisis, threats and opportunities that require "adaptive strategic leadership" (p.32), stakeholder conflict and competing values. They focus firmly on the behavioural flexibilities of leaders in each context but also discuss the importance of disruptive events as being influential to the adaptive development of leaders.

Good and Sharma, (2010) link the concept of adaption with cognition by proposing a model describing the specific flexibilities they believe make up an individual's adaptive capacity. The most relevant to this research being the concept of Cognitive flexibility. Cognitive flexibility (Good and Sharma, 2010, p.162) draws from adaptive definitions when it is described as the "individual's ability to shift attention in order to respond to the environment in a new way". Cognitive flexibility is conceptualised by Good and Sharma (2010) stating that adaptability is required and demonstrated by leaders, as a response to an external event, indicating an adaptive outcome or behavioural response. They additionally propose a flexibility framework to enhance understanding of leader flexibility. Flexibilities identified include coping, explanatory, emotional, interpersonal, cognitive, learning, communication, gender and decision making.

These flexibilities were applied using a simplified cyclical three stage process framework. The three stages are:

- Perceiving; namely, noticing the cues in the environment, filtering the information in order to act more flexibly.

- Recognising; the demands of the situation and generation of options for response. Meaning that leaders need to create a personal repertoire of possible responses.

- Action; and deciding on the appropriate action in response to the context.

The framework proposed allows the researcher to address the flexibilities proposed, in the context of leadership. The cyclical nature of this process is that as the context unfolds and changes, an adaptive or flexible leader will vary their responses by appraising the cues, generating different options which will vary the actions taken (Good & Sharma, 2010).

White and Shullman (2010) focus on the leader's effectiveness and ability to deal with differing degrees of ambiguity. They suggest that measuring the skill of a leader's "aptitude for ambiguity" (p.94) should be considered for identifying high performers in leadership. Their qualitative research involving interviews with business executives identified eight clusters of 'enabling' behaviours and eight 'restrained' behaviours were also identified that leaders used to manage their uncertainty and "deny ambiguity" (Kaiser, 2010, p.78) . This study was limited as it focused purely on an individual level of analysis and ambiguity as a psychologically constructed phenomenon. Additionally, there is limited discussion addressing the influence of the behaviours identified in their study and how these enabled leaders to manage their feelings of uncertainty. Their study did not address in depth the influence of context, specifically contextual ambiguity and the variables that are within the context. This is an important study, however, as whilst it did not focus on behaviours it did provide insight into the current empirical research of leadership in contexts of uncertainty, and how adaptive responses are generated.

Similarly, Kaiser and Overfield's, (2010, p.106) study, offers a 'mastery of opposites' conceptualisation of leader effectiveness by quantifying the degree of flexibility. Their research assessed the ability to produce adaptive responses as "grounded in complexity theory of organisations and leader". Kaiser and Overfield (2010) proposed a model to assess flexibility as a set of opposing but complementary behaviours towards predicting leadership effectiveness, and cognitive adaptive processes to developing adaptive expertise in different contexts.

A common characteristic that emergency response teams in HROs share is the level of ambiguity that accompanies the events and situations that they routinely face. This study infers from the literature that complexity means situations that require working under

pressure over sustained periods of time with the potential for disastrous results if an error is made; situations that are a combination of ambiguous and often unplanned strands of activity that require intervention all at the same time. The next sub-section addresses the concept of Complexity Leadership Theory.

2.3.10 Complexity Leadership Theory

Stemming from work in the physical sciences, Complexity Leadership theory (CLT) (Uhl-Bien, Marion & McKelvey, 2007; Uhl-Bien & Marion, 2009; Schneider & Somers, 2006; DeRue, 2011) conceptualises leadership as a "complex, interactive dynamic from which adaptive outcomes emerge". CLT views leadership as a paradigm that focuses on "enabling the learning, creative and adaptive capacity of Complex adaptive systems" (Uhl-Bien, Marion & McKelvey, 2007, p.298). Viewing organisations as complex adaptive systems (CAS), CAS are emergent, interactive and dynamic (Uhl-Bien *et al*, 2007) and are analysed as "a complex interplay from which a collective impetus for action and change emerges when heterogeneous agents interact in networks in ways that produce new patterns of behaviour or new modes of operating" (Uhl-Bien *et al*, 2007, p.299).

Further to this, leaders are described as interacting but independent agents who are bonded by a common goal. Characteristically, CAS emerge naturally in social systems and are quickly able to problem solve, demonstrate creativity, learn and adapt.

The issues that leaders need to solve are inherently complex (Uhl-Bien, Marion & McKelvey, 2007; Uhl-Bien & Marion, 2009). The implication is that the leaders themselves must be able to operate at the requisite levels of complexity to deal with these issues. Complexity is based on the premise that leadership is conducted in a social system and that there are multiple streams of information, action and interaction occurring (Marion & Uhl-Bien, 2001) within this social system. Thus, the requirement for leader cognition is high and there is the potential for an overload in complexity to increase leader error in leader processing (Marcy & Mumford, 2010, p.2). The overarching framework of Complexity Leadership Theory is composed of three leadership functions:

The Administrative function refers to the actions of individuals in formal management positions and roles who are responsible for organising activities (or the bureaucratic function). This is a top down leadership structure, favouring authority. CLT in contrast to this function recommends that this authoritarian approach to leadership not be at the expense of encouraging creativity, learning and adaptability.

Adaptive Leadership in CLT is 'agentic' (Uhl-Bien & Marion,2009, p.638) in that it acknowledges that individuals have the capacity to make choices. Both individual and collective adaptive leadership is a "dynamic process in which agentic adaptive leaders

interact with and engage the potential of emergent complexity dynamics to produce adaptive change for an organisation" (Uhl-Bien & Marion, 2009, p.638).

Enabling Leadership refers to the role of managing the 'entanglement' (Uhl-Bien *et al*, 2007) between administrative and adaptive leadership in order to move the context to enable adaptive leadership to take place. This study recognises the components of this framework as contributions to enabling adaptive leadership.

Baran and Scott (2010) adopted a complexity approach to leadership, focusing on emergency response and conducted a study of near miss firefighting reports. As previously discussed, this study resulted in three overarching sense-making processes being identified: framing, heedful interrelating and adjusting. There is significant emphasis placed on the process of sense making. This is because five of the nine studies identified in dangerous contexts are grounded in sense making as either a lens to view the current organisational picture or have unpicked the processes of sense making as they apply to the dangerous context or emergency response team. A review of sense making as a concept and how the concept appears in these studies, would appear to provide a richer picture of team leadership processes than any other process at present and is discussed below.

2.3.11 Sense making processes

Sense making is a process that is commonly researched in the area of organisational change (Maitlis & Sonenshein, 2010; Regine & Lewin, 2000) where leaders are often required to understand the environment in order to adapt to its changing conditions. Disruptive contexts and situations such as organisational change prompt leaders' sense making and sense making processes are deemed of critical importance in disruptive settings, such as crises or dynamic and turbulent contexts (Yin & Jing, 2014; Maitlis, 2005), enabling leaders to rationalise and respond (Yin & Jing, 2014). Therefore, comprehensively reviewing the sense making literature in relation to this study is essential.

Social processes centre around the sense making capacities of teams facing ambiguity in dangerous contexts. For example, the process of decision making is influenced by the sense made of the context and immediate situational requirements.

In conceptualising sense making, elements can be taken from the descriptions of what triggers sense making and why sense needs to be made and to then align these elements with the descriptions of dangerous contexts. With research focusing on individual leader cognition in recent years, such as vision formation and causal analysis (Partlow *et al*, 2015; Marcy & Mumford, 2010), less attention has been given to the collective processes

of sense making and the interactive accounts of leaders in organisations. Weick (1993) argues that collective sense making is essential in turbulent contexts as it is necessary to maintain coherent understanding between individuals to prompt collective action.

In order to conceptualise sense making, it is necessary to examine the current definitions, challenge the different assumptions that these authors have made and use these to construct and justify a definition that is appropriate to this study. There are different ways to conceptualise sense making: as a process (Weick, 1995; Maitlis & Christianson, 2014, p. 57), lens (Sonenshein, 2009; Stensaker & Falkenberg, 2007; Vough, 2012), perspective (Sandberg & Tsoukas, 2015. P7) and others describe sense making using Weicks' (1995) seven sense making properties, highlighted in table 2.5 below.

Table 2.5 - Seven sense making properties (Weick, 1995, p.17).

1	**Grounded in identity construction**
2	It is retrospective
3	It is enactive of sensible environments
4	It is social
5	It is ongoing
6	It is focused on
7	Extracted cues and driven by plausibility rather than accuracy

This study briefly addresses these sense making properties and critically reviews these against the contextual nature of working in dangerous contexts. Table 2.6 below shows how sense making is conceptualised in current studies.

Table 2.6 - How sense making is contextualised in studies

Author	Term	Definition	Characteristics
Weick (1995, p.94)	Cognitive Process	*"Is a process through which "people frame experiences as being meaningful in some specific way"*	Retrospective Social Plausible
Maitlis & Christianson (2014, p.62)	Cognitive Process	*Sense making is the "process through which people work to understand issues or events that are novel, ambiguous or confusing, or in some way violate expectations"*	Individual
Balogun & Johnson (2004, p.524)	Conversational/ Narrative Process	A *"conversational and narrative process through which people create and maintain an intersubjective world"*	Shared meaning
Gephart et al (2010, p.284)	Social/ Discursive Process	*Sense Making has been defined as the "discursive process of constructing and interpreting the social world"*	Non-Verbal behaviour Shared meaning Interpretation
Sandberg & Tsoukas (2015, p.7)	Perspective	*A way of viewing the world through our lived experiences*	Frame of mind

Recent definitions adopt and support Weick's (1995) idea of sense making as a social process. Balogun and Johnson (2004, p.524) describe their view of sense making as a "conversational and narrative process through which people create and maintain an intersubjective world". Supporting this definition, Gephart *et al*, (2010, p.284-285) state that sense making is "an ongoing process that creates an intersubjective sense of shared meaning through conversation" but further the definition by stating that shared meaning is also made through non-verbal behaviour in settings where people "produce, negotiate and sustain a shared sense of meaning". The breadth of literature on sense making makes conceptualising the term difficult (Maitlis & Christianson, 2014; Sandberg & Tsoukas, 2015). Despite similarities, and that the definitions demonstrate an evolving understanding of the concept, there is no consensus, nor expectation of a single definition.

"*While the leadership role in sense making under crises is critical, leaders are likely to face two main types of problems common in organizations, which add to the difficulty of the task: ambiguity and uncertainty*" (Weick,1995, p.94)*.* Studies identify commonality of the presence of the term 'ambiguity' positioned in the crisis leadership literature. Scott &

Trethewey (2008, p.305) adopt the perspective that it is *"the presence of multiple, plausible interpretations of what is going on in the environment"*. This definition aligns with Baran and Scott (2010), from which this study also adopts its definition. An illustration of this is in the 1996 Mount Everest disaster, where it is acknowledged that contribution in part to the disaster was the multiple conflicting voices of the people on the climb that led to a breakdown in communication and disrupted the sense making processes of the team (Kayes, 2004).

Despite the extensive experience and training of the leader in this specific context, there was a "failure to appreciate ambiguity" (Kayes, 2004, p.91) and adapt to the contextual cues, such as mist and lack of daylight hours remaining, because they were overwhelmed by the complexity of the context and the multiple conflicting voices. This resulted in the death of eight climbers, including the two most experienced leaders. Kayes (2004) analysed this event in the form of a 'groupthink' exercise, which highlighted specific group based contextual and emotional variables and external situational variables that were unique to this event and that influenced the climbing leader's decision making in an extreme context. The study, however, was not clear in its analysis of the accounts they were able to review, about how events unfolded, or what contextual cues the climbers did recognise. Additionally, there was no indication from the study of the type of sense making that was dominant in this context, either collective or individual.

Referring to an earlier discussion, in the case of Mr de Menezes, Colville *et al* (2013), provide an example of contextual ambiguity, in the shooting of an innocent man on a London Underground by a Police Officer leading to tragic circumstances. Colville *et al* (2013) adopted a sense making lens to examine the contextual frames and cues of officers working on that day and impacted by the event. The officers experienced a new organisational routine that was implemented by a top down, directive approach and its purpose was to instruct officers what to do in situations of immediate threat or danger. Colville *et al* (2013, p.1203) pointed out that "lessening ambiguity implies that through action, you can learn to discount what might have been going on and reach an answer to the question as to what is going on". The presence of two 'routines' (p.1201) for the police officers resulted in the loss of effective framing of the situation and cue recognition and therefore their ability to adapt effectively to the context. The study by Colville *et al* (2013) supports the characteristics that are identified in HROs and appears to be a common limitation of an HRO. Policies and procedures that govern these organisations can restrict leader's understanding of the situation at hand which, as demonstrated by the Police Officers in the shooting of Mr de Menezes, can lead to disastrous errors.

Colville *et al*'s (2013) study was limited as the information was based on secondary accounts from one official government report into the event which was characterised as

ambiguous. Sense making in the study was about "connecting cues and frames to create an account of what is going on" (p.1205), but where the Police Officers' interpretations of these frames and cues was interrupted. Colville *et al* (2013, p.1205) state that in this instance*,* "novelty in the form of dynamic complexity was posing problems for such sense making". These studies and examples of extreme incidents demonstrate the influence of ambiguity within a context and raise questions about how leaders navigate in these ambiguous circumstances.

The next section attempts to address this question by defining, characterising and analysing sense making within extreme contexts. Sense making and collective sense making processes are highlighted alongside relevant empirical studies that have captured sense making processes in extreme contexts.

2.3.12 Shared sense making

The review of the literature reveals ontological differences in two aspects of sense making: where sense making takes place and when sense making occurs. Sense making has previously been acknowledged primarily as taking place as an individual process; a process that takes place cognitively within the individual (Weick, 1995). Linking back to the focus of this study on teams, this study views sense making as a social process, whereby ongoing meaning is being created based on the interactions between individuals. This is a process which may typically be found within teams. Thus named 'Collective Sense Making', it is a socially constructed process of creating inter-subjective and shared meaning through an iterative and discursive cycle (Maitlis & Christianson, 2014) between team members. These discursive processes mean that sense making is seen through 'accounts' or 'narratives' (p.95) of individuals. However, these accounts do not indicate that there is consensus or agreement as a collective but rather propose that sense is captured through the multiplicity of stories.

Combe and Carrington (2015) attempted to bridge the gap between individual and collective sense making by investigating multiple leader cognition as an in-depth case study in the health sector. They evaluated a single crisis context with the purpose of finding cognitive consensus. They did not seek to find a collective understanding, but instead used multiple data collection techniques to gather responses for the case study method with the aim of expanding their perceived lack of research in emerging cognitive consensus.

Wolbers and Boersma (2013) suggest that collective sense making can be weak under extreme and ambiguous conditions as collective sense making means that there will be multiple interpretations of the context and these interpretations need to align in order to produce an adaptive response. White and Shullman (2010, p.94) also share a similar

view of leader collectiveness specific in that it addresses the concept of ambiguity, stating, "those that can keep the experience of uncertainty to a tolerable level can embrace the ambiguity as an opportunity to bring people and options together to learn and adapt as they collectively find their way".

On the other hand, HROs provide an example of where the creation of shared meaning results in a "tightly coordinated collective action" (Maitlis, 2005, p.23). As previous studies discussed: the de Menezes shooting (Colville, 2013); Mann Gulch disaster (Weick, 1995) and the Everest disaster (Kayes, 2004); there was a lack of shared sense making processes. The idea of shared meaning, however, does not guarantee that the resultant meaning is a true reflection of the actual event (White & Shullman, 2010).

In support of the identification of collective processes, Wolbers and Boersma, (2013) describe how emergency services have information management systems in place to enhance their attempts to coordinate action when working with multiple organisations. Their qualitative empirical study of emergency responders developing collective sense making from information in fictional scenarios, states that the purpose of the information systems is to provide support for its users to reach 'situational awareness' (Wolbers & Boersma, 2013; Baran & Scott, 2010).

The system achieves this by creating a common operational picture (COP). The COP as a system allows the information to become more available and accessible and is defined as "achieving a sufficient level of shared information among the different organisations, participating in disaster operating in different locations" (Wolbers & Boersma, 2013, p.188). Their study focused on how emergency responders interpret information and attempted to show how this affected responder's collective sense making. The results of their study concluded that in extreme contexts, it is not only the management of information for coordination that is important; it is the way that information is interpreted, negotiated collectively for relevance and subsequently provides direction for leaders. It is the development of shared understanding that is essential for coordination between organisations.

Wolbers and Boersma (2013) focus their study on information management systems at an organisational level. The concept of reflexivity was identified as a 'crucial condition' with which to address the issue of a dominant narrative in the interpretation and negotiation of information (Wolbers & Boersma, 2013, p.195). Their study indicated that a dominant narrative can develop that does not consider different interpretations of a context "to become visible" (p.196). Although their study was limited in the number of narrative accounts collected, they did provide an indication of the social dynamic of extreme contexts.

Baran and Scott (2010) focus their research in the context of a dangerous setting and in the examination of near miss reports of firefighters on the front line. Adopting a grounded theory approach and drawing from complexity leadership theory, they conceptualised leadership as the process of organising ambiguity. The near miss reports were descriptive accounts of "highly ambiguous and emergent crisis situations" where individuals experienced "threats to both their physical wellbeing and cognitive information-processing abilities" (Baran & Scott, 2010, p.47). Their study uses a sense making lens and uses narratives to identify three overarching sense making processes: Framing, Heedful interrelating and Adjusting, drawing from a similar framework by Weick (1995); Creation, Interpretation and Enactment framework.

Figure 2.3 – Framework demonstrating sense making processes for organising ambiguity (Baran & Scott, 2010, p. S60)
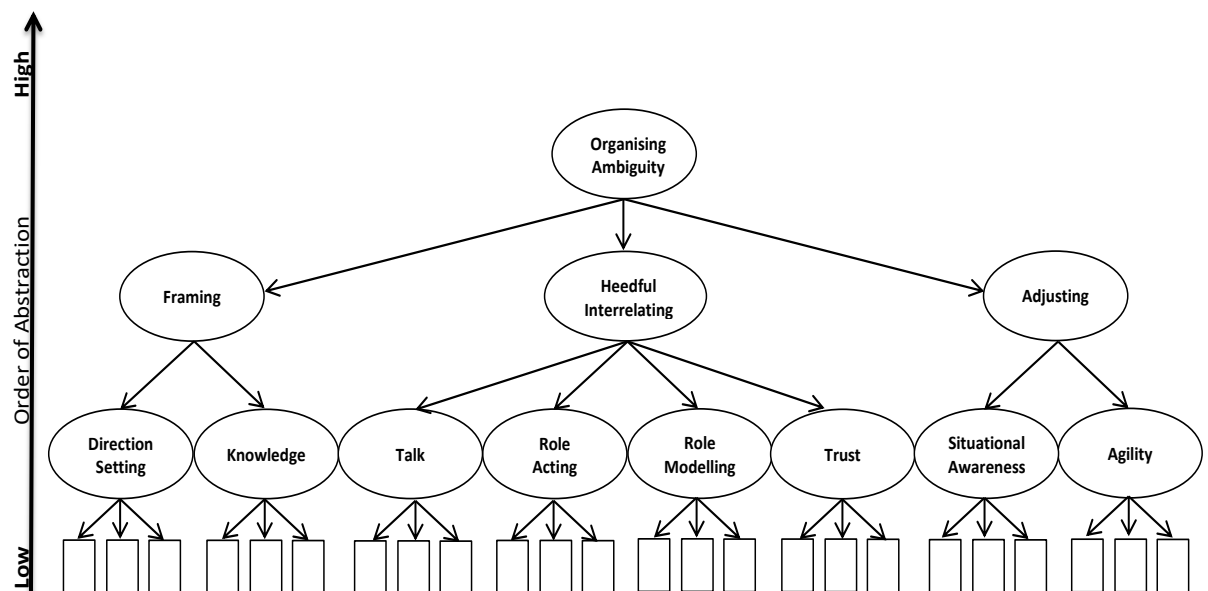
Framing is where leaders collectively identify what is significant to the setting; Heedful interrelating processes are where participants create a shared understanding and a common interpretation of the situation, based on social interactions of participants. It is the process by which leaders engage in sense making, "not as lone cognitive act" but as an interpretative process (Baran & Scott, 2010, p.56). Using a collective sense making approach contributes to the literature that addresses both leadership and extreme contexts. From this social and qualitative approach, researchers begin to obtain a richer and more in depth understanding of the way leaders think and understand their context (Campbell *et al*, 2010).

As mentioned above, Baran and Scott (2010) provide a framework with which to explore collective sense making processes further. These were comprised of eight sense making processes, three of which are categorised as actions, which are outside the scope of this study: Direction Setting, Role acting and Role Modelling; and five are categorised as

collective sense making processes: Knowledge, Talk, Trust, Situational Awareness and Agility. Figure 2.4 below highlights each process and each shared sense making process will be discussed in the following sections.

Table 2.7 - Sense Making processes Baran & Scott (2010, p.S52)

Secondary Categories	Definition	Lowest-order Categories
Situational awareness	Maintaining cognizance of surroundings and the environment	Continually assessing environment for surprises
		Challenging assumptions and double checking work
Direction setting	Use of formal and informal authority to influence adherence to policies and procedures, encouraging vigilance as a social norm, and properly directing actions of those involved in the situation.	Ensuring personnel follow safety procedures
		Maintaining knowledge of team members' actions
		Reminding team members of situational priorities.
Talk	Facilitating sense making through verbal cues	Repeating reports until meanings are shared
		Negotiating instances of conflicting information
Knowledge	Using information from both prior experience and training to purposefully guide action	Comparing current hazards with prior experiences
		Reminding team members of situational expectations
		Relying on those with the most expertise
Role acting	Reducing ambiguity through behaving in accordance with expected roles and using the expected division of labour to anticipate others' behaviour.	Performing tasks expected due to positional title
		Assigning specific roles to divide and control work
		Acting appropriately in relation to others' roles
Agility	Rapidly adjusting behaviour due to changing conditions	Thinking and acting quickly when plans go awry
		Readjusting priorities in the face of change
Role modelling	Personally enacting examples of mindful behaviour	Wearing personal protective equipment
		Following policies and procedures
Trust	Believing in the reliability of coworkers and depending upon them when necessary	Staying together as a team, in proximity and goals
		Avoiding lone actions that jeopardize others

Framing: As illustrated by the Union Carbide Bhophal incident (Weick 1988); Mann Gulch incident (Weick, 1993) and NASA Columbian space shuttle disaster (Dunbar & Garud, 2009) leaders need to know how to "frame the threats of the crisis" (Yin & Jing, 2014, p.98), resulting from identified contextual cues. The process of 'Framing' refers to; "past moments of socialisation and cues tend to be present moments of experience. If a person can construct a relation between these two moments, meaning is created" (Colville, 2013, p.1204).

Holt and Cornelissen (2014) support this stating that to make sense involves "contextualising a particular cue or experience in the context of a learnt frame" suggesting that this is a retrospective activity of drawing from previously formed cues, based on past experiences of individuals, to begin to make sense of the present event or situation. Weick (1995) suggests that crisis is an 'interruption' to the cues that we (individuals or collectives) would expect to see and recognise. Maitlis (2005, p.21) argues therefore that sense making enables individuals or collectives to rationalise the world in a way that enables action. Maitlis and Christianson (2014) draw from Weick (1995) to provide a working definition that this study draws from;

"A process, prompted by violated expectations, that involves attending to and bracketing cues in the environment, creating intersubjective meaning through cycles of interpretation and action, and thereby enacting a more ordered environment from which further cues can be drawn." Maitlis and Christianson (2014, p.67)

The collective process of 'Knowledge' is identified by Baran and Scott (2010, p.52). Knowledge in this instance was categorised under the overarching sense making process of 'Framing' (p.54) which is described as the use of information from past and equivocal experiences and training (Baran & Scott, 2010, p.52). Additionally, the process by which leaders must assess the level of risks, and the results from Baran and Scott's (2010) research suggests that those with more experience are better equipped to make this assessment. Wolbers and Boersma (2013) found that leaders that had knowledge of the organisation's language, roles and procedures were better able to attribute meaning to actions.

The process of reflexivity was suggested as a means by which multiple perspectives to create a shared meaning, are acknowledged. Reflexivity, "allows the professional to redirect his or her decisions without being hindered by professional boundaries" (Wolbers & Boersma, 2013, p.196). In other words, leaders who work in multi-organisational contexts must adapt to this context and this means that there needs to be effective information management of the knowledge of multiple agencies and their ways of operating for sense to be made. Leader cognition studies discuss knowledge as a

process that informs mental models (Marcy & Mumford, 2010). In turn, mental models can serve as a driver for sense making processes. Complexity leadership is a social leadership process, and this indicates that leadership in this instance can be from the bottom up. However, the premise that experienced leaders lead less experienced leaders in these contexts indicates that leadership in these contexts is a top-down process or contains "formal authority" (Baran & Scott, 2010, p.55).

Organisational structures such as HROs, are formal structures with policies, procedures and formal management relationships identified. Drawing from training and experience, it is important for the experienced leader to contextualise the situation, particularly in dangerous contexts, more so in comparison to less experienced colleagues. Drawing from experience and recognising similar contextual cues allows leaders to begin to make sense of the situation, frame the risks appropriately and reduce the potential for errors.

Heedful interrelating: the process by which group members develop plausible interpretations of the environment (Baran & Scott, 2010). It is essentially described as a process of reducing ambiguity (p.57). It is not a process that is done individually but rather is a process that engages groups in sense making through interaction in order to pin-point meaning (p.56). This is important as it is the process by which leaders assess potential risks in the environment. Leaders must recognise that as sense making is to enable action, each action that is taken can have unintended consequences, with the possibility of creating further ambiguity. This in turn leads to further sense making by the group, until the ambiguity is reduced, and the situation resolved. Recognising that this is possible and taking care is defined as "enacting mindful behaviour" (p.57). Baran and Scott's (2010) research demonstrates that the group attempted to reduce ambiguity through the processes of talk and trust. Although it must be acknowledged that a challenge to heedful interrelating is the risk of Groupthink as discussed earlier in the Everest disaster (Kayes, 2004).

Talk is described as "facilitating sense making through verbal cues" (Baran & Scott, 2010, p.52). Talk is categorised under the overarching sense making process of Heedful Interrelating. Further to the definition of Heedful Interrelating, Talk is a communicative process by which groups engage in sense making in order to arrive at a shared meaning (Baran & Scott, 2010). Communication can be done in a variety of ways and this has possible implications. Recognising that there will be multiple interpretations of contexts, the requirement to communicate or to talk, is essential. Firefighters indicated that it was important to question orders, not make assumptions and repeat what has been asked, to ensure a shared understanding (p.56).

Trust is described as the belief in the reliability of colleagues and feeling that they can be depended upon (Baran & Scott, 2010). Leaders "enacting mindful behaviour" (p.57) is essential for the trust between groups. Leaders need to believe that they can rely on the team members they have around them. Working in dangerous contexts requires "interpersonal trust" (p.57), for example, when the floor gave way under a firefighter, placing him in extreme danger, there was a belief that the team would continue sense making, adapt to the context with continuous risk assessment and provide the assistance required (Baran & Scott, 2010, p.58). This provides an example of the importance of adaptability in contexts characterised by danger.

Adjusting: described as having the mind-set that is ready to adjust and adapt; otherwise described as a "quick, mindful recognition of danger" (Baran & Scott. 2010, p.59). Two sense making processes were identified in their research as contributing to working in extreme contexts and HROs.

Situational Awareness is described as "maintaining cognizance of surroundings and the environment" (Baran & Scott, 2010, p.52). Also identified in Wolbers and Boersma's study (2013), this suggests that leaders must continuously engage in sense making in order to respond to the contextual cues in the environment. Further to being aware of the situation, the process of agility (De Meuse, Dai & Hallenbeck, 2010; Raney, 2014) is used interchangeably with adaptability in literature and is described as quickly changing behaviour in accordance with the changing conditions (Baran & Scott, 2010). As this review has previously discussed, the characteristics of dangerous contexts suggests that leaders are working under particular constraints, one of which is time (Hannah *et al*, 2009). Although studies of leaders in dangerous contexts acknowledge that time is a critical factor (Hannah *et al*, 2009; Hannah *et al*, 2010; Samuels, Craig, Foster & Lindsay, 2010; Colville *et al*, 2013), particularly when faced with immediate danger, it is not clear in the current literature, how leaders adapt and respond under time critical conditions in dangerous contexts.

Baran and Scott (2010) and Wolber and Boersma's (2013) studies are useful to the focus of this study, as they state the critical need for teams to be adaptive (or adjust) in dangerous contexts and demonstrate the importance of leaders being able to adjust to ambiguity when the stakes are high, in order to minimise the potential for error in these contexts. The collective sense making processes are useful to this study, highlighting failure and error of leaders in these contexts. For example, their results suggest that in some cases firefighters failed to use knowledge gained from prior experience or use their training to engage in "constructive framing" of the event (Baran & Scott, 2010, p.55).

Baran and Scott's (2010) research suggests further research to identify how, using a sense making lens, leaders draw from their social mental models and past experiences, providing a richer understanding of the results. Their evidence suggests that those with less experience may take more risks, fail to organise the external stimuli and recognise lessons from "prior equivocal experiences" (p.55) and frame the context inappropriately (Baran & Scott, 2010, p.55). Therefore, a question can be raised as to how this experience and knowledge influences leaders, their adaptive leadership response and their ability to adjust.

Baran and Scott's (2010) research highlighted that the process of framing is bounded by groups and their collective experiences. Similarly, Baran and Scott (2010, p.55) recognise the influences of the "policies, procedures and formal reporting relationships" in the framing process, describing how a more experienced firefighter, also higher in rank, would attempt to frame the less experienced firefighters interpretations of the event to invoke caution into their actions. This indicates some significant influence of the structure of HROs on the firefighters. This section has explored the sense making processes of Baran and Scott's (2010) study. The next section discusses shared leadership and the processes of shared leadership in dangerous contexts.

2.3.13 Shared leadership

The concept of shared leadership is well established in conventional contexts and has previously been addressed in the context of decision making teams (Bergman *et al*, 2012), yet it remains underexplored within dangerous contexts. Klein *et al* (2006) references shared leadership in their study of trauma departments and extreme action teams, and whilst this is useful to draw from, this was not in the context of danger as conceptualised for this study. Their study did not seek to extend the literature in shared leadership, but instead focused on the concept as a process of leadership emerging in urgent contexts and within a hierarchal structure.

Researchers have proposed that multiple members of a hierarchical team may display or enact leadership within the team, despite there being a formal designated leader (Avolio *et al*, 1996; Ramthun & Matkin, 2014). Pearce and Conger (2003, p.286) describe shared leadership as "a dynamic, interactive influence process among individuals in work groups in which the objective is to lead one another to the achievement of group goals". In this instance, shared leadership is described as a process of leadership. Burke *et al* (2018) place emphasis on the relationship between formal and informal leadership when investigating extreme environments. They reference high-reliability teams, stating that the success of teams working in these environments can be dependent on a mixture of formal, shared and informal approaches to leadership. For example, in such teams, a

focus on knowledge, ability and expertise over rank is key to team success (Weick & Sutcliffe, 2015).

Referring to the study by Klein *et al* (2006) in the trauma resuscitation unit, different members of staff, with different designated roles gather at the admittance of a trauma patient, forming a team that will treat the patient. Klein *et al* (2006, p.590) conceptualise these as "improvisational organisations". Their study acknowledges that leadership in these types of teams does not "reside in one individual" but rather takes on a shared approach, viewing leadership in this instance as a style. Their study defines leadership as "fluidly flexible" (p.616), moving between shared, hierarchical and de-individualised, and dynamically delegated processes.

Whilst the concept of shared leadership is stated in complex, high intensity contexts, Klein *et al*'s (2006) study was not focused on emergency response with the respondents facing danger, there is limited further empirical evidence to support their definition in contemporary literature. Conger (1998) highlights the need for qualitative studies focusing on leadership processes, because qualitative studies are required to investigate the dynamic nature of extreme action teams in depth. With relevance to this study, answers to these questions remain vague in the current studies addressing leadership in dangerous contexts.

Ramthun and Matkin (2014) conducted a study in the literature focusing on shared leadership in dangerous military contexts. Ramthun and Matkin (2014, p.244) characterise shared leadership as the "distribution of leadership influence across multiple team members". In both definitions, the multiplicity of members, differing knowledge, skills and abilities are necessary for a group to enable the concept of sharing leadership within the team. Their study describes how shared leadership emerges through mutual influence, leadership emergence and dangerous dynamism. Ramthun and Matkin (2014, p.253) also acknowledge that the context of the military has differences and that "non-military teams may possess other characteristics not accounted for". The process of sharing leadership within the team may have different implications for processes in emergency response teams.

Several arguments have formed in the current review of literature and these arguments have theoretical implications for this study. In the next section, these arguments and implications are reviewed.

2.4 Theoretical implications and contributions of this chapter

This section addresses the theoretical implications for the chapter and the study. This chapter identifies specific gaps in knowledge of leadership processes in teams working in dangerous contexts and where further studies are needed in the current literature. This sub-section addresses these gaps, the potential contributions and re-poses the research questions of this study.

Hannah *et al*, (2009) highlight the importance of context and identify that different contexts will require different forms of leadership and leaders must be able to adjust (Baran & Scott, 2010). This study acknowledges that research into different contexts is an ever-changing endeavour and is continuously evolving to provide researchers with a richer and increased construction of leadership (Hannah *et al*, 2009). Aligning with Klein *et al* (2006), leadership is viewed as multi-faceted, which supports leadership theories that address working in dynamic contexts with unique attenuators and intensifiers (Hannah *et al*, 2009), such as time criticality, low resources, ambiguity, rapid change and threat. The concept of pragmatically adopting several theories of leadership therefore provides a potentially useful framework (Day *et al*, 2014) for capturing the complexity of leadership in dangerous contexts and how it is enacted.

Mumford *et al* (2007, p.539) also state the importance of further research into domain specific approaches by stating that "interaction among variables operating in different domains needs attention, in part because it will provide a framework for the development of more sophisticated theory and better interventions to help leaders think about problems". Developing this call for further research, Baran and Scott, (2010) argue that their research into collective sense making processes, and the limitations of their study, provides a basis for an extension and more in-depth investigation into these processes. Further qualitative research in dangerous contexts would contribute to this limited research base.

Ambiguity is the result of "multiple plausible interpretations" (Weick, 1995, p.45) which the leader must filter in order to provide an adaptive response. There is little to explain how leaders respond or interpret the "multiplicity of stories" (Maitlis & Christianson, 2014, p.95) that are drawn from multiple interpretations and the ambiguity that this must create surrounding the context. Building on the uniqueness suggested by Hannah *et al* (2009), Baran and Scott (2010) suggest each extreme context has its own particular risks. As a result, leaders in extreme contexts are often negotiating complexity, making timely decisions concerning the safety of individuals, and therefore need to understand complexity dynamics to determine how to respond in each situation (Porter & Uhl-Bien *et al*, 2007; O'Connell, 2014).

Maitlis and Christianson (2014, p.81) discuss narratives as a discursive process and as the most used and "preferred form of currency" (Abolafia, 2010, p.349) in sense making but they discuss this from the perspective of organisational sense making, rather than particular emphasis on the leader in context. Maitlis and Christianson (2014, p.95) state that "meaning in an organisation is best captured by a multiplicity of stories". They describe the narratives told through a lens that construct meaning. This study aligns with this idea of a lens and seeks to look through the lens of front line leaders' narratives. This method provides insights into the social construction of meaning, the construction of collective narrative and therefore contributes to understanding of leaders' intersubjective accounts and creation of meaning in context. In critique of narratives as part of sense making, there is doubt surrounding the accuracy and reliability of these accounts as a retrospective process. Leaders may be influenced by focusing on what the lessons learnt from the event were and this may distort the detail of what happened. Additionally, there is doubt as to the construction of "truly shared narratives" (Maitlis & Christianson, 2014, p.82). Baran & Scott (2010) and Mumford *et al*, (2007) emphasise that the discussion of processes can be enhanced in the following ways:

- By discussing the importance of processes in the dangerous context leadership field,
- By defining these specifically as they present themselves in context, under conditions classed as dangerous,
- Showing how they integrate within a given situation,
- By discussing the relationships/complexities surrounding processes and their influence based on how they unfold within an incident.

Dangerous contexts often involve complexity, and the study of how leadership collectively processes and makes sense in these ill-defined contexts will be a useful area of research (Mumford, Zaccaro, Harding, Jacobs & Fleishman, 2000; Mumford *et al*, 2007; Hannah *et al*, 2009). Responding to the calls for further research into leaders adapting their response (Hannah *et al*, 2009) to highly complex and changing environments, further exploration by this study into the social processes of leadership will provide a richer and deeper understanding of leadership in dangerous contexts.

A key potential contribution of this thesis is to leadership processes in dangerous contexts. Baran and Scott, (2010) stated that there are comparatively few studies in leadership that have focused on leadership processes employed within dangerous contexts, characterised by ambiguity. Leadership research has primarily focused on contexts that have been stable or mundane. Their research into collective leadership processes, and the limitations of their study, provides a basis for an extension and more in-depth investigation into these processes. In consideration of furthering their research,

this thesis will address the limitations of their study and addresses the call for this research directly.

Based on a review of previous empirical studies in dangerous contexts, future empirical studies need to focus further on the collective processes of leaders, particularly highlighting the need for work in shared understanding within these ambiguous and uncertain contexts (Maitlis & Christianson, 2014). The current status of the leadership process literature is that a number of specific context studies have taken place, with each highlighting significant gaps in this area of study:

1. There is limited understanding of the processes of leadership enacted in dangerous contexts, specifically in emergency response. The study of how leadership is enacted within a team in dangerous contexts, will be a useful area for research (Mumford *et al*, 2000 & Mumford *et al*, 2007).

2. There is a lack of knowledge about how leaders think within teams and how teams understand dangerous contexts (Mumford *et al*, 2007).

3. Focus on identifying further enabling processes that will explore how leaders reduce ambiguity of "multiple plausible interpretations" in an effort to adapt to the context of working in emergency services to minimise errors (Baran & Scott, 2010; Wolbers & Boersma, 2013; Colville *et al*, 2013).

The retrospective nature of the fire fighters reports in the research by Baran and Scott (2010), also highlights a limitation to this study. Retrospective accounts of events are subjected to the interpretation by the individual. Accuracy of these accounts is questionable. Wolbers and Boersma (2013) conducted an ethnomethodological study which means that the researcher was present in the context and was able to gain unique insights from the narratives of leaders in context. This was limited however, as the context was a simulation exercise. Therefore, the responses of individuals were not investigated when facing actual threat to life. A second limitation of their study is that only reports from firefighters were analysed. That provided a single focus in one HRO, the fire service. This means that the context of high reliability was under-represented. A wider and richer understanding of leadership would be to ensure representation of other incidents in other HRO, such as police and ambulance services.

Throughout the review of the current literature, significant gaps in knowledge of leadership, leadership processes and constructions of danger have been highlighted. Constructions of leadership have been discussed and there is limited knowledge that addresses leadership in the context of danger, thus literature as recent as 2018 is still stating the requirement for further research (Burke, 2018). Leadership processes and how

leadership is enacted and the influence of the context of danger on leadership is significantly limited, and less empirical work has been conducted in emergency response teams working in dangerous contexts. In response to these gaps in the field, this study seeks to explore the following research questions:

- How do teams working in dangerous contexts construct leadership?
- How do teams working in dangerous contexts construct danger?
- How does danger influence leadership processes?
- What are the leadership processes of teams working in dangerous contexts?

2.5 Chapter Summary

This review has critically analysed contemporary leadership studies in dangerous contexts. This study acknowledges that there are calls for furthering leaders' constructions of dangerous contexts; a better understanding of leaders in dangerous contexts will inform a deeper appreciation of the mechanisms and ontology of leadership processes (Hannah *et al*, 2009; Yukl & Mahsud, 2010). It is the intention of this study to contribute to literature on dangerous contexts and demonstrate how team and social processes emerging in these contexts can enrich understanding of a leadership approach. The theoretical framework is to examine collective interpretive accounts of dangerous contexts with the purpose of identifying leadership processes thereby enabling an appropriate adaptive response in dangerous contexts. The next chapter addresses the methodological approach to the study and the researcher's philosophical position.

Chapter 3 - Methodology Chapter

3.1 Introduction

In this chapter, the methodological framework developed to explore the central phenomenon of the study, is outlined: social processes of leadership. The following research objective is addressed:

- **To adopt a relevant qualitative methodological framework for data collection and analysis to capture the participant voices.**

The methodological decisions of the chosen research approach are outlined and justified, specifically focusing on the research design; including the sampling strategy and choice of data generation methods. Focus Groups are used as the primary method data generation method, with their practical application explored within this chapter. The ethical considerations of the study are detailed, before outlining the framework used to analyse the data as well as the potential methodological contributions of the study.

This chapter acknowledges how I, as the researcher, bring my personal influences to the study with regards to my positioning on various aspects of the research design; including the nature of the research topic; data generation methods; and philosophical commitments. I therefore refer to myself in the first person at various points in the chapter, when discussing my research positioning and decisions made.

It is useful to remind the reader of the central question that guides this research: *How is leadership enacted in dangerous contexts?*

Four additional sub questions support the exploration for answering the primary qualitative research problem;

1. How do teams working in dangerous contexts construct danger?
2. How do teams working in dangerous contexts construct leadership?
3. How does danger influence leadership processes?
4. What are the leadership processes of teams working in dangerous contexts?

Denzin and Lincoln (2011), suggest that it is useful to follow a structure for integrated philosophical and methodological discussions. A structure outlines the phases of the research process which, as stated by Denzin and Lincoln (2011, p.12), help to "place philosophy and theory into perspective in the research process". I have chosen to follow the basis of Crotty's (1998) scaffolding model below. The model provides this study with a

progressive methodological framework, which will allow opportunities to provide justification for the decisions taken. Additionally, it allows for the discussion of the theoretical perspectives and methodological approach of the research in a well-recognised format. The model has been adopted to reflect the philosophical and methodological discussions in this study and adapted to reflect the data generation and analysis stage of the research process.

Figure 3.1- Scaffolding model of research (adapted from Crotty, 1998, p.2)
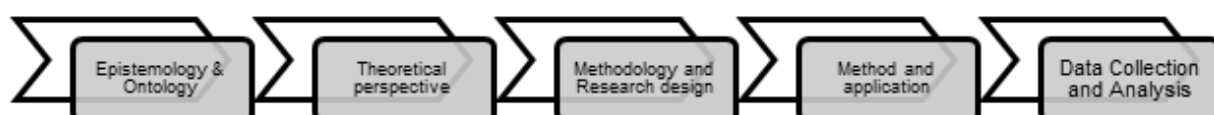
The next section will address the first aspect of the scaffolding model; the Ontological and Epistemological position. Following that, I discuss how each aspect of the scaffolding model will be addressed.

3.2 Ontological and Epistemological Commitments

In this section, the ontological and epistemological commitments for this study are outlined. The process of establishing researcher commitments enables me to adopt methods that align my commitments with the aims of my research.

When discussing epistemology, or 'what is known', I align with social constructionism. I believe that knowledge and meaning is developed through interactions between individuals. In other words, social interactions that determine our beliefs, our values as social actors in our realities; what is understood as being right, what is wrong and what we understand to be positive or negative social interactions. Social Constructionism,

> *"is based on the idea that social reality is not separate from us as individuals, but that social realities and ourselves are intimately interwoven as each shape and is shaped by the other in everyday interactions"* (Cunliffe, 2008, p.214).

This relational perspective builds on the premise of Dilthey (1833 -1911) who asserted that "human social behaviour is always imbued with values" (Hughes & Sharrock, 1997, p.98). As discussed in the previous chapter, it is important to briefly re-iterate here that this study does not adopt a relational methodological approach but rather adopts a relational perspective or lens of meaning making. Building on this concept of human social values and therefore a perceived consciousness, Creswell provides the view that

"individuals seek understanding of the world in which they live and work…developing subjective meanings of their experiences" (Creswell, 2001, p.24). The term social refers to the "mode of meaning generation" rather than meaning creation (Crotty, 1998, p.55).

Building on this idea of constructing knowledge and meaning through interpretation, a complexity view of leadership follows this reasoning through in its concept of inter-subjectivity, stating that leadership is the "product of interaction, tension, and exchange rules governing changes in perceptions and understanding" (Lichtenstein *et al*, 2006, p.2). Drath (2001, p.136) proposes that "people construct reality through their interactions within world views, when they explain things to one another, tell each other stories, create models and theories…and in general when they interact through thought, word and action". Further to this, the concept of social interaction takes place when these actions are orientated towards another. (Hughes & Sharrock, 1997). Reality in this study is constructed out of interaction between a person with the world (Crotty, 1998).

When discussing ontology, or the study of 'what is' in terms of fundamental categories, I acknowledge the existence of an external reality which exists outside of my perception and which I interact with, and there construct my meaning. There are multiple constructions of reality and each is influenced through social interactions with others, and therefore culturally derived. As Creswell (2001, p.25) describes, the 'social' dimension of social constructionism states that constructions are influenced by cultural and historical 'norms' that are formed in organisations or groups. Specific to this study, this relates to the norms of working in an operating environment, which involves close team working, facing danger on a daily basis, in emergency response organisations.

By recognising this multiplicity of individual perceptions of reality, and how this is informed and influenced by socially constructed meaning (exemplified in cultural norms), this study explores the perceived and meaningful realities of the team members who work in emergency response teams in dangerous contexts.   I draw from their experiences of incidents within dangerous contexts; specifically how they construct danger, and how they construct leadership. These are important questions to consider as their understanding of these concepts, as well as the cultural and historical norms of their operating environment, influence their responses when discussing or reflecting upon each concept during the data collection process.

It is useful at this point to remind the reader how leadership and leadership processes are defined in this thesis, as epistemological decisions have been made on the basis of how the terms are understood:

- The definition of leadership that is adopted for this study is the *social process of intra-personal and intra-group interaction to achieve goals, by reducing contextual*

ambiguity and generating adaptive outcomes (A synthesis of Lichtenstein *et al*, 2006; Baran & Scott, 2010; Bardis, 1978; Eberly *et al*, 2013).

- The definition of leadership processes that is adopted for this study is *structured interactions generating outcomes adaptive to need. These include, directive/action-based, and inter-personal/social interactions, such as recruiting, planning, visioning, directing, sense-making, motivating, coordinating, monitoring and enabling* (A synthesis of Morgeson *et al*, 2010; Fleishman *et al*, 1991; Weick, 1993; Day *et al*, 2004; Lichtenstein *et al*, 2006; Uhl-bien, 2006; Barnett & McCormick, 2012).

This study identifies all process types as highlighted in this definition. However, the interactive and social processes dominate as the study adopts a team level of analysis.

3.2.1 Theoretical Perspective – Interpretative Study

I adopt an interpretative theoretical perspective for this study. The theoretical perspective, meaning the "philosophical stance behind the methodology" (Crotty, 1998, p.66). Max Weber's (1969) idea of *Verstehen* (understanding) (Bryman, 2001, p.56; Gill & Johnson, 2011), also referred to as the interpretive approach (Crotty, 1998), is focusing on meanings, in the sense that the methodological approach is "attempting to re-construct the subjective experience of social actors" (Hughes & Sharrock, 1997, p.101). This is in contrast to the concept of *Erklaren (*explaining) which is more attributable to the natural sciences, and a positivist stance in seeking to explain causal relationships. Weber (1969, cited in Crotty, 1998) builds on this contrast by suggesting that understanding of causation comes from an interpretation of social action. Weber (1969) considers that,

> *"an interpretation of a sequence of events to be causally adequate, if on the basis of past experience it appears probable that it will always occur in the same way"* (Weber, 1969, cited in Crotty, 1998, p.39).

This study has a theoretical interest in understanding and interpreting "meaningfulness" (Hughes & Sharrock, 1997, p.101), specifically in dangerous contexts. The methods of this study seek to interpret individuals' and teams' understanding of their experiences in dangerous contexts and thus generate meaning from this data. I argue that it is not only about how participants make sense of the world or the dangerous context through their interactions with others, but also with the value of their meaning making, or their interpretation of the interaction that takes place (Crotty, 1998).

Acknowledging that social constructionism has a relative ontology as well as realist (Crotty, 1998, p.65 & Denzin & Lincoln, 2013, p.27), I understand that there will be differing sense made of the same 'phenomenon' by different members of the teams. Participants may experience phenomenon but may interpret them differently, drawing from

their experience and background, thus creating multiple constructions of what is understood to be real. Therefore, the researcher also acknowledges a realist ontological view and recognises that participants may be taking part with their own views of the world and events, which "may be better elaborated through the interaction with others" (Silverman, 2020, p.207). The purpose of this research is to understand the social processes of leadership in teams, where there will be differing constructions of reality between participants. Each team in the study will give their examples of working in a dangerous context, and each participant may have their own interpretation of what happened during an incident. The focus will remain at a team level analysis. For example, the nature of focus group facilitation encourages group discussions of individuals' reflections.

This study emphasises that individuals' ways of viewing the world are based on their cultural values, beliefs and experience, supporting Crotty's (1998) suggestion that an interpretivist "looks for culturally derived and historically situated interpretations of the social life-world" (Crotty, 1998, p.67). My social constructionist positioning is clearly embedded in my research questions as my interest is the way in which individuals construct understanding of a phenomenon, in this case how leadership is understood. This is appropriate to the research as the study will be viewing the topic through the lens of the experience of individuals in a group context and their collective interpretation of specifically identified incidents.

Conducting interpretative research means acknowledging the biased and subjective nature of human beings as research participants. These distinctions in understanding are important to identify, because my understanding of how the world can have an existence outside of the mind and the consciousness, influences the form of social research that is undertaken (Cunliffe, 2008). Further to this, it is only when we engage in an interactive way within this world that we can begin to make meaning and generate meaningful realities (Crotty, 1998). These meanings are explored through the social processes of leadership and how meaning is shaped in the group through their response to questions posed.

Therefore, this study adopts a range of methods to build knowledge and understanding of the intersubjective meaning of knowledge in teams facing dangerous contexts.

> *"Knowledge of persons could only be gained through an interpretative procedure grounded in the imaginative recreation of the experiences of others; to grasp the meaning which things in their world have for them" (Hughes & Sharrock, 1997, p.98).*

In this section, my philosophical stance, epistemological and ontological understanding and commitments for this study have been discussed. In the following section the research design and method that will be used to generate empirical data and the process of data analysis will be outlined. Furthermore, the potential limitations of the research design will be acknowledged throughout the discussions within this chapter, and due consideration is given to the ethical implications of conducting this research.

3.3 The Research Design

This section sets out the reasoning of relevant methodological decisions of the research design. I begin by outlining the method used to identify appropriate literature for review and consideration in this study and discussing the methodological reasoning for the staged process adopted. I will address each stage in turn:

- **Stage 1 -** The first step of this research was to conduct an analysis of the current leadership literature. There is a considerable amount of research in the leadership field of study and therefore it was important to narrow the search to address my research question. In-depth searches for more recent (post 2005) general leadership journals revealed a gap in the literature around those operating in contexts that were not categorised conventional. Once this gap was established and I had narrowed my research study, I conducted a thorough literature search for articles meeting the following criteria:

    - Articles that discuss leadership processes or functions
    - Articles that address 'Dangerous Contexts'
      and
    - Articles that focus on leadership in teams.

- This search was not restricted to empirical studies, context or type of leadership, the type of team or the focus on the leader or leadership. For example; conceptual articles that discussed processes or functions; teams that operate in conventional contexts were included as well as general articles examining leadership from the leader and team perspective were included.

- **Stage 2 -** A review of all articles identified was conducted for processes that have previously been identified in recent articles and studies.

- **Stage 3 -** To support shared understanding and provide clarity of the processes in the literature, I created a process map. To achieve this, I used Morgeson *et al's* (2010) taxonomy as a basis for the creation of a conceptual process map. In the recent publication by Burke *at al*, (2018), Morgeson's taxonomy of team leadership functions was also utilised as a basis of their study. Morgeson *et al* (2010) is useful as they provide a broad set of fifteen functions that "coalesce within the dynamism present in team process, thereby representing the state of the art with respect to team leadership theory" (Burke *at al*, 2018, p.718).

Mapping out processes found in Morgeson *et al's* (2010) conceptual paper enabled me to include processes identified before 2010 and continue to map processes found in further and more recent articles, therefore applying the theoretical literature to existing literature to provide a broad encompassing picture of the processes found in the literature. In line with Morgeson *et al* (2010), mapping the processes in this way provided a thematic tool and was a useful exercise, as I was able to see at a glance which studies had mentioned which processes. A limitation of identifying existing processes in the literature was the level of detail to which the process was discussed or explored (Conger, 1998). For instance, in some studies the process was mentioned but there was little discussion or definition given to how the process applied to the context or purpose of leadership in the paper, and therefore how it added to the theoretical knowledge base.

I retained the model of grouped processes forming overarching themes. Processes such as 'sense-making' from one of the over-arching themes of the processes, and where authors identify an individual leadership process, such as 'heedful inter-relating' (Baran & Scott, 2010), these were captured within the appropriate theme or sub-theme in the map.

Each time a process was identified in a journal article either as being described as important or relevant to understanding of leadership processes, an 'x' was placed in the process map. These processes could be identified either through conceptual discussions, empirical findings, or theoretical definitions.

Stage 4 - Where authors provide a definition of processes, these were captured to enable a synthesised discussion of the process definitions for this study. Where prior studies are conceptual or empirical in nature this is clearly defined, as the empirical studies are more relevant to refining the theoretical contribution of my study (Lee, 2014), as discussed earlier. Definitions of leadership were also captured and variables such as the author's philosophical positioning were considered, as well as the context in which the process was being discussed.

The mapping exercise was used to gain a more complete understanding of the processes that are currently present in the leadership literature and to provide evidence of a

systematic approach to reviewing the literature. My approach was to continuously add to this process map with additional studies. Furthermore, by adding descriptions and meanings to the themes identified, I continued to collect data to exhaust the number of themes so that there were *"no gaps in explanations"* of the themes (Strauss & Corbin, 2015, p.140).

Stage 5 - As the process map deepened thematically and systematically, the researcher began to extract studies that matched the research boundaries. The studies had to meet all of the following criteria:

- They addressed working in a dangerous context
- The context was grounded in the Emergency Response Team
- They included an empirical study of a team context

The literature review was utilised to filter the studies in stages; nineteen empirical studies met the criteria for teams working in dangerous contexts, and these have been discussed in chapter two (page 36) Further filtering processes revealed that seven of these empirical studies were of teams working in dangerous contexts and in emergency response team contexts, three of which were recently published as part of a special issue in the Journal of Organisational Behaviour (2018). Chapter two has paid particular attention to these articles as they are the most recent studies to be conducted with relevance to emergency response teams in dangerous contexts.

Stage 6 - Previous questioning strategies from empirical studies were examined prior to the research being carried out and relevant questions to the context and parameters of this research were extracted. These form the basis of the questioning strategy (Appendix C) for this study as well as enabling the identification of further areas in dangerous contexts to be explored. This strategy therefore does not include the most recent studies. However, the recent studies adopted differing research methods, for example: Schmutz *et al*, (2018) focused on videoed observations of team behaviour in simulated emergency examples at the port of Rotterdam, seeking to measure performance in relation to behaviours demonstrated; Uitdewilligen & Waller (2018) used the same video simulation to conduct a quantitative study with the purpose of sequencing information sharing behaviours.

The intention of the mapping process was to inform the research with a thematic tool from the existing literature. The purpose was to enhance the identification of processes in the context being studied and to provide evidence of limited research and justification for the exploration of the limited research conducted in dangerous contexts, specifically Emergency Response Teams. The design of this study, informed by this process is outlined in the remainder of this chapter.

3.4 Research methodology

When researching a particular issue, it is important to have the appropriate skills and techniques to employ during the research process (Hughes & Sharrock, 1997). These are not to be viewed purely as instruments to carry out the research, as these skills and techniques operate attached to a set of assumptions. Put another way, the philosophical issues and assumptions that are raised about the relevance of the methods used in social research, are pivotal to the philosophical approach of the research. The following section discusses focus groups as the method for data generation.

3.4.1 Research method: Focus Groups

Focus groups were selected as the data generation method for this study. For the purposes of this research, focus groups are "characterised as a particular type of group interview or as a collective conversation… where the researcher asks a set of targeted questions designed to elicit collective views about a specific topic" (Silverman, 2020, p.206).

The focus group will have a focused discussion on a topic that is introduced by the researcher. This is supported by Kevern and Webb (2001, p.323) who state that it is a "guided in-depth interview of a relatively homogeneous small group of individuals purposefully selected". In contrast to most current empirical studies on leadership and in dangerous contexts, Morrison-Beedy, Cote-Arsenault and Fienstein, (2001, p.48) argue that focus groups as a method can be superior to carrying out individual interviews because "group interaction can assist in eliciting richer or more sensitive data". Further to this, Kevern and Webb (2001) state that this method facilitates group processes in helping the group explore and provide clarity in their views, which would be less easily achieved in individual interviews. In this instance, the focus groups will be facilitated primarily to generate discussion around an incident, categorised as dangerous.

Research into the use of focus groups, shows that this technique has predominantly been applied in health studies (Guest *et al*, 2006), but also within market research, where the theoretical contexts and methodological assumptions have been expanded and then in the social sciences from 1980's (Kevern & Webb, 2001). In social sciences, focus groups have been applied in "exploratory academic research", primarily to gain an understanding of meanings related to phenomenon, peoples' opinions, beliefs, experiences and values (Kevern & Webb, 2001, p.325), which this study has also sought to do.

As mentioned previously, primary empirical research with the individuals who operate in dangerous contexts, especially at the intra-group level, have not previously used focus groups as a method to explore leadership processes; most studies have post-incident

reviews drawn from textual sources (Hannah *et al*, 2010). This is a clear limitation of current empirical studies if leadership within teams is to be understood further. Despite this, there is an understanding from the literature that all participants working in dangerous contexts do so by operating primarily in a team environment, thereby supporting focus groups as the selected team based data generation method.

Studies such as Colville *et al* (2013) and their investigation into the shooting of Jean Charles de Menezes in the London Underground in 2005, incorporated a secondary documentation review research method. Despite the clear communicative issues arising during that event fundamentally being a team-based issue, the initial primary data collection undertaken by government agencies did not include a team focus, but rather conducted one to one interviews with key ranking individuals and provided individual accounts and perspectives.

Further to this, fire personnel work as clearly defined teams. Yet, Baran and Scott's (2010) focus on 'near miss' fire incident reports, places a methodological focus on the individual, despite offering three leadership or social processes that mirror a sense-making lens. In further studies, where the team has been the unit of analysis, Kayes (2004), in his study of the Mount Everest disaster, analysed the team behaviours and responses to external cues through interviewing. Whist in some cases, this may be the only means of gathering information or data, team responses such as those emerging from effective questioning and possessing expertise in the facilitation of focus groups, can highlight the dynamics between the individuals at the time of the incident. Individual participants as a standalone source of data, whether through interviews or documented accounts, are limited in their ability to understand and articulate accurately what the team thought at the time and to explain why and how particular decisions were made during an incident. To address this methodological and empirical gap, focus groups were chosen as the data generation method for this study, with a clear level of analysis of data at team level. This study builds on and therefore strengthens methods in the leadership field, by exploring within the team environment.

3.4.2 Sampling Strategies

In this case, each participant in the team possesses knowledge of working in a particular type of incident and within a particular context. In this study, teams have been purposively sourced for their role of operating within dangerous contexts. There are mixed levels of experience in each team and levels of knowledge in different areas of expertise. This is intentional to provide breadth to this exploratory study. Specific criteria for inclusion in a focus group for this study are:

- The teams are established, with a history of working together and therefore provide rich data opportunities to contribute to the research, or information rich participants (Krueger & Casey, 2015).
- The team can identify one or two incidents (maximum number) that they all attended, and be prepared to discuss them together, in depth. There is a range of levels of command in the team, accounting for different levels of training and experience and therefore offering a range of perspectives in the focus group. Levels of command involved in an incident at both tactical (lead) and (general) operational level.
- The participants have different areas of expertise within the team, contributing to a range of different perspectives possible.

The focus groups will be between 90-120 minutes (Morrison-Beedy *et al*, 2001). This allows the researcher time to engage with the participants, introduce the topic and for the conversation and discussion to form a natural flow in the group. The next section discusses how I apply the methods of the research.

3.5 Applying the research method

Figure 3.2 below shows that I adopt Creswell's (2013) view that the qualitative research method is best viewed as a set of interrelated activities, and approached as a cycle. This cycle is useful as it enables a systematic and logical progression through the process. Although potential limitations are briefly raised throughout this chapter, limitations that were then realised during the application of this methodology will be considered in chapter six in line with the discussion of my conclusions and contributions.

Figure 3.2 – Qualitative Research Method (Creswell, 2013, p.146)
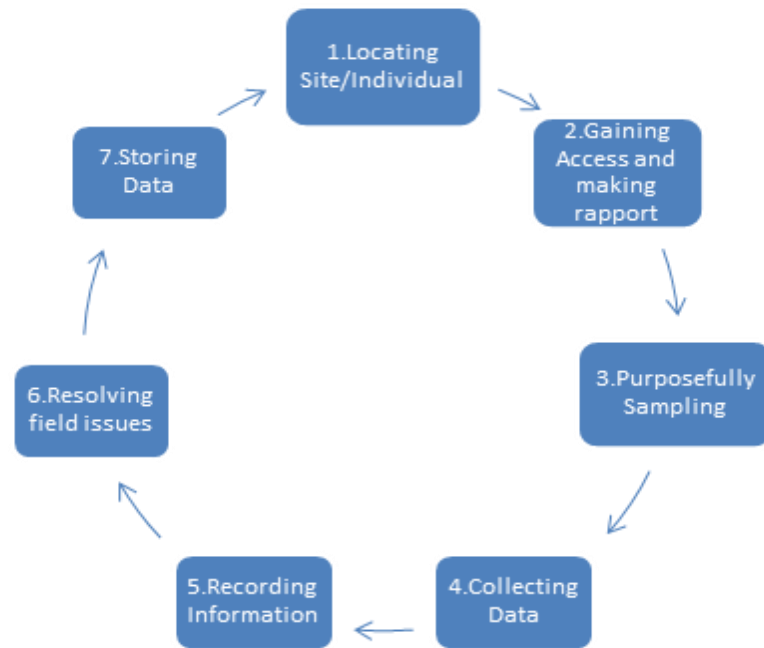
3.5.1 Locating Site/ Teams

The research is conducted in four emergency services that are accessed by the public dialling 999; the ambulance service, police force, fire service and mountain rescue. Focusing on emergency services narrows the scope of those teams that match the criteria to participate in the research. My research participants are those who work in teams that have the most exposure in their day to day working to hazardous situations, meaning that they often work with a direct risk or threat to themselves and others. The public sector has been purposively identified as the appropriate area for this research because further work in leadership in HROs and working in dangerous contexts is required (Hannah *et al*, 2009).

HROs in Great Britain operate within the public sector. Their leadership operates on multiple levels; Strategic, Tactical and Operational. In practice, this is the translation of leadership from the headquarters (Strategic) to setting up command in the field as on-site leadership (Tactical) and then in-situ leadership (Operational) or within the situation. The focus in this study is on the tactical and operational levels, or those present in the field at an incident. This is identified in the literature and pilot study as a real-life issue that is faced at these levels of command in HROs and an issue that has been identified as a gap in leadership literature.

To remind the reader, incidents that all these teams can face include (but are not limited to): armed robbery or hostage situation, chemical and hazardous material or spills, large fires, rescue operations in remote locations, water rescues, off shore accidents, lost persons, large road traffic incidents and terrorist threats. These are incidents that all

emergency services can attend or work within simultaneously, being a multi-agency incident. This research acknowledges that there may be some overlap of discussion of incidents and processes that are identified as a result of cross collaboration efforts between services, and although a useful study for further research, this research is not addressing the multi-agency approach to incidents.

The focus of the research is on the North East of England. No research has previously been conducted in this region on these emergency response teams, specific to leadership or leadership processes in dangerous contexts, nor is any research identified in the literature search and review. A range of specialist teams relevant to this study exist geographically close, and are therefore accessible. Confining the research to North East teams raises some potential limitations, for example: particular ways of working (and therefore identified processes) in the North East may be different from other parts of the country, for example Northumberland has the largest rurality in England, and Teesside has one of the highest areas of deprivation. This raises issues with the transferability of the findings to other teams in other locations. The intention of the research is to enable a regional picture of emergency response units to form; units that often find themselves attending similar incidents in the region. This is a useful practical output of the research, which I will facilitate post-study across regional emergency response teams. Although emergency response teams in other parts of the country and the world may work differently and experience situations specific to the antecedents of their context, these findings and subsequent framework will be useful for other emergency services as a basis for further understanding their leadership emergence and processes in dangerous contexts.

3.5.2 Gaining access and establishing rapport

Initial access was gained to the Hazardous Area Response Team (HART) within the Ambulance Service. This generated further contacts of team leaders and managers in the Fire Service, Mountain Rescue and Police Services. In this environment, most managers attend the same regional strategy meetings of emergency services and conversations about the research had taken place. Therefore, when I contacted each of the managers to discuss access, the purpose of my research and what I would need from them was not completely new. I was told that access was influenced on the basis of the trust and respect managers in the other emergency services had between each other. I was 'vetted' by one through a phone call and an initial meeting as being reliable and genuine, so I was welcomed by the other services.

Contacts in these organisations have introduced me to the individuals (usually in command) that are able to grant me access. Rapport is essential with these individuals or

'gatekeepers' (Creswell, 2013, p.154). Due to the potentially sensitive nature of the incidents that would be discussed, I needed to establish trust early in the research relationship. This method enables the researcher to build 'authenticity' (Miles, *Huberman & Saldana*, 2020, p.38) with those researched, as Miles *et al* (2020, p.39) state "understanding is a more fundamental concept for qualitative research than validity".

3.5.3 Participant selection strategies

The unit of analysis in this research is the team. Each emergency service organisation consists of teams that work together on a daily basis, attending 999 emergency incidents. The possible sample across the four emergency service organisations consists of the following:

Ambulance Service - Hazardous Area Response Team (HART) – 5 teams of 8 people and 1 team leader = 41 people in a potential sample. Teams are predominantly male and 1 female took part in a pilot focus group.

Fire & Rescue Service (FRS) – 5 teams of 5 people and 1 Crew Manager (team leader) = 26 people in a potential sample. There are further teams of 5 people located at each core station around the North East. Teams are predominantly male; there were no females in the pilot focus group.

Police Firearms Unit (PFA) – 6 Teams of 20 people and 2 Sergeants = 122 people in a potential sample. The 6 teams are located around the North East of England. Teams are predominantly male, 1 female took part in the focus groups.

The sample that took part in the study, consists of eight teams and a total of 61 participants. The following table, 3.1, provides their demographic information:

Table 3.1 – Focus group sample – Demographic Information

Focus Group Team	Age Ranges	Years of Service	Total Participants in focus groups
Focus Group 1 HART	8 Hazardous Area Response Team members (including 1 Team Leaders) 7 Male Aged 30-50 years 1 Female Aged 30-50 years	1 under 1 year service in HART 4 over 10 years 2 over 20 years service	8
Focus Group 2 FS	8 Fire service officers – All Male 2 aged 55-60 years 4 aged 45-55 years 2 aged 35-45 years	2 over 30 years service 2 over 20 years service 3 over 10 years service 1 on probation	8
Focus Group 3 MRT	7 team members of Mountain Rescue – all male 3 (55-65 years old) 2 aged 45-55 years 2 aged 20-30 years	2 over 30 years service 1 over 25 years service 2 over 2 years service 2 on probation	7
Focus Group 4 PFA	6 Police Firearms Officers (including 1 sergeant) – All male 3 aged 30-50 years 3 aged 50 -60 years	2 under 1 years service in Firearms unit 2 over 5 years service 2 over 10 years service	6
Focus Group 5 PFA	7 Police Firearms Officers (including 1 sergeant & 1 Bronze commander) 6 Male aged 30-50 years 1 Female Aged 30-50 years	4 under 1 year service in Firearms Unit 1 over 15 years service 2 over 20 years service	7
Focus Group 6 FS	8 Fire service officers – 7 Male/1 Female 1 aged 55-60 years 4 aged 45-55 years 2 aged 35-45 years 1 Female aged 25-35 years	3 over 25 years service, 2 over 20 years service, 1 over 15 years service, 2 over 10 years service	8
Focus Group 7 FS	8 Fire service officers – All Male 2 aged 50-55 years 4 aged 35-45 years 2 aged 25-30 years	2 over 20 years service 2 over 15 years service 2 over 5 years service 1 over 1 year service	8
Focus Group 8 HART	9 Hazardous Area Response Team members (including 2 Team Leaders) 7 Male Aged 30-50 years 2 Female Aged 30-50 years	1 under a year service in HART 4 over 10 years 1 over 20 years service	9

Teams in the emergency services (police, fire and ambulance) across organisations primarily work on a twenty four hour rota system. In a typical week, four or five teams on the rota will be on call and one team will be on 'training'. They will be in work but carrying out training exercises for emergency response and checking equipment. The teams are predominantly males aged between thirty and sixty years old.

Mountain Rescue Team (MRT) – 1 team of 40 people, (Team Composed of no less than 5 per incident) including 1 Team Lead per operation = 40 people in a potential sample. The teams consist predominantly of male volunteers aged between 25 – 65 years old. There were no females in the pilot focus group. There were 5 females in the whole team of 40 people. This team work differently to the main emergency services as they are a group of volunteers that have full time job roles outside of the MRT. Not all team members are able to attend all events and therefore it will be a mixed number of volunteers (team members) at every incident. MRT face incidents such as search and rescue, often in treacherous conditions and with a threat to their lives such as water, flooding, heights, rock falls, speed of rescue causing personal injury and unpredictable weather in some of the remotest parts of the region.

Non-probability types of sampling are used for the study because of the specific nature of the context. The participants need to be representative of the individuals most able to provide meaningful data to draw analysis and findings. Purposive sampling is the approach taken, and is discussed below, along with a discussion of the sample size (Strauss & Corbin, 2015; Cresswell, 2013; Kerr, Nixon & Wild, 2010; Miles *et al*, 2020; Curtis, Gesler, Smith & Washburn, 2000).

Guest, Bunce & Johnson, (2006, p.61) offer a useful definition of purposive sampling in that participants are selected according to "predetermined criteria relevant to a particular research objective". Creswell, (2013, p.156) supports and builds on this criteria for selection, stating that participants should "purposefully inform an understanding of the research problem and central phenomenon in the study". Although one of the most common types of sampling selection, purposive samples are participants that are placed with the knowledge and experience to inform the researchers understanding of the phenomenon under investigation. With specific regard to this study, Roberts (1997, p.80) states that focus groups primarily use purposive sampling methods used to "ascertain theoretical insights from articulate representatives of the cultural variables of the population".

The samples, although purposive, are based on their location and availability. The team that will be used at the time of research will be the 'training team' on duty in that week, which will avoid issues of cessation of research due to 999 emergency call outs. This

avoids compromising situations for staff participants and the research data reliability and validity. Teams will only be excluded from the possible sample at that location, if they are unable to meet the criteria. The criteria for inclusion were presented to the organisations two weeks prior to the session taking place.

When discussing the size of the sample, which relates directly to the discussion of sampling strategy, there has been some debate in qualitative research about sample amount, sample size and therefore data credibility, or how many interviews are considered to be 'enough' (Guest, 2006). Morse (1995, p147) suggests that saturation of the data is key to conducting excellent qualitative studies, however, she also advises that "there are no published guidelines or tests of adequacy for estimating the sample size required to reach saturation". Determining non-probabilistic sample sizes in purposive studies have become based on the point at which saturation of the data occurs. Saturation in the context of thematic analysis (Silverman, 2020) is determined when no new themes are emerging (Strauss & Corbin, 2015). Further explanation is offered by Kerr, Nixon and Wild (2010) stating that a sample is indicated where saturation occurs and this point indicates that enough data has been generated in order for there to be credibility in analysis.

Guest *et al*, (2006) conducted a study with sixty interviews with the purpose of providing guidance to researchers regarding saturation and therefore sample size estimation. Data saturation for the most part occurred after twelve interviews were analysed, whereby new themes emerging were infrequent. Creswell (1998) recommends between twenty and thirty participants for a 'grounded study', which this inductive approach resembles. However, Romney, Batchelder and Weller (1986) stated that small samples were sufficient in purposive studies providing that the participants have a good degree of knowledge in the subject area. This suggests that sample size is representative of the domain under investigation. Morse (2001) supports this stating that if the research question is broad in nature then saturation will take longer. As this study has been focused on teams facing a particular and rare type of context, the scope of the study is sufficiently narrow and teams were identified in the literature, as theoretically relevant to this context.

With regard to the specific research method in this study, namely the number of focus groups to undertake to achieve data saturation, Sharts-Hopko (2001) state that three or four focus groups should take place, representing the phenomenon and analysis should take place to see if saturation has occurred. Concurring with this, Bristowe, Siassakos, Hambly, Angouri, Yelland, Draycott and Fox (2012), held five inter-professional focus groups of five to seven participants, to investigate teamwork for clinical emergencies. They found that saturation occurred after the five focus groups, including a pilot.

Silverman (2020) is specific suggesting focus groups should consist of six to eight participants whom all share a characteristic under investigation. Sharts-Hopko (2001) state that more than ten participants become harder to control and larger numbers means that their contributions to the discussions will be limited. The approach this study adopts the Sharts-Hopko approach, taking an iterative evaluation of saturation until there is sufficient data to respond to the research questions and aims. Emergency response teams typically consist of five to eight participants, mirroring the number stated by Bristowe *et al* (2012). Initially one focus group was carried out with each of the four types of emergency service, and then additional focus groups were carried out until saturation of themes occurred.

3.5.4 Data generation– Pilot Study

In order to establish the methodological strategies that the study would adopt, I decided to conduct three pilot focus groups. This was an opportunity to:

- Ascertain that I was conducting focus groups with the relevant people for my research
- Assess the length of time needed for each group so that I could state this accurately to future groups
- Refine and adjust my questioning approach after each pilot group. For example; it was necessary to encourage an open response environment, using probing questions to tease out a fuller answer to questions. Additionally, I had too many questions and based on the initial length of answers I was getting from the group, I realised that would not have time to ask them all. I had to reduce these to the most directly relevant to leadership. This assisted me in keeping the focus of the research.
- Practice my skills in group facilitation. In this case, it was necessary to adjust to the dynamic of the group. For example, if the group feels very formal and structured compared to another group that immediately appeared relaxed, this influenced the flow of answers between the members of the group. One group appeared to 'bounce' off each other but another group were formal in their responses. I adjusted my style to encourage openness. Additionally, it was necessary to facilitate the group in terms of people talking at the same time, managing dominant members as the rest of the group let them speak instead and managing members who offered no responses (Cassell & Symon, 2006).
- Assess if I was gathering enough data from the pilot groups to answer my research question.

These field issues, alongside access issues, were recognised and addressed through their identification in the pilot study, which led to the refinement of the research approach.

3.5.5 Data Generation - Post-Pilot Refinement

As a result of the pilot focus group, the study was refined in the following ways:

First, the questioning strategy was the main area that required further consideration. I had previously decided that the focus group could discuss any amount of incidents that they wished. I felt that as I knew little of the context, I would not dictate the incidents discussed. I believed that a range of incidents would give a broad range of processes. The responses and descriptions of events were spontaneous and vague. After the focus group pilots, I changed my approach and decided that they would need to pick one or two incidents to discuss as a team in depth before the focus group. This was so that I could analyse processes of these incidents in significant depth for PhD study and contribution to theory.

Secondly, I decided to structure the questions into categories that follow the conceptual framework in the literature review; contextualising leadership, team leadership and leadership processes. This was to provide flow to the interviews and to provide a framework (rather than a completely open or fixed structure) for the discussions. This allowed me, as the researcher, to plan a series of possible probing questions to facilitate and encourage the discussion.

Third, I would add a small team activity to the session to ensure the participants were clear what I was looking for in the focus group and to ensure that all processes in the incident were emerging. This means that an additional method will be added, and multiple method approaches increase the reliability of the data (Morrison-Beedy *et al*, 2001).

Finally, it was deemed that the time period of 90-120 minutes indicated for conducting the focus group, was correct. There was significant discussion generated in the pilot studies and in the final research focus groups. Next, I focus on the development of the questioning strategy and justification for the inclusion of questions in the study.

3.5.6 Focus Group Questioning Strategy

The questioning protocol (Appendix C) consisted of five (Morrison- Beedy *et al*, 2001) key open-ended questions (who, what, why, where, when (Gustin, 2010)), based on the findings of the initial literature review in terms of leadership process areas, and research questions other authors have applied to this context. The questioning strategy was supported by: the use of previously asked questions of leadership in teams (Endrissat & Von Arx, 2013); similar questions of leadership in dangerous situations (Campbell *et al*, 2013); applying similar processes of questioning found in prior empirical studies in this context. The focus group interview protocol is designed to enable the primary and probing

questions to "draw out rich description from the participants" (Ramthun & Matkin, 2014, p.247; Wengraf, 2004; Creswell, 2013; Strauss & Corbin, 2015).

The questioning strategy begins by the researcher introducing the purpose of the focus group and by stating some '*ground rules*' for interaction (Morrison-Beedy *et al*, 2001, p.49). The group will be advised that:

- There are no right or wrong answers
- This is a discussion in which each participant has equal voice
- The interview should not be discussed with colleagues outside the group
- The goal is not to reach a consensus of opinion but to explore all opinions and experiences.

Initially posing questions about the leadership in the team and the way the team operates, will provide some insight into the dynamics of the team and how they operate. These questions assisted the researcher in the facilitation process of the focus group. For example: balancing team interaction in the focus group if a dominant voice is emergent; or the best way to facilitate a discussion that includes sensitive information (Morrison-Beedy *et al*, 2001).

The strategy of this research was to ask about one or two incidents of their choosing, where an in-depth discussion of the whole team can take place. As the teams were advised several days before that this would be a primary focus for the research, they had to consider the incidents for discussion. The criteria for the choice of incidents was considered and I decided that a prescriptive approach (or placing extensive boundaries around the incident) to what they could choose was not appropriate for this study. If too many boundaries were imposed on the incident discussed, such as rank level present, particular type of threat or an event that was extensively planned or unplanned, there would be considerable bias from the participant teams. Based on this concern, the final criteria of an incident to be discussed included:

- The team needed to believe that they faced a potential threat of harm or danger from the incident and therefore danger was present. These were generally incidents that stood out as important to the teams; incidents that they remember in detail, which had made an impact on them and they could recall well.
- Those present in the focus group worked together as a team on the incident. This meant that they could discuss the incidents during the focus group and all members could take part.

To provide a structured approach to the questioning strategy of a particular incident, this research adopts the approach of Hannah *et al* (2009), who suggest discussions and

therefore subsequent analysis of the data around specific incidents should be structured in three stages: *preparation*, *in situ* and *post event*. This not only provides a clear structure for organising a focus group and its discussion of incidents but also provides a framework structure for the mapping of leadership processes, emerging through the analysis of the incident.

3.5.7 The 'Process card exercise'

Once the focus group has concluded its discussion of the incident, a short group task called was introduced. The process card exercise was to provide a sense checking exercise or a recap of the discussion, for the team to ensure they had covered in discussion and in their examples, all the processes that appear at each stage of an incident. This was a useful visual method incorporated after the pilot focus groups with the purpose of providing a visual representation of teams shared understanding of leadership through their discourse about an incident (Rose, 2001). The focus of analysis is not on the image itself but on the text representing their discourse. This was to support reader understanding of how teams understanding leadership. The exercise comprised the creation of a set of pre-determined cards (see appendix D). Each card contained a leadership process, as identified in the literature review. These, along with blank cards for emergent processes and renaming of processes, were given to each of the focus groups, who were asked to arrange the cards showing where the particular process was demonstrated in relation to the incidents they discussed, as a timeline. This timeline approach was adopting Hannah *et al*'s (2009) conceptualisation that stages of action occur during extreme incidents. The groups were able to add or remove cards as they wished.

To avoid the potential of influencing the focus groups, these cards were given out after the focus group discussion (so as not to contaminate the data collection process) but link back to the incident that was discussed in detail during the focus group. This provides the teams with a point of reference and focus for the task. They were required to work together to place the cards at each stage of the incident; *preparation*, *in situ* and *post event* (Hannah *et al*, 2009) with the purpose of clarifying where they believe the processes emerge. How they placed the cards (format) was entirely up to the team. They were provided with additional blank cards to write additional processes and place them where appropriate in the same structure. They were also aware that if a process did not appear, it would not be included.

There were some limitations to conducting this exercise. Alongside describing their account of an incident, this was also a retrospective task. The teams were placing the cards based on a combination of procedure and collective memory of the incident.

Memories may be compromised over time and therefore cards were placed based on their perception and belief at the time or recalling the incident. was not a task requiring consensus from the team, or a task where there was a correct place for any process but as teams can be procedurally focussed, there was concern that sometimes teams would want to place a process where it 'should' fall, rather than where it naturally did. Additionally, dominant members of the team could take over the task which would not provide an accurate representation of all the team members but this was mitigated by the researcher asking for all team member opinions. Multiple processes could be placed at multiple stages of the incident, as this task was to provide freedom for the team to construct an image of how they understood the incident and leadership in the team occurring. Following each focus group process card exercise, I took a photograph of the placed process cards to inform the final stages of data analysis. The photographs have been replicated as diagrams and are analysed in the process card exercise section in Chapter 4. Next to consider is the role of researcher in the process of conducting focus groups and associated tasks within it.

3.5.8 Role of the Researcher in data generation

Cassell and Symon (2006) address the role of the interviewer in group interviewing, stating that it is a facilitative role. Morrison- Beedy *et al* (2001) refer to the 'moderator' when conducting focus groups. For the purposes of this research, I (the researcher) am also the moderator or facilitator. I engaged with the group as an 'active listener' (Cassell and Symon, 2006, p.145) outlining to the group initially how the focus group would be conducted and ensuring the group felt at ease and safe, enhancing openness and creating a non-judgemental atmosphere where sensitive information can be discussed. (Morrison-Beedy *et al*, 2001). As a moderator, it is important to have the skills to facilitate a sensitive discussion and to recognise if a participant is in distress (Morrison-Beedy *et al*, 2001). This was addressed by the researcher introducing the topic at a slow pace and beginning the focus group with more general discussion about the team. Additionally, it was important that the researcher was able to close this discussion at an appropriate time (Morrison-Beedy *et al*, 2001).   At the start of the group interview, participants were asked to introduce themselves to the researcher (assisting with analysis later) with the intention to create an open environment for discussion and to outline this facilitative role.

I adopt a social constructionist philosophy, where the focus group is a "dynamic social process of collective sense making" (Silverman, 2020, p.2010). I also hold a realist ontological view and therefore as previously stated, recognise that participants may be taking part in the focus group with their own views of the world and events. I am focused on the interactions between the participants themselves in generating the meaning in conversations (Silverman, 2020) with regard to the interpretative analysis of the focus

groups. Detailed notes of observations are essential to achieve integration in the interpretation process (Strauss & Corbin, 2015). I therefore wrote diary entries and field notes about the research process, thoughts and feelings. This assisted me in facilitating a reflexive positioning in the analysis of the study in terms of personal and professional values, beliefs and experiences (Nadin & Cassell, 2006), demonstrating researcher integration with the research process.

3.5.9 Recording and storing information

Ahead of data generation phases, all participants were asked if they were comfortable with the interviews being recorded. This process was to assist with my analysis if appropriate. The process of recording the focus groups was also stated on the ethical consent form that the participants signed. The recording equipment was tested for sound before the interview; however, I made written notes in case the recording equipment failed.

Transcripts and incident reports were collected and were stored electronically on a password protected laptop to which only the researcher had access. The NVIVO software that was used to analyse data, was also stored securely on the laptop and password protected. Organisations and participants in the research were made aware of this through the ethical consent forms signed before the research commenced.

3.5.10 Resolving Field Issues

The researcher made field observation notes during the focus groups. These notes make reference to the participant's interactions with the group; highlight the participant's behaviour during the research process; describe actions or mannerisms that may be pertinent to gaining the participants interpretation of the questions or their answers to the questions. For example: due to the sensitive nature of the topic these notes will be useful when transcribing and analysing the data, to determine if the participant was uncomfortable at any stage or displayed signs of distress. Field notes helped the researcher piece together their interpretation of the data by informing possible networks, thinking about possible "links, overlaps, connections, flows" (Miles *et al*, 2020, p.96) amongst the data extracts, items and sets. These notes assisted in creating the descriptions of the themes and assigning meaning (by the participants and as a researcher interpreting the data) and context.

3.6 Thematic Analysis of Data

Thematic analysis is a common approach in qualitative research methodology (Silverman, 2020). In my review of current literature relevant to this study, five studies in the leadership field adopted qualitative methods. The small number of studies demonstrated that there was scope for further work adopting further qualitative methods. Tuckett (2005, p.76) states that the aim of thematic analysis is "to develop a set of logical themes and associated characteristics (exemplified by sub themes which together formed a 'story')".

Social processes in this study have been understood as developing through interactions, the feelings, beliefs and values, in the narratives of the participants. For example, the qualitative design of the research enables stories or narratives from participants to be captured by discussing their experiences and their associated feelings about an incident. I considered using other methods for analysis, such as content analysis, but this research is not seeking to analyse the process of interaction or the "sequential" (Silverman, 2020, p.220) construction of meaning within the focus group, it is instead seeking to explore leadership processes within the incidents discussed by the focus group.

I also considered adopting a Template analysis (Brooks, McCluskey, Turley & King, 2015; Cassell & Symons, 2004) approach but felt that as significantly fewer processes were present in the data extracted in empirical work carried out around dangerous contexts. This research has scope for an inductive approach without fixed a-priori assumptions and thus is more exploratory (Saunders, Lewis & Thornhill, 2019) and enabling of codes and themes to emerge. Template analysis can limit the 'diversities of meaning' through discourse in narratives (Cassell & Symons, 2004).

Taking an inductive approach acknowledges the literature but avoids attempts to fit an emerging theme in the analysis into pre-existing themes. It is important to acknowledge however, that this study is not purely inductive. Processes also exist generally in the leadership literature (through the process of deduction from the literature) but may not be present in dangerous contexts and therefore, analysis of the data will continuously refer back to the literature to support inductive inferences. As the literature review chapter identifies, processes not appearing in dangerous contexts supports justification for further work on the identification and meaning of processes in this area (Lichtenstein *et al*, 2006; Hannah *et al*, 2009; Baran & Scott, 2010; Samuels *et al*, 2010).

With reference to the potential of mixed method approaches (Saunders *et al*, 2019), adopting an 'abductive' approach was considered (Bryman, 2012). This is described as "engagement in back and forth movement between theory and data in a bid to develop or modify existing theory" (Awuzie & McDermott, 2017, p357). Abductive approaches have

been criticised as they are based on 'guessing' meaning (Libscomb, 2012) inferred by the data, and to be considered credible, Bryman (2012) proposed researcher reasoning must be inductively and deductively evidenced.

In this study, I have adopted a predominantly inductive approach, allowing the data to guide me, and ensuring authenticity of the participant voice (Ponciano, 2013). I have, however, used elements of abductive reasoning within my progressive focusing approach, in which I have moved back and forth between the data and the literature, to optimise understanding or *verstehen* (Weber, 1969), remaining true to my interpretivist roots. As Sinkovics and Alfoldi (2012, p.824) state, abductive reasoning "involves using existing theoretical explanations to make inferences about data … accommodating surprising or anomalous patterns by modifying the existing theory…ultimate aim of finding the most plausible way to explain what is happening".

Most directly relevant to the research analysis method chosen, is that the step by step thematic analysis by Braun and Clarke (2006) provided a flexible framework; it may be adapted and applied iteratively across inductive research, constantly refining and improving understanding of the phenomenon, reinforcing the progressive focusing approach. This method provided greater freedom of approach to work back and forth through the steps of analysis, continually searching for themes in the data. It is described as "a method for identifying, analysing and reporting patterns (themes) within data" (Braun & Clarke, 2006, p.79). This approach also supported the constructionist and qualitative stance of my research.

In this research, the thematic analysis framework aligns well with the constructionist and inductive element of this (Braun & Clarke, 2006) approach, which aims to provide a "rich and detailed, yet complex account of data" (Braun & Clarke, 2006, p.78). Braun and Clarke's (2006) method provides analytical flexibility during the coding process; for example, transcription analysis will run concurrently to ongoing focus groups, enabling iterative data collection and analysis. The process therefore, has a cyclical approach, similar to progressive focusing (Sinkovics & Alfoldi, 2012).

In summary, thematic areas are explored through an inductive approach to identify processes that emerge from the data, and then in the final stage of analysis, a cross reference approach using the thematic tool (process map) is taken to identify if the findings of prior studies emerge within the data. This involved mapping the identified processes in my study with those emerging in the emergency response team and dangerous context literature. If a theme is similar but has different characteristics, then a new theme or definition of the process may emerge. This systematic approach highlights

whether new processes emerge from the data and if similar processes emerge, provides a more contextualised process definition.

The research data that was collected through focus groups was analysed using the following integrated coding process (Braun & Clarke, 2006) shown in table 3.2. NVIVO was used as the data management tool because it provided a mechanism to store the coded data and group codes, generating categories, themes and sub-themes. The demographic information for the participant sample that took part in the study is detailed in table 3.2 below. Eight focus groups were conducted across four emergency service organisations with a total of sixty-one participants.

Table 3.2 – Thematic analysis process (Braun & Clarke, 2006)

Stage 1	Familiarisation with the data	Transcribing the focus groups and listening several times to the recording to be close to the data.
Stage 2	Generating initial codes	Working through the transcription of the focus group or whole data set systematically, initial codes were identified
Stage 3	Searching for themes	Collating codes into potential themes through collapsing of codes of similarity. Review of themes against the literature.
Stage 4	Reviewing the themes	Reviewing the themes in relation to the entire data set. To ensure consistency of meaning and approach. This stage generated a thematic template.
Stage 5	Defining and naming themes	Meaning was given to each theme to provide clarity and explain the relationship to its sub-themes. Adding meaning to themes builds a more in depth understanding of the theme and demonstrates academic rigor in a consistency of approach (Braun & Clarke, 2006). Consideration was given to the integration of field notes made at the time of the focus group at each stage.
Stage 6	Producing the Report- (writing the findings chapter)	Final themes were identified in this stage of analysis, after all data collection and analysis had taken place. This referred back to the research question and concepts in the literature to enable synthesis informing the theoretical framework, which will form my contribution.

When beginning analysis of the data set, the researcher kept a copy of the research question and sub-questions to hand, with the purpose of maintaining the focus of the study (Saldana, 2016). The researcher looked at stages 1, 2, 3 and 4 as the main analysis sections of the process and provides detail here of how the thematic process was implemented.

Stage 1 - Thematic analysis begins with familiarisation with the data set. To enable this, the decision was made to personally transcribe all focus group data obtained. This

approach ensures researcher familiarity with the data, especially where the conversation is listened to several times, to investigate nuances. Focus groups have several participants, and it is important to recognise who said what, particularly the leader of the team involved.

The researcher took field notes throughout each focus group, to provide additional analysis and understanding of the dynamic of each group. These included points of discussion where there was emphasis, for example body language, or expressions of participants. This is useful as Morrison-Beedy *et al* (2001, p.51) state that "data needs to accurately reflect several important dimensions of the focus group, including the content, process, environment, dynamics and milieu". A third party transcribing the focus groups would not be able to visualise the group and therefore distinguish one voice from another, nor provide an integration of group dynamics into the analysis.

Stage 2 –Initial first cycle coding took place (Charmaz, 2006), whereby, the data was broken down into "discrete parts" (Saldana, 2016) or data extracts (Braun & Clarke 2006). A code in qualitative data can be one word, a sentence, phrase or a paragraph but is characterised as assigning a "summative, salient, essence-capturing and/or evocative attribute for a portion of language-based or visual data" (Saldana, 2016, p.3). In this research, the data coded are the transcripts of the in-depth focus groups.

The researcher undertook a systematic line-by-line analysis at a team level to generate initial open codes. This process of open coding (Strauss & Corbin, 2015) is useful because it "provides the researcher with analytical leads for further exploration" (Saldana, 2016, p.81), keeping the researcher open to the direction of the data. To enhance understanding and rigour it is common to use more than one initial coding process.

This study applied two initial coding processes; process coding (Strauss & Corbin, 2015), where the researcher applies a conceptual label to what the participant is describing, and Nvivo coding, where the code includes the exact words of the participant (verbatim coding) where their words provide a clear description of their meaning. This ensures that the research "honours the participants' voice" (Saldana, 2016, p.74). As the purpose is to explore processes in the data, the process description is useful when re-visiting the codes in stage 3 and can form the basis of themes as the analysis progresses through the stages. The following two codes, both within the theme of decision-making, provide examples of a process code and an nvivo code.

> The verbatim comment, *"You sort of build up a picture so you know who to watch, you know who you need to guide",* was process coded within 'Leadership as guidance'. This was because a number of verbatim comments fell within the general sub-theme of guidance as a leadership process.

The verbatim comment, *"each person on a watch has to be a decision maker"* was in-vivo coded as 'Each person needs to be a decision maker'. This is because the verbatim comment provided exactly the meaning required within coding decision-making processes.

Table 3.3 provides a summary of the number of codes and themes generated during the data analysis process:

Table 3.3– Focus group transcripts and codes generated

Focus Group Team	Transcript word count	Number of individual codes generated
Focus Group 1 HART	8550	123
Focus Group 2 FS	8450	78
Focus Group 3 MRT	4700	100
Focus Group 4 PFA	11800	194
Focus Group 5 PFA	9650	169
Focus Group 6 FS	8750	58
Focus Group 7 FS	8500	98
Focus Group 8 HART	6470	121
Total	**66,870 Words**	**941 Codes**

As mentioned above, although this study was predominantly designed to be inductive and data-led, there are also aspects of abductive research included in the approach. The rationale for this was to ensure the ability to generate meaningful themes from the coding, reaching saturation of the data, and ensuring a credible, rigorous approach with potential transferability (Sinkovics & Alfoldi, 2012).

This was enacted through the sequential development of coding. Each focus group was fully coded separately. The first focus group formed the initial 'template' of coding against which each successive focus group was then applied and meaning tested in a continuous process of review and re-evaluation.

Stage 3 – Identifying themes from the data is an "outcome of coding… not something that is, in itself coded" (Saldana, 2016, p.13). Similarities are sought to organise the data into initial themes. This process bears similarity to the process of 'focused coding' used in many types of qualitative studies, whereby codes are grouped together, and categories or

overarching themes are formed (Saldana, 2016). This is similar to the constant comparative method used in grounded theory (Creswell, 2013).

The themes generated in the first focus group were then tested and re-evaluated with the coding set from each successive focus group. This was an iterative abductive approach, involving progressive focusing (Sinkovics & Alfoldi, 2012), applied to deliberately challenge the themes already generated. The purpose of this was to constantly ensure the themes, and therefore meaning, represented the data as closely as possible. Where there was disconnect, the data was prioritised and the theme either changed or removed. Over the course of the eight focus groups, this led to a substantial amount of revision until the key themes were generated with good levels of saturation.

Stages 4 & 5 – This stage involved reviewing the themes found during the data analysis process. The process map created during the review of the literature provided the basis for a-priori mapped processes that contained possible themes. This was not a template for 'fitting' themes into prior assumptions, but instead offered cross-reference mapping. This informs the synthesis of the literature and the findings, which will form the contribution chapter of the research, specifically, emergent theory.

The researcher confirmed meaning applied to concepts raised during the focus groups with participants at the time, "theming…requires comparable reflection on participant meanings and outcomes" (Saldana, 2016, p.140). A process of progressive focussing (Sinkovics & Alfoldi, 2012) underpinned a commitment to deepening analysis and meaning. This was demonstrated by data generation in focus groups taking place concurrent with ongoing coding and analysis of prior focus groups. Transcripts and the meaning inferred were repetitively reviewed with each new data set presenting. This took place until saturation of the data occurred, demonstrated by new concepts emerging only infrequently. The key being to exhaust the concepts occurring so there are "no gaps in explanations" (Creswell, 2013, p.140).

For the presentation of the rich in-vivo data, acronyms will be used to identify each focus group, for example: FG1 represents Focus group 1 and HART represents Hazardous area response team. See table 3.4 below for full acronym list:

Table 3.4 – Acronym list for the focus group teams

FG1 HART	Hazardous area response team
FG2 MR	Mountain Rescue
FG3 FS	Fire Service
FG4 PFA	Police Fire Arms

3.6.1 Thematic Analysis Data Credibility & Focus Groups

There are several methods that can be adopted, to provide academic rigour and to ensure robustness (Butterfield *et al*, 2005) of findings using thematic analysis methods and focus groups. This study adopts Lincoln and Guba's (1995) evaluative framework to evaluate the quality of the research, because their definitions resonate closely with my social constructionist and interpretive ethos. By adopting this approach, I am not seeking to create a positivist validity or generalisability; instead I am seeking to demonstrate a credible research study in the terms of a constructionist approach. The evaluative framework is presented and discussed in-depth in chapter six, conclusions.

3.7 Ethical Considerations

Denzin and Lincoln (2013, p.52) state that research "needs constant input from conscience" in order to navigate the ethical issues that are present. In other words, the research needs to consistently review the study to ensure that ethical issues are considered and revised throughout. This study has been carried out within the guidelines of Northumbria University's ethical procedures. A student ethical issues form and participant consent form was submitted and both were approved by the university ethics panel (Appendix E & F).

Consideration of Ethics requires the researcher to consider its implications across the whole of the research process. This includes addressing issues such as the relationships that are built; the nature of the organisations; the issues that address care for the participants and their roles, and how the data collected will be handled. Lee-Treweek and Linkogle (2000) also argue that there are elements of danger and risk for the researcher when conducting social research (Lee-Treweek and Linkogle, 2000) quantifying the term danger in a similar way to this study as "the experience of threat or risk with serious negative consequences" (Lee-Treweek and Linkogle, 2000, p.1). Creswell (2013, p.58-59) provides a table of ethical issues that can be found in qualitative research. I use this as a basis for addressing these important issues. In table 3.5, I add to this and outline how I have addressed each issue:

Table 3.5 – Ethical issues in qualitative research - Sourced and adapted from Creswell (2013, p.58-59)

Stage in the research Process	Type of Ethical issue	How this study addresses this issue
Prior to conducting the study	- Seek university approval on campus - Examine professional association standards - Gain local permission from site and participants - Select a site without a vested interest in the outcome of the study	Full ethical consent for the research to be carried out has been given by the university ethics panel (Appendix E). An organisational consent form has been signed by each organisation that has taken part in the research. All participants that were interviewed as part of the research completed a participant consent form (Appendix F). Neither the site nor the participants have a vested interest in the research.
Beginning to conduct the Study	- Disclose the purpose of the study - Do not pressure the participants to complete the consent forms - Be sensitive to the needs of vulnerable populations	The researcher adopts a policy of honesty and transparency with regard to the purpose of the research, meaning that the researcher disclosed the reasons for the research to all parties and provided a detailed description of what was going to happen during the research process. No participants were pressured into signing consent forms. I address the concept of working in HROs separately.
Collecting Data	- Respect the site and disrupt as little as possible - Avoid deceiving participants - Respect potential power imbalances	I was respectful of the environment in which the research was conducted, not being in the way of the normal operations of the emergency services. I ensured that I did not deceive participants by adopting a transparent approach to the research.

Stage in the research Process	Type of Ethical issue	How this study addresses this issue
	and exploitation of participants • Do not use participants by gathering data and leaving site without giving back	I respect all participants and the voluntary means by which they took part in this research. The research provides anonymity of the participants and any formal or informal interactions have been disclosed. Questions used during data collection have not led the participant towards a suggested response. Of high priority is the protection of the participants, their views and their relationships within the organisation. I sought to build a positive and reciprocal relationship with the organisation whereby I will give back through my area of expertise where this is appropriate.
Analysing Data	• Avoid siding with participants • Avoid disclosing only positive results • Respect the privacy of participants	I have given appropriate thought to the concept of siding with participants in the research process and will maintain the balance of the researcher relationship with participants. This action was disclosed with the purpose of the research. The research analysis process anonymously reported multiple perspectives of participants. The participants will have alias names in the research. Data collected was stored securely in data files on a laptop that cannot be used by any other person Informal notes, reflexive diary entries, incident reports and transcripts were not identified with any one participant and was stored securely with the laptop.

Stage in the research Process	Type of Ethical issue	How this study addresses this issue
Reporting Data	• Avoid falsifying authorship, evidence, data, findings and conclusions • Do not plagiarise • Avoid disclosing information that would harm participants • Communicate in clear, straight forward, appropriate language	The data was reported in an honest and open manner. The work was entirely mine with appropriate APA referencing and acknowledgement where necessary. No evidence or story in the research enables the identification of individuals in the research. The use of language is tailored to the requirements of the intended audience.

It is necessary to address the nature of the organisations in this research. The organisations are emergency services, with a duty of care and responsibility to the members of the public that they service and to their upstanding credibility in society. There are two areas to address within this research. As a researcher, I was told experiences that recalled events also experienced by members of the public. I understand that I am responsible for my professional conduct in all situations and cases and I represent the professional reputation of the university and the case organisation at all times. This information is presented in abstract form, which means that no incident is identifiable and as a result, no members of the public involved in these incidents were harmed directly or indirectly by the analysis of this study.

Secondly, I recognise that the contextual nature of the study means that I was asking participants to describe experiences that may be difficult to recall, depending on the severity of the event and the subsequent outcome. Participants are trained to deal with life and death situations but the concept of re-living the experience is an area that I need to consider carefully. The nature of these interviews was fully disclosed and the participants were debriefed before and after the interview. Their involvement was voluntary and they were able to withdraw from the study at any point.

In a similar way to the participants recalling difficult experiences, I recognise that as a researcher in these contexts, I may be exposed to some difficult accounts of incidents which have a level of "emotional danger" (Lee-Treweek & Linkogle, 2000, p.4). Emotional danger in this instance is "danger to researchers brought on by negative feeling states induced by the research process" (Lee-Treweek & Linkogle, 2000, p.4). The emergency

services in this instance, offered the option of counselling services to me and to individuals exposed to these details, if it was necessary.

3.8 Chapter Summary

This chapter has identified and explained the philosophical underpinnings of this research, outlined the research gap, potential methodological contributions and provided the epistemological and ontological assumptions of the research. I have outlined the research methodology and provided justification for the sampling and focus group approach. The chapter has discussed the analysis framework and credibility of the research data and has addressed ethical issues arising as a result of carrying out the research. The following chapter will present and discuss the findings and analysis of the research.

Chapter 4 – Findings

4.1 Chapter Introduction

The previous chapter outlined the methodological underpinnings of the research and the methodological position of the researcher. The design of the study was presented and the ethical implications discussed. This chapter focuses on the findings from the study, and in doing so, addresses the following research objective:

- **To conduct thematic analysis of data to generate in depth understanding of leadership in dangerous contexts through the lens of teams.**

This chapter presents the themes and analytically discusses the emergence and development of these themes from the data. This chapter presents data that will support chapters five and six in answering the following four sub-questions of the research;

- How do teams working in dangerous contexts construct leadership?
- How do teams working in dangerous contexts construct danger?
- How does danger influence leadership processes?
- What are the leadership processes of teams working in dangerous contexts?

The chapter begins by revisiting the analysis process discussed in chapter 3, to provide a description and rationale of how the themes have emerged and are presented in the study. The categories and themes are then presented beginning with the category 'Context of leadership'. The second category discusses the findings from the study's exploration of teams 'Construction of danger'. The next category analysed is team 'Understanding of what danger does to leadership'; the implications of danger, and how leadership changes in the face of danger. The final category addresses the processes of leadership emerging within identified stages of an incident, namely 'Fluid leadership'.

The final section of the chapter is a summary, discussing the main findings of the research and provides direction for chapter five, which is a synthesis of the findings with literature (chapter two) from three main theoretical areas; complexity leadership, team leadership and dangerous contexts. This synthesis will provide a detailed understanding of how leadership of teams operating in dangerous contexts has evolved and how this study has contributed to understanding of the phenomenon through analysis of leadership processes.

4.1.1 Review of the analysis process

As previously described in the methodology chapter, the first stage of exploration was identifying leadership processes within the literature of leadership in teams in dangerous contexts. I reviewed the current literature and mapped leadership processes against Morgeson *et al*'s (2010) typology of leadership functions. Processes were added to this basis as the review progressed. An example of a process added from the literature is 'shared leadership' (Bergman *et al*, 2012).

I adopted Braun and Clark's (2006) analysis template to provide a robust process of coding and analysis. As previously identified, the transcription process of the eight focus groups identified 66,870 useable words for the analysis process. Initial codes were generated from the transcriptions of the focus groups. As I continually shifted between the codes, data and the literature, categories, themes and sub-themes began to emerge. Appendix H provides a detailed table of the categories, themes, sub-themes and codes extracted from the data. This was to ensure the appropriateness of codes in the sub-themes and themes. Following this, the themes were grouped into categories where there was a clear relationship between the meaning of the themes and the research sub-question. These categories and themes are presented at the end of this chapter.

As part of my data analysis, I continuously highlight the processes emerging, as the enactment of processes are the way in which leadership operates (Morgeson *et al*, 2010). Figure 4.1 below shows how I focus on social processes at various stages during an emergency response incident. The figure depicts how a conventional context for teams is before and after an incident, such as being at an operational station. The dangerous context is when the team attends an incident. Three stages are identifiable during the dangerous part of an incident.

Figure 4.1 – Focus on social processes of leadership during stages of an incident
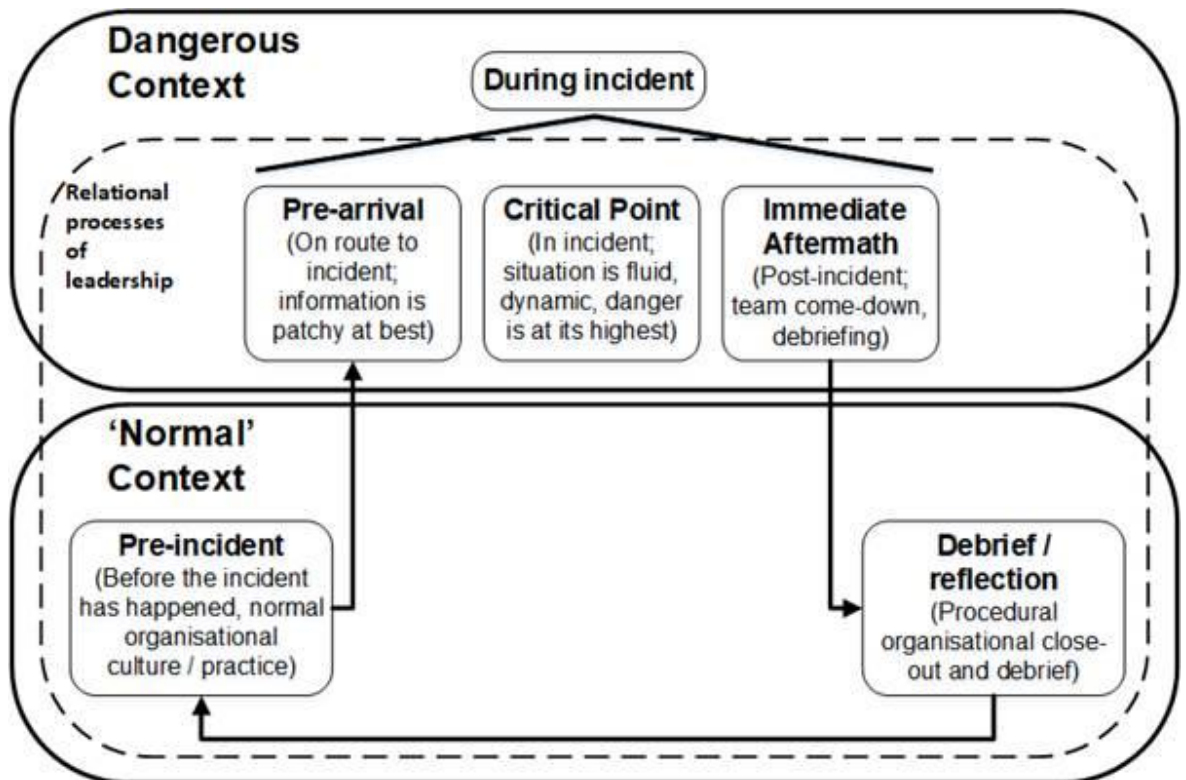
Following the third focus group (pilot), I developed an additional analytical tool (the process card exercise) as a sense-check to ascertain if the leadership processes in the literature were replicated in the focus groups. This was to gain a richer understanding by allowing the groups to shape the discussion and use their words to define leadership as they perceived it (Ponciano, 2013). The source of Figure 4.1 was the output of the focus groups and the process card exercise as applied in the focus groups. The process card exercise diagrams highlight where the teams identified two additional stages (pre-arrival and immediate aftermath) to the three identified by Hannah et al (2009). Codes that highlight the existence of the two additional stages are in Appendix H. The pre-arrival stage relates to the themes of 'continuous risk assessment' and sub-theme 'planning'. The codes relating to the pre-arrival and immediate aftermath stages are under the theme 'desensitisation', sub-themes 'coping mechanisms' and 'mental dangers'.

Figure 4.1 helps frame discussion of the social processes applied across an incident, by first understanding the individual stages of the incident itself. The themes and codes relating to the five stages of an incident can be seen in Appendix H.

The next section presents the thematic findings of the study.

4.2 Presentation of themes

In this section of the chapter, I present my findings from the research focus groups. I adopt a staged approach to presenting data. The first stage is to present each category and related themes that have emerged from my analysis of the focus groups. The findings are presented using the research sub-questions that I seek to answer, which I use to form the categories. Each research sub-question has generated themes and sub-themes which are presented as summary tables at the beginning of the discussion of each category for ease of reference.

After the discussion of the four categories, I then present my analysis and findings of a process card exercise, discussed in section 4.6.9. This supports my thematic analysis with a visual representation of how team members view leadership across stages of incidents they identified. This represents an important complementary data source, enriching understanding of the phenomenon because it directly represents the voice (Ponciano, 2013) of the participants, as they are describing the phenomenon in their words. The statements made by participants include part descriptions of incidents that have taken place and that the teams have attended. The incidents are of a sensitive nature and in some cases provide potentially disturbing descriptions of situations where there has been threat to life or incidents that may cause mental distress.

For clarity, this study first addresses what participant teams understand about the context in which they work. To achieve this, at the start of each focus group, I asked them to describe how the team operate, work together and how they understand the team to function. This was useful to get a sense of how the teams worked together generally on a daily basis, to place the focus of the study clearly on the operational structure, and team environment; through this I was able to more fully understand the context in which leadership takes place.

As a reminder, acronyms are used to identify each focus group, for example: FG1 represents Focus group 1 and HART represents Hazardous area response team. See table below for full acronym list:

Table 4.1 – Acronym list - acronyms as displayed throughout findings chapter

FG1 HART	Hazardous area response team
FG2 MR	Mountain Rescue
FG3 FS	Fire Service
FG4 PFA	Police Fire Arms

I now present each category and the themes; these are included in summary tables at the start of each section. Within the themes and sub-themes, social processes of leadership emerged throughout the discussions and I advise which social processes emerged at the beginning of each section where appropriate.

4.3 Context of leadership

This section focuses on emergency response teams and the themes are presented below. I set out the contextual boundaries of the research and provide some useful information regarding the participant organisations, particularly addressing the rank and command structure.

This section aims to answer the first research sub-question:

'How do teams working in dangerous contexts, construct leadership?'

As outlined in the previous chapter, the level of analysis is at team level. The data presented does not distinguish between individual participants, except when it is the designated team leader, as their differing rank offers further opportunity for understanding leadership. Each theme will be presented and discussed using 'verbatim' quotes to provide illustrative examples. Each quote is discussed with researcher interpretation and analysis, to explain how it contributes to answering the research sub-questions and overall research question. References to literature from chapter two will be drawn upon where there is direct relevance to support or provide comparison with the themed data.

First, the teams' responses to my question of what they understood by leadership in emergency response teams is described. Due to the unique antecedents of the incidents that the teams work in, I felt that it was necessary to understand how the teams conceptualised leadership in this context. Their first responses were relating specifically to the structure and the hierarchy of the organisation, explaining how leadership operates from a command perspective. Based on researcher observation notes at the beginning of the focus groups, it was primarily the designated leader of the team that began to answer the questions. There was some hesitancy at the start for team members to talk. Initially, I felt the other team members were waiting to see what type of questions would be asked. I also felt perhaps that they did not feel they could answer questions on leadership, if they were not in the designated role.

The designated leaders' responses began to form a picture of command and control being the primary way leadership was understood. First, the theme of directional leadership is discussed. This type of leadership is not being addressed under the section 'Fluid leadership' because it is useful to contextualise leadership at this stage. Secondly, social

processes that emerged in this section, appear under the theme 'Team culture and training'. The processes are training, enabling team cohesion and promoting team identity. Further sub-processes are also identified such as predicting actions and coping through cohesiveness. These are important to consider as they also set the scene for teams operating in emergency response. A summary (table 4.2) of the themes discussed is below.

Table 4.2 – Summary table for the category 'Context of leadership'

Category	Theme	Sub-theme
Context of leadership in Emergency Response Teams	Directional Leadership	Directive leadership through chain of command
		Multi-level leadership
		Team structure
	Team culture and training	Team training
		Enabling team cohesion
		Promoting team identity

4.3.1 Directional Leadership through chain of command

Directional leadership emerged as a theme across all teams and this was how all teams began to describe leadership in emergency response teams. This is likely due to the rank structure in place. Procedurally, all teams within this study have an operational hierarchy and designated leader who are accountable for the teams and who provide direction by directing activity of the team on a daily basis. An example of this is informing the team when they will be training and when they are having meetings. This type of directive activity is largely procedural, but I argue here it is important to include to set the scene of leadership in their conventional working environment and therefore understand how it emerges in dangerous contexts. For example, to understand the emerging social processes of leadership, it is essential to examine the organisational structure of teams to contextualise this appropriately. Themes in data appeared to support this; directive leadership can only be fully understood as a process if the command structure and the procedures are clear.

The teams in this study come from four different emergency service organisations, yet interestingly have very similar hierarchal management and command structures in place. At large scale incidents, a multi-agency approach is often necessary due to the skill base of each emergency service. Multi-agency in this case means multiple emergency services will be drawn upon. For example, fire, police, ambulance services will all attend one incident, each tasked with carrying out a specific role. In these instances, the services must work together to achieve one goal. Whilst this study does not focus on multi-agency incidents or approaches, it is useful to establish that there are similar command structures

in place. What can be drawn from this is that all teams understand positions and levels of command in the same way, which has important implications for communication, accountability and smooth running of operational tasks.

In the focus groups, I observed that the use of terminology across all services was very similar. For example, they all used the term '*dynamic risk assessment'* and the way this is used and this terminology appeared across all focus groups. This is useful procedurally because all services should receive the same common operational picture (Wolbers & Boersma, 2013) through initial briefings from operational command, and operate with similar methods.

Teams discussed their rank and hierarchal structure in the focus groups. This appeared to be an important focus point for them, and they were keen to explain how the structure worked and to set out the parameters in which they worked as a team. This data is essential to provide clear understanding of how the teams operate from a procedural and structural reporting perspective, and to understand the contextual boundaries of emergency response teams in comparison the conventional team context. Figure 4.2 below displays a general operating structure of the units in which the teams included in this study operate.

Figure 4.2 – Operational rank structure example - HART
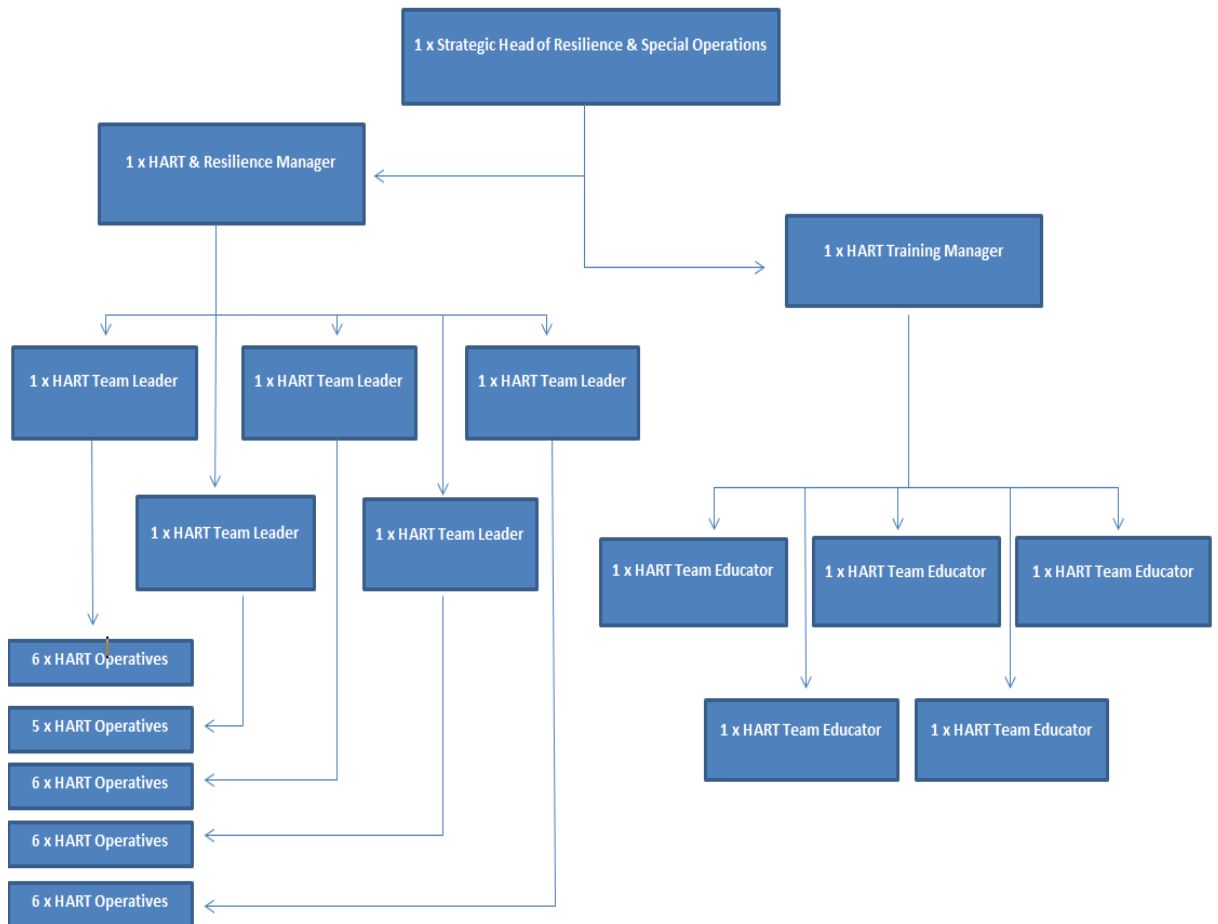
All teams were found to operate under a formal rank structure, for the purposes of accountability and having clear responsibilities. Rank structures are historically from uniform services, where clear command decisions needed to be made. The teams described the reporting structure, which was like that of normal hierarchical systems in organisations. Typically, team members have a team leader, a crew or watch manager, a unit or station manager and then a regional commander. PFA provide an example of their leadership structure, stating in the focus group:

> 'We work in a rank structure in the organisation, as we're a uniformed service. As a PC you take direction from the sergeant in all things. (FG4 PFA)

In terms of level of incident, there are Gold, Silver and Bronze commanders within each service. The higher the incident level in severity, the higher the level of command that is established on scene or remotely. In large multi-agency incidents, one or all levels of command will be present on scene. This type of command structure is mirrored at all major incidents by all emergency services, which aids collaboration. The figure below demonstrates typical incident command at a larger scale fire. The figure depicts a two pump (fire engine) incident and a four pump incident. At a four pump incident, an added

layer of command in terms of sector is added. This is due to fire requiring more engines to attend, and the police and other emergency services potentially being in attendance.

Figure 4.3 – Incident command structure example – Fire Service
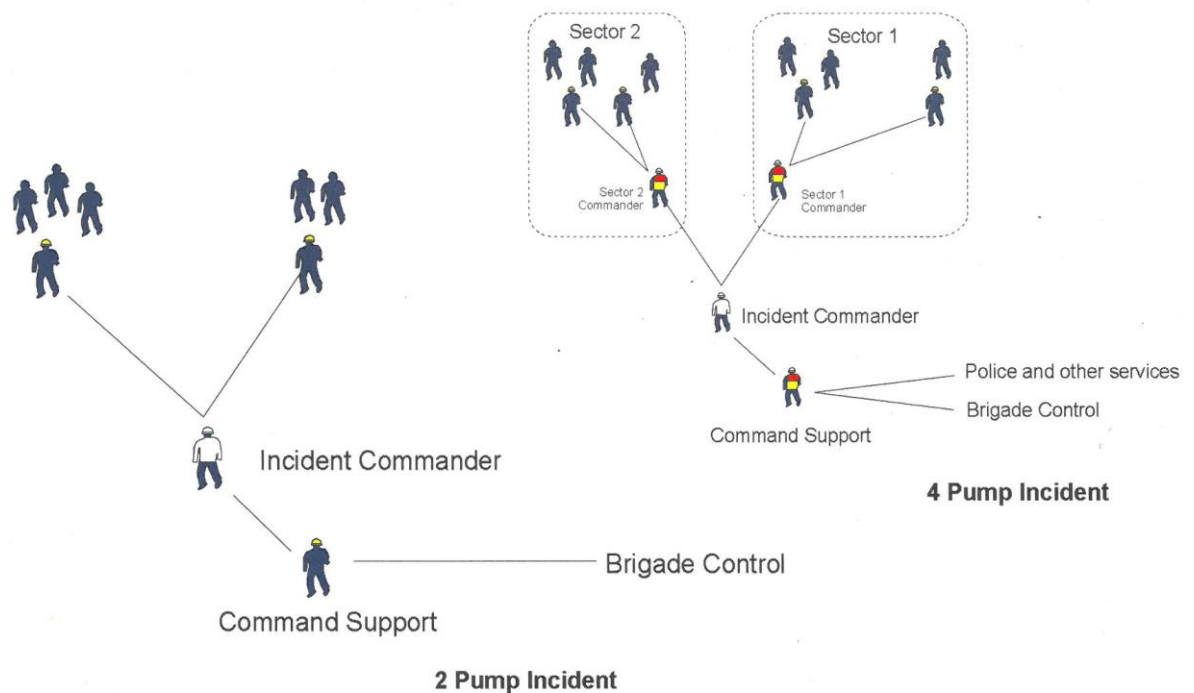
The teams referred to the way they work and their operational procedures throughout their responses in the focus groups. As I have established, the social processes are the focus of this research and in addition to discussing the structural nature of the teams, a strong picture of their team ethos, bond and their ways of interacting began to form from the teams' discussions and their interactions in the room during the focus group. As we moved through the questions, all teams began to settle into the discussions.

The following discussions turn attention to the approach to incidents with reference to their understanding of leadership in the team. In discussing their approach to incidents, teams initially indicated that often in dangerous and critical incidents, where teams and the public are in immediate danger, designated leaders may adopt an authoritative style, becoming more directive in approach if and when a situation presents with some uncertainty. *'I think it makes you a bit more authoritative. So, instead of saying 'XXX can you go and do that', you say' XXX go and do that'. It's your tone… if it's something out of the ordinary; you'll be more authoritarian because you want someone to follow exactly what you're saying'* (FG7 FS).

Participants stated that it:

> *'makes me, as someone who's not in charge, more willing to go with decisions if it's dangerous'* (FG4 PFA)

> *'Depends on the critical nature of the event as well. A normal run of the mill job, if it's something out of the ordinary where it's something risk critical where someone*

can get hurt or killed or something, I'll have to make a bit more authority on my decisions' (FG8 FS)

These quotes are representative. In this example, an authoritarian style becomes the default style because leaders need the team to follow instruction precisely. This is critical if the team has differing levels of experienced or trained team members. For example, there may be probationary team members that require constant instruction. Teams were clear to point out that this style instils confidence of competence in the leader and therefore compliance in the team, not because of the rank structure but because of the directive style of leadership.

In the examples above leadership is about being confident, but it is also about having the ability to make decisions under difficult conditions. It is described as having strength of character in the face of adversity. Supporting this interpretation, considering the role of the leader at a house fire incident, one team states:

> *'he's got to have the overall say at the end of the day and say "no, it's my call and I'm not willing to put you in there". He's got to have that strength of character to be able to say that. When you've got a mother screaming that her bairns are upstairs and you're wearing a BA set, you want to go in'* (FG3 FS)

Despite seeking opinions from other team members, a clear and fast decision must be made in time critical situations (Hannah *et al*, 2009). Consideration must be given to the safety of the team, even if this means someone else (member of the public) is in critical danger. The team members in this case want to go in the house but the leader must make the final call regarding the safety of the team, based on several factors. Therefore, they might have a team that disagrees with the decision of the leader, as well as also needing to be able to cope with those involved in the incident, where members of the public are acting in desperation for the safety of their family.

The verbatim quote from FG4 PFA above, suggests a *'willingness'* to go with decisions. This implies that there is a choice in whether they follow the team leader. In a command structure this dynamic is unusual. This was confirmed by FG8 FS focus group, whereby the freedom to choose whether to enter a dangerous situation is available, despite describing working in an authoritative command structure. This is an important insight into emergency response teams where, despite a structural hierarchy (similar to military teams), leadership shifts to individual or team choice when facing danger.

Where leadership is viewed as directive, the opportunity for team members to make choices when facing danger presents implications for the leader, and the ability to maintain a directive and authoritative style in every circumstance. In this case, the descriptions suggest that leadership emerges as a process to assert control over a

complex situation, where one person issues directive control measures, primarily to avoid confusion. Additionally, these examples indicate that an authoritarian approach is appreciated where previous experience of exposure to danger is low.

The directional leadership style is similar to top-down command approaches to leadership, particularly in military studies (Ramthun & Matkin, 2014). The difference in the case of emergency response teams is that teams indicated that they can make a choice, within boundaries. One critical distinction is evident. They might be directed, through their command structure, in a similar style to military teams, but as public service workers, they have personal freedom to choose whether they enter a dangerous context..

The above discussions highlight that despite possessing a certain extent of choice with regards to entering dangerous contexts, this choice is rarely made due to the dynamics found in team work in the emergency services. This suggests a prominent cultural influence of the emergency service working team environment, which will be explored in detail in the following section - Team culture and training.

4.3.2 Team culture and training

Issues relating to an established culture of teams working in dangerous contexts appears in-depth and influences several social processes of leadership. The literature addresses the importance of leadership forming a positive culture, influencing and creating cohesion within teams. However, this study addresses these areas not just as positive areas to develop for leadership but looks at team culture as a process as an encompassing whole; everything the team does is embedded in social interaction. Team cohesion is a sub-theme incorporated within the theme of culture in this study due to the tightness of bond that appeared prominent between the team members. The teams were asked to reflect upon how they work together. General responses centred on the working context and specifically addressed issues of recruitment, for example:

> *'It only attracts the certain sort of people who are willing, quite like or thrive on situations like that'* (FG1 HART).

> *'Everyone joins thinking it's the hazardous area response team- so you know what you're supposed to be, meant to be doing- what your job role is. I think you go in open minded, knowing these situations, there are lot of people who don't because they don't like heights, don't like water, don't apply for HART, so we all know the types of situations we're going to be put in – we know, we're not frightened'* (FG1 HART)

> *'I think it generally attracts people who want to work in a team, doing what we do. It's not a solitary role. So, if you want to work by yourself, you wouldn't apply to come here. You generally attract people who are similar minded'* (FG5 PFA).

The issue of recruitment was raised without prompting. Teams felt this was a significant process that emergency services needed to consider when selecting team members. Teams raising this suggests that there are discrepancies in this process and that not all teams work together as well as they could, based on the type of person recruited. Supporting this, teams began to describe the type of person that would be attracted to this type of role.

From the data, and as shown in the illustrative extracts above, teams believe there is a 'type' of person with a specific mind-set recruited for positions in emergency response teams. Participants made it clear that they join these specialist teams with a clear understanding of the parameters of the role, cultural challenges faced and are keen to join a 'team' culture. Team members form part of a collective where focus is on the team tasks rather than individual responsibility.

The researcher's interpretation of this was checked during the focus group, with participants nodding in agreement, and further stating that everything they did had an influence on another team member's role. Observing the interplay of these conversations was useful, as an absolute clarity about each other's roles in the team was displayed. In addition to this, they demonstrate acute understanding that they will face challenging incidents; they understand this is a team role and they know that they will face danger themselves. They are also not frightened to face the 'danger'. This indicates that the team environment and level of collegiality perhaps encourages teams to thrive, even when they know the types of dangers. This data is useful leading into discussions of the sub-theme of promoting team identity.

4.3.3 Promoting team identity

A sub-theme of processes of promoting team identity emerged throughout the focus groups. Several teams make the clear distinction between themselves and what they class as 'normal' teams operating in emergency services. Teams felt they were different to other teams in the same emergency service and are called when there is a difficult and complex job. All teams across the focus groups suggested that they were exceptional, displaying pride in, and distinguishing themselves from, normal teams in the same emergency service. One team summarised the concept of exceptionalism, stating, *'We're different from the rest of the service in that you wouldn't be here if you didn't have some sort of leadership' (FG4 PFA).* This team and others go on to support this notion:

> '*with the threat escalation in the UK with the terror threat, we'll be the first people there to deal with that so we kind of, we're more geared up now to deal with dangerous stuff'* (FG4 PFA)

'Because we train and train, and we train much more often than normal command' (FG4 PFA)

'*if you go to a normal police job and the normal police turn up and the commander… they don't have a lot of current experience in dealing with shoplifters, criminal damage or crime, because that's not what we do; but dealing with a spontaneous incident that's quite important'. (FG5 PFA)*

'I think HART differs slightly from the normal ambulance crews because we've got the mentality that the military has got, because we are such a close team, and we are working so closely together'(FG6 HART).

They undertake larger scale incidents with higher risk factors than normal commanded teams and identify themselves as in line with military teams rather than public sector organisational teams. Based on the comments above, they want to be recognised or identified as specialist rescue teams that perform specialist functions and roles. For example, some will have more training in water-based rescue or working with heights.

These activities demonstrate the dangerous nature of 'rescue'. Aligning themselves with military teams suggests they believe that they are higher in level of ability (not rank), have more leadership skills, train in similar ways and more intensely than normal teams and they are called when it is a more complex rescue requiring focused expertise. This concept is supported, as this is how they operate procedurally. FG4 PFA provide an example showing how leadership shifts in its entirety at an incident, stating:

> *When there's a firearms incident though there's a command structure which can then take away the rank, it supersedes the normal rank structure, you have bronze, silver and gold. Bronze command can be a PC who is giving direction to a sergeant up to Inspector. You can have an Inspector in a car, taking direction from a PC during a firearms deployment.'* (FG4 PFA).

This statement appears respectful of the rank structure and command procedures. This differs to military teams, however, in that there is incident specific structure. The rank structure shifts leadership and command of the incident to teams with specific expertise. In most teams, a delegation of duties may be appropriate based on specialist expertise, but this example describes a full shift in command.

It is useful to understand that all members of specialist teams, such as firearms and HART have been through basic training as normal police officers or paramedics and have worked in the normal contexts from which they now differentiate themselves. The exceptions to this are the fire service and mountain rescue who attend the same incidents, whether in a normal or specialist role. The concept of a team superseding ranking officers in command is unusual and differs from military and current studies in emergency response teams (Campbell *et al*, 2010). This has significant implications for the leadership capabilities of teams working in dynamic, and often dangerous, contexts, as training would be different to conventional teams, with an emphasis on being able to take command.

In contrast to this, from a voluntary sector perspective, the following comment supports the need for the team to ensure preparedness in the face of danger and implies the opposite of what might be observed in a military team. For example, *'from the outside, it is a bit like oh wow, I really need to prove myself before, but it does build that confidence, it's that confidence in each other more than anything'* (FG2 MR).

Voluntary emergency service, such as the mountain rescue teams, have a different team understanding in comparison to police firearms, HART or fire service teams. Preparedness was not as prominent a concept within their responses. Although they undergo some scenario based training, they do not face exposure to danger as frequently as a full time emergency service. This provides a particularly interesting insight into voluntary emergency services, as there is a feeling by team members of needing to prove that they are able to handle dangerous and complex situations, which in turn will build their confidence. Confidence in this case is that they know each other can handle difficult situations, and that they will stay confident and able throughout an incident. Despite the need to be able to handle difficult situations, dangerous contexts lead to the possibility of accidents:

> *'It is a dangerous area we work in, so there's always the possibility of accidents no matter how much training we do. Like I say, we try to minimise that'* (FG2 MR).

For the team, training is portrayed as a way of reducing accidents and minimising error, however due to the ambiguous and complex nature of the context they acknowledge there is little that can be done to avoid accidents. Scenario-based training appears useful in terms of increasing the perceived level of exposure to danger. Despite extensive scenario planning and the significant emphasis placed on training, it is arguably difficult to re-create such levels of danger and thus to prepare for the unexpected. This poses the question as to the extent to which training can influence teams' responses within dangerous contexts.

Team participants engage in dialogue to resolve incidents where mistakes have been made, referring to the personality types of those who work in the teams. They state, *'I guess the emergency services, it's not the place for shrinking violets, so if somebody has made a mistake, somebody will tell you, either jokingly or seriously. It very rarely gets left to fester. It would be identified and dealt with'* (FG5 PFA).

Several teams turned to the issue of recruitment with regard to their discussion on training. The recruitment system within the services has changed over the years. Conversations with the participants indicated that the services have moved from intense training and selection courses in previous years to shortened courses. Conversations like this were useful as it helped to build understanding, and therefore interpretation of the

data. For example, for a police officer to become a firearms officer now, they must complete an intense ten-week course. The teams highlighted what they felt was a shift from previously working their way up the ladder and thus having gained knowledge and experience to enable leadership, to being able to take a short course to achieve the same status; '*you've got to do more work with people now as the people you're getting aren't as well trained*' (FG3 FS).

Team culture focuses on the need to have confidence in each other and as a result of the differences in training and experience levels (stemming from their recruitment processes), it is proving difficult, yet essential. In emergency services, those recruited to higher levels of command are not necessarily the most experienced firefighters, paramedics or police officers as in previous decades. New processes of recruitment and fast track training means that command can be assumed in much shorter time periods.

During the focus groups, this was an issue raised by the teams and they discussed this in terms of the impact it may have upon the team. In some cases, incident commanders had relatively less experience, and therefore there was a lack of trust by some team members regarding decisions at incidents. This may be particularly challenging when operating in a structure where commanders can be issuing instructions from a remote location, away from the scene.

Despite the teams superseding the normal rank structure, challenging the normal command positions is a difficult task. As FG5 PFA previously stated, culturally, it's '*not a place for shrinking violets*' and the circumstances of adopting this specialist identity as a team presents a challenge. This phrase indicated that speaking up is essential, and refers back to the teams recruiting a particular 'type' of personality. Teams need to have members that are willing and able to voice their opinions within the rank structure and leadership must acknowledge experience to maintain effectiveness.

Team culture appears to be established through '*mutual influence*' (Ramthun & Matkin, 2014). Leadership is not exclusively derived from position in the hierarchical structure. Leadership develops through reciprocal influence such as experience, ability to step up, capability and knowledge, and the perception of honesty. For example, one team leader stated, '*I wouldn't expect any of the team to do something I wouldn't do. I wouldn't want to put myself into that position, so why would I put any of these into that?*' (FG6 HART).

In this statement, the leader of the team is showing respect for his team members and displaying that they would not exploit team members to do anything dangerous that they themselves would not undertake. The team nodded and made agreeing noises during the focus groups which the researcher interpreted as the team demonstrating their respect for the team leader and suggesting that what was being said was an accurate assessment of

the leader's way of working. This comment demonstrates a level of high experience and judgement regarding incidents and, consequently, an understanding of the challenges faced by team members. Equally, honesty in leadership within teams gains respect in this type of culture. One group stated, *'I think because of the type of people we are, we are quite open and honest with each other. There's not mud-slinging behind each other's backs'* (FG4 PFA).

It would be naïve to suggest that there is never anything said behind people's backs, but generally, Emergency Response Teams strive for the job to be done correctly, safely and effectively. Emergency Response Teams appear acutely aware of their actions and decisions based on the "*open and honest*" interactions within the team. As the teams describe incidents, they were continuously describing how they justify their decisions as they work through the incident. This is particularly important when considering how the team often apply self-directed processes. This also implies that past leaders have put team members into difficult situations and respect has not always been reciprocal. The team were nodding in appreciation in response to this comment. Team culture also shows a respect for team member safety, for example, *'Personal safety first I always say, second, your teammates and third, the casualty. I think that's one of the main things I've picked up on when I've been out in some more dangerous areas'* (FG2 MR).

Viewing emergency service teams as a collective is useful to understand to how teams perceive themselves and dangerous working contexts. The next theme discusses the leadership process of enabling team cohesion, to further understand how teams interact in dangerous contexts in comparison to conventional contexts.

4.3.4 Enabling team cohesion

Through observations of the teams during the focus groups and the analysis of the data, there was confirmation of teams being cohesive as being a firm resolute state between team members. This was especially apparent in teams that have worked together for an extended duration, and who knew each other, and, in some cases, each other's families well, through social interactions beyond the working context. Teams stated that their cohesiveness is achieved over time, and is thus not immediate with new members. Responding to this emergent process of developing cohesiveness, team cohesion is identified as a sub-theme in the findings. It is conceptualised as an enabling process of leadership, rather than a resultant absolute state of cohesion, and it emerged in all focus group discussions.

The following data presented addresses several aspects of cohesiveness: how cohesion is built in the teams; the ways in which cohesion emerges within dangerous contexts; and, how the teams operate as a result of cohesion as a leadership process. As themes are

progressively presented, this chapter will attempt to capture emerging cohesiveness between the team members.

Discussing team cohesion provides the opportunity to identify strong bonds between members across all teams in the focus groups. Cohesion was observed in all the focus groups through their use of humour, general 'mickey-taking' and banter. The designated team leaders were often the instigators of this, and this is deemed significant because it is a process of encouraging team members to speak up. Teams tended to immediately relax. This was observed by the researcher in the physical body language and verbal interaction of the participants. For example, where the leader display relaxed behaviour and opened-up, the team visibly relaxed, smiled, and shoulders lowered. The interaction between team members became more frequent, with greater freedom to comment being observed. It was through this that insights to the workings of the team emerged. The teams felt they were family, stating '*With the threat we deal with, our team is like a family'* (FG5 PFA). In support of this, other teams stated:

> *It's like family, it's a work family. We're all quite close you know. That does help us a lot you know'* (FG1 HART)
>
> *'More than a team. It's not just a team at work, we socialise as well, which is an important factor. This is where you get your trust'* (FG1 HART)
>
> '*It sounds corny but you can rely on people at the extremes with your life. People do work well as a team because they've got to'* (FG5 PFA).

Based on the nature of the role, and continuous social and work interactions of these team members, the bond in the focus groups felt profound, perhaps in comparison to 'conventional' teams. These teams feel like they are 'family', as referred to by several participants. The comment of being more than a team and the reference to family also serves to promote the feeling of care that has formed between the team members. They live with each other on long shifts, often for several days.

Across the focus groups, only one team (FG3 FS) did not appear to have this profound bond, and this was interpreted as them having relatively new team members, as well as some team members on probation (see figure 3.1, chapter three). One participant, who was on probation within this team, commented that it was time that enabled you to be an effective team member. *'I wouldn't say it was possible to become an effective member of the team in less than a year, and probably 2 year station observation was chosen for a reason'* (FG3 FS). This may be because new members are not confident in their knowledge and need to gain more experience, or maybe experienced members are not confident in the new member.

Team cohesion appears in discussions of military teams (Yammarino *et al*, 2010). However, as previously established, the contexts that military teams face are different in nature to emergency response teams and there are also significant cultural differences. In comparison, this sub-theme captures literature sub-themes such as social climate and team wellbeing (Morgeson *et al*, 2010), whilst extending understanding by exploring these sub-themes in dangerous contexts. Teams indicated that the nature of danger at incidents strengthens the bond of the team, which is perhaps why the teams feel profoundly reliant on each other. Dangerous incidents bring the team together as the nature of the context prompts working as a tightly bonded unit. They need to trust each other implicitly and rely on each other to make the right decisions. This can mean life or death in some cases, which helps to explain why there is such closeness. As a result, a sub-theme that emerged was '*predicting actions',* which will now be presented.

4.3.5 Predicting team member actions

This is a sub-theme that was in the findings and has emerged because of the nature of the context. The bond the teams form and the inherent communicative processes within the team enable ability for members to predict each other's actions, stating '*the jobs been done and almost nothing has been said'* (FG3 FS). Further instances of participants referring to being able to predict others actions were apparent across the data:

> *'When the times get harder and the job gets difficult, everyone's so in tune with each other, like I've witnessed on this watch. The jobs just been done and there's almost nothing been said, it's they know what they're doing and you trust him…you know? It's a complex thing and it takes some time to build up'* (FG3 FS)

> *"although we hadn't used verbal communication, literally by the direction of our vehicles going in, we managed to resolve the job correctly by going toward each other. Everyone did exactly what they wanted to do and that's because we work so well as a team'* (FG5 PFA)

> *'If I worked with another team, I couldn't say that they'd do the exact same thing as what we did. We might do a slight variation. But our team work together all the time, did exactly what we'd planned on doing anyway, without even speaking to each other'* (FG5 PFA).

The team nodded in agreement with the statement from FG5 PFA, and re-iterated the nature of danger as a catalyst for bonding in the team. The closeness of the team develops into the team knowing and being so attuned with each other, that they have reduced their reliance on communication and interactions on jobs. Teams are often able to predict each other's actions, based on previous experience of their team mates' actions. As a result of knowing the team well, one team describes how even body

language can give enough information to form a prediction of action. Prediction also has importance in assessing risks and making decisions regarding an unfolding incident.

However, it is easier to predict an incident if you are dealing with the '*expected'* in an unfolding incident; the expected being the predictability of the way an incident will unfold from experience in a similar context previously. The process of communication is seen as essential to effective leadership, but a finding of this research is the concept of not having to discuss actions pre-incident. In the absence of direct communication techniques being available as described in the final quote, the result of capturing a criminal has been achieved through the ability to predict the actions of another team member in a time critical and dynamically unfolding situation.

The last comment states (FG5) that teams will do as they planned, without speaking, suggesting that this is team specific and due to the nature of the particular team and relationship between the team members. If members were to swap teams, this could be an unlikely occurrence. This concept of an enhanced team capability emerging over time has implications for leadership as it enhances the concept of retaining current members. Leadership in this case might be to encourage cohesiveness, but the implications are that this may not be achieved across all teams and may not be through training alone. There may also be issues with relying on the ability to predict the actions of others, such as complacency. This as a concept has not received discussion previously in dangerous contexts but is indicated in the shared sense making literature.

This section has addressed the organisational context in which leadership takes place. The organisational command and emergency response team structures, the composition of those teams, their understanding of leadership within organisational and team parameters, has been examined. In the next section, the exploration of the construct of danger has resulted in several emergent themes and sub-themes. The following section will discuss the construct of danger, dangerous contexts, tangible and mental danger and desensitisation to danger. These themes are related to emerging leadership processes enabling working in this context. Discussion of how these integrate with further emerging leadership process themes will be made later in the chapter, when findings of what danger does to leadership are presented.

4.4 Construction of Danger

This section discusses the types of danger faced by teams, their understanding of what makes an incident dangerous, their conceptualisation of danger and the complexities of

working in danger environments. This section aims to address the second research sub-question

'How do teams working in dangerous contexts construct danger?'

Few studies have attempted to define dangerous contexts (Campbell & Hannah, 2010). Definitions are challenging based on the particular contingencies, constraints and social dynamics (Osborn *et al*, 2002) present in a dangerous context, in comparison to normal and routine contexts (Hannah, 2009). As a result, this research sub-question focused on exploring team construction of danger, and how danger appears in the contexts faced by emergency response teams. This is critical to establish, as danger is the lens through which the team are responding and viewing their context of leadership. Therefore, it is necessary to gain a full understanding of how they construct danger. Analysis of this data resulted in themes and sub-themes presented in summary table 4.3 below.

Table 4.3 – Summary table for the category 'Construction of danger'

Category	Theme	Sub-Theme
How teams construct danger	Tangible	Tangible/physical dangers
		Conflict in understanding
		Teams as dangerous
	Mental	Mental dangers
		Expectation of rescue role
		Pre-arrival, immediate aftermath, or post-incident stress
	De-sensitisation	Detachment
		Coping mechanisms; pre-arrival, critical point, immediate aftermath, and post-incident stages
		Denial of danger

Emergency response teams predominantly deal with members of the public, and face dangers whilst also being in a civilian capacity in their role. A fundamental difference to military studies is the mind-set that emergency response team members have whilst working in their capacity. As a uniformed service, all teams stated that they have control and authority in the situation, but as civilians (public servants), they have the choice to refuse to face the danger. As teams and individuals, they cannot be forced into a potentially dangerous situation, whereas this is not the case with the military.

It is the team that makes the decision to go forward into a potentially dangerous circumstance. This is less relevant if the team faces an unexpected situation as they can find themselves in a dangerous situation without a choice. The following section will discuss how teams construct danger, and the sub-themes; tangible danger, mental danger and desensitisation to danger.

4.4.1 Tangible Dangers

Each focus group was asked to describe their understanding of a dangerous context. In order to answer this, the teams initially talked about what they consider to be dangerous incidents. The teams initially found naming dangerous types of incidents difficult. All teams in the focus groups looked around the room at each other with expressions of uncertainty whilst they were thinking. This was unexpected given that their day to day role is to face incidents that 'conventional' (FG5 PFA) teams in the emergency services would not. The types of dangerous incidents described are not common to all the teams, and the type of danger is dependent on the type of rescue service provider. The responses have been distinguished between the focus groups for this reason:

> "*chemical, suicide, gas leaks, anything like that can go wrong but we have that much PPE and things and equipment to detect things when they're about to go wrong*" (FG1 HART)

> "*another big area of physical danger that creeps up on you is the water stuff*" (FG2 MR)

> "*someone armed with a shotgun, numerous other weapons, knives, hammers….*" (FG4 PFA)

> "*Knife threat; Guns; Crossbows; Machete; Terrorist; Suicide vests; Medical Trauma; Hit by cars; Mental health and an incident that might affect one of your colleagues, that can be quite dangerous*" (FG5 PFA)

> "*Erratic patients, especially if there's been assaults with weapons and things like that. Environmental as well.*" (FG6 HART)

> "*There's a potential of greater risk because of the reduced staffing, which creates a greater level of stress and anxiety in everybody, and it's quite tangible. You can see it and sense it yours*elf" (FG7 FS).

Using the language of the participants, the types of incidents above describe mostly '*tangible dangers*' that can be faced by the teams. The term tangible from one team refers to the ability to place some boundaries around the incident; the ability to '*see and sense it*' (FG7 FS) and therefore be able to assess the level of threat and plan a measured response. Tangible dangers faced by emergency response teams affords the team the ability to prepare strategies for the possibility of danger; pre-incident, in-situ and post-incident (Hannah, 2009). For example, there are set procedural models on how to manage the circumstances on scene when dealing with a person with a sawn-off shot gun or where there is a hazardous chemical spillage.

Teams place much focus on the amount of procedural training that takes place to provide the skills to mitigate circumstances in the event of the team facing these particular situations. From the examples given, there is also heavy reliance on the personal protective equipment that is used in these circumstances. However, when dealing with an

'erratic patient' (FG6 HART), events cannot be easily anticipated. The use of the term erratic suggests that responses cannot always be predicted, therefore aligning with Hannah's (2009) unique intensifiers in dangerous situations.

The identified types of danger have some similarities and differences with those operating in military contexts (Yammarino, F; Mumford, M; Connelly, M & Dionne, S. 2010). Similarities include the threat of physical dangers; guns and knives as well as some environmental dangers; operating in or near water or chemical exposure. These dangers are often anticipated in a military and an emergency response context, due to the information the teams receive on route to scene. As discussed in chapter two and referring to the context, responses to incidents are driven by whether the danger is anticipated or unanticipated and this can be complicated by multiple interpretations of the environment (Scott & Trethewey, 2008). Multiple interpretations can present a challenging aspect to facing danger, in that the information regarding the incident parameters that are relayed to teams on route may not be accurate, and therefore negate planned response.

After thinking about particular dangers, some focus group teams became broad in their interpretation of what they consider to be dangerous incidents, viewing potentially "*everything and anything"* (FG3 FS)*'* that they attend as dangerous. This judgement is based on the potential that every situation they go into may have dangers, explicit or implicit. Further investigation of what is understood by danger moved away from tangible types of incident, towards threat to life:

> "*everything and anything"* (FG3 FS)

> "*Something that is a threat to life, either to the public or any responders*" (FG7 FS)

> "*There's a perceived threat or a possible threat. Either it's a potential or it's going to happen, that's what you're working against, the threat*" (FG7 FS)

> "*Where we can't guarantee safety*" (FG6 HART).

FG6 HART refer to the aspect of not being able to '*guarantee safety'*, suggesting that danger is perhaps not a deterrent in the context that they work in. They attend an incident with full knowledge that it may be dangerous to themselves and/or members of the team. Based on the quote above, the initial mood of all the groups was that the possibility of injury or death is in the background of their normal working context but that this is extremely unlikely. As the focus groups moved on, with further discussion of danger, I felt it was as if a lightbulb switched on with every group, where they suddenly realised what they actually faced. This was indicated by the teams suddenly looking around the room at each other, disputing who did what and pointing out that what other team members did, had been quite dangerous upon reflection.

This was most prominent when telling stories of incidents. They were also reflecting, asking 'what if?' regarding previous incidents and consequently drawing attention to the danger. The discussions were unprompted and, sitting in the room, I felt that it was as if they had only seen the danger for the first time. During the focus groups, teams acknowledged types of danger and understood they can be in danger. However, teams appear to view the context as inherently dangerous and therefore relate to danger as embedded. There appears to be an acceptance that they may be at risk during an incident but attention is placed on preservation of public lives and the job they have to do, rather than their own in the moment. A further interesting insight from discussions regarding constructions of danger, was related to the teams perceiving themselves as potentially being dangerous to others; this will now be discussed.

4.4.2 Dangerous team

Impromptu discussions in the teams, around different individuals' perceptions of danger emerged in the focus groups. Team members began to question each other during the descriptions of incidents, to challenge the decision making of the team member at that time. This was useful as they were de-briefing themselves about the incident and data emerged through this.

A surprising finding was that several teams perceived the team itself as dangerous. This implies that, in part, the context becomes dangerous because of the team's presence. For example, Police Firearms have the capability to kill with the weapons they carry, either deliberately on instruction from an invoked reaction or by accident. Teams are dangerous to one another for this reason, and dangerous to the public and other emergency service personnel on scene. HART stated this based on the equipment they have during rescue operations and echoed by PFA's stating:

> '*In relation to what we do, we are carrying live firearms amongst other things, so we've the ability to kill. So, from our position we are quite dangerous'*.

> '*You are dealing with threat to life, our lives, our colleagues lives, the public, the subject, because if they invoke a reaction from us we are going to shoot'* (FG6 PFA).

This is a particularly interesting finding and one that perhaps inherently applies across the emergency services due to the equipment that they all use. For example, FS stated that they would not like to find themselves at the other end of a hosepipe because of the dangerous pressure. All services are therefore not only carrying out a risk assessment on the incident, they must also include themselves as a potential risk to the incident and public. In this example, I also felt that they described the physical equipment such as ballistic equipment and guns, as shielding them from danger but I also felt it assisted in

their mental preparation for dealing with danger, thus also emerging as a metaphorical shield.

The way in which the teams describe danger closely aligns with Campbell & Hannah's (2010) definition of danger in that the teams face situations that are unpredictable and dynamic, where there is a threat to life or the possibility of severe harm to person/persons in the team and perhaps where there are limited resources. Hannah (2009) and Campbell & Hannah (2010), however, discuss danger only in terms of the risk to the response team and the responding organisation. The data from the focus groups goes beyond this, demonstrating instead a considerable focus on patient and civilian risk in each incident. This suggests that the team definition of danger extends beyond their organisational environment and is instead encompassing of all the people involved. The next section addresses the concept of mental danger.

4.4.3 Mental Danger

FG6 HART not only include the physical or tangible element of danger, they also make reference to the psychological nature of facing danger, or having to attend and deal with what might be considered a deeply distressing situation. Teams talked about travelling en-route to incidents and described how their adrenaline is high if they know it is a serious incident; if they know there have been fatalities, and their preparation and communication is happening 'in the wagon' (FG1 FS) before they arrive on scene. Teams reflected on previous anxiety en-route, particularly where there has been a lack of information regarding the nature of the incident (this can be lack of information on the exact location of the incident), which sometimes impacts their preparation or readiness pre-arrival. Again, this supports Hannah *et al* (2009). FG2 MR concurs with this, stating:

> '*I think its split into 2 types really, maybe….one is physical danger to you and the other is mental/emotional danger to yourself. I suppose if you think about the emotional, mental danger to yourself, then dealing with some of the fatalities. Yeah, we've started to look at that a bit more carefully now in terms of effect on team members*'

> '*A lot of it can be dealing with people who have committed suicide. It can be getting their bodies out of gullies after they've jumped off bridges or hanging out of trees in woods and that's not a usual thing that people might do. Those are some examples of where what you see and what you experience is quite out of the ordinary*' (FG2 MR).

FG2 MR in the second quote, provide an example of the mental danger that the team can face. Attending dangerous incidents where the team face a psychological threat provides challenges for leadership. For example; mental danger is a serious threat to the teams that work in this area and is acknowledged by most team leaders present in the focus groups throughout the study. The concern is primarily of Post-Traumatic Stress Disorder

(PTSD), where the symptoms and influence of seeing and responding to these distressing situations is not tangible at that time. The influence of these incidents may manifest weeks or years later. For example, two team members from FG2 MR described a slightly different situations which were not considered 'dangerous' at the time. In the first statement, the mental repercussions of his not being able to fulfil his role during the incident, albeit not his fault, resulted in years of reliving the repercussion of what he perceived as a failure.

> *'It's something that's affected me most in my 30 years and that was a person who had been dead for several weeks. We knew he'd been dead for several weeks, but it was our task to find them. We pretty much knew where they were but we missed them on 2 occasions and they were subsequently found several weeks later and that affected me psychologically more than ever, it still does'* (FG2 MR).

> *'I've seen dead people before, family members, but they've all died of natural causes but to see someone semi mutilated was… I was quite….you feel full of adrenaline for so many hours and then I remember I was driving home and I asked my girlfriend at the time to drive and she wouldn't….and there was this big lorry screaming down the A1 and I absolutely s**t a brick and we had to pull over and sit there for 10 minutes'* (FG2 MR).

They were both able to recount the events with intricate detail because it had made such a psychological impact on them. The stress from incidents is not only felt post incident (at debrief stage the next day or years later), it can be felt en-route to a known dangerous incident, whist still on scene and in the immediate aftermath of the incident. The example from FG2 MR suggests that this was a stress reaction immediately after the incident. The team reactions to the stories in the focus group provided evidence that this is an element of the role that resonated strongly across the whole team. They were all nodding in a way that appeared empathic; indicating that they understood the psychological stress in the immediate aftermath of his situation.

In this instance, leadership is being able to 'see' the implicit nature of situations and the effect on the team members at the time, but also to understand how these situations can contribute to post traumatic stress responses later. Further to this, their role as those that save others features strongly in their mind-set, and a conflict arises in terms of their self-definition, in which several teams refer to themselves as *'superheroes',* whilst also acknowledging they are not '*superheroes'.*

> *'If you've got something that's been going on for 24 hours and because we're volunteers, we're superheroes, we try to keep going and then suddenly you think this is not good'* (FG2 MR)

> *'It's not that we think we're super human, we just know'*

> *'Can't be super human, we can't be in two places at the same time'* (FG6 HART)

> '*Whilst everyone else is running away from the incident, we're the ones running towards it'* (FG8 FS).

All teams demonstrated a determination to resolve each situation they face. The quote above suggests that this is how they feel during lengthy jobs. Teams described how they can attend multiple incidents in one day. Immediately following one job, they may be called to another and teams commented how they have to mentally prepare for the next incident in the immediate aftermath of the previous incident. FG1 HART stated " It's a case of drawing a line". This implies notions of endurance and is discussed in the next secion In the statement from FG8 FS, the team view themselves in comparison to conventional teams in the emergency services. Their perception of danger is collectively risk adverse, yet they display a 'proud of facing danger' mind-set linking to a '*superhero*' aspect of the role. This is visible in all the teams in the focus groups. Every superhero has the fact that they rescue people as an identifier of self. Hannah, Campbell & Matthews (2010, p.S158) refer to this as the '*heroic ideal',* but in the case of individual leaders rather than a team. In further focus groups, teams instinctively mentioned that they did not see themselves as super human but just highly trained individuals undertaking a role. This suggests that they perceive that others may think or feel that what they do is a bit superhuman.

These quotes referred to the fact that they knew the situation and knew what they were doing to resolve it. The comments above suggest that the situation sometimes dictates how they feel. This may be down to a reduction in resources (mentioned as a potential threat earlier), that leads them to not be able to deal with every incident at the same time. If a few jobs come in at once then this would be challenging, creating stress within and on the team en-route to the incident, and/or immediately after the incident. The comments also indicate that they feel superhuman effort is expected from them in their role and they find this hard to live up to.

They have the expertise and it is expected that leaders and their teams know what to do and how to do it (White & Shullman, 2010), but there is conflict in the reality of what is expected and what is feasible. Despite being able to refuse to face danger, the expectation from the public and often the command structure creates additional pressure on the teams, as they feel responsible. This theme highlighted the implications that danger can have on the teams, but desensitisation to danger was also present within discussions. The next theme will now consider this.

4.4.4 Desensitisation to danger

Danger is inherent in the role of the teams and the teams establish that they face dangerous incidents, sometimes on a daily basis. Although the teams acknowledge that there are tangible physical and mental dangers, there is also a surprising confliction in the way that 'danger' is perceived by the teams.

> '*Well, what you think is nasty, we could probably sit and have our bait and not leave scene….that's just what we've done for the last 20 years or whatever….not saying it's right or wrong and not saying it won't affect us in years to come but it doesn't affect us because…we're there to help*' (FG1 HART).

> *It's how it's reported. The first few pub fights you go to seem horrendous but by the time you're 5 years in, it's just another pub fight, piece of cake*' (FG4 PFA)

> *"It's how you perceive it isn't it. I think we think going to a knife job is dangerous but on our pecking order it doesn't really; you're not going there worried or scared at all because it doesn't – when you first join the police you probably do"*

> '*We come up against knives, people threatening to harm people every day and it's just exposure*' (FG5 PFA).

These examples refer to the understanding of the team member based on their level of experience in the PFA's section. Teams also indicated that length of service, and exposure are factors contributing to the de-sensitisation to distressing incidents. Based on the amount of experience and therefore exposure they have over many years, they no longer worry about the potential danger of the situation. This is also due to their belief that their personal protective equipment will keep them safe. The first comment above is inferred through the phrase '*on our pecking order…*' that in comparison to other types of threat or incident attended, this is not one to be concerned about. In essence, there appears to be a different understanding of the level of danger a person with a knife poses, based on the level of exposure to that type of threat.

Insights in to how they achieved de-sensitisation emerged when describing having to deal with several incidents in a day:

> '*We've gone from siege, bus crash on the way to the axe thing, over to the shot gun incident, all in one day*'

> '*It is one job at a time and once ones finished; I think we're quite good at compartmentalising it*'

> '. *Whatever happened 20 minutes earlier has no bearing, is no longer relevant*' (FG1 HART).

Although this team raised the concept of attending multiple incidents (more than two) in one day, attending multiple incidents one after the next is not a common occurrence for the teams, and that attending a couple of incidents in one day is more common. Multiple

incidents for those that are not de-sensitised would be extremely difficult to cope with emotionally, particularly if they were distressing. The teams have adapted to this way of working by compartmentalising under incidents, using this as a technique for coping with undue pressure. HART in this instance are not saying that what happened in the incident is not relevant but that the result of that job can not impact the quality of work from the team on the next job. The teams make reference to drawing lines. These metaphorical lines symbolise the finality of that incident and fuel their mental ability to move on to the next job. Further to the teams being 'used' to difficult and dangerous incidents, there is a distinction for some teams about being in danger at all. In this study, there was initially reluctance from two teams to see that they might ever put themselves in dangerous situations. FG1 HART and FG2 MR indicate that you are '*doing something wrong if you're putting yourself in danger*'. Additional supporting quotes include:

> '*To some extent, you're doing something wrong if you're putting yourself in a massive amount of danger*'.
>
> '*you're probably doing something wrong if you're literally in a situation where one slip is going to cause you to injure yourself as a team member*' (FG2 MR)
>
> '*It should never happen. It might happen one day, but in theory, if you put these things in place (the process), that should never happen. Plus, you're relying on your pals as well so one will say, 'what about that' and we'll say ok, we'll do that first or xxx will say. We're relying on our own experience to keep ourselves safe*'
>
> '*I think because of the systems we put in place, that we very rarely find ourselves in the situation where we think we're in danger and we're not able to cope because we wouldn't get there*'
>
> '*we're classed as hazardous area response team, so the nature of our jobs is to put ourselves in hazardous areas, but because of this, we are really risk adverse and know the situations we're going in, so we don't*' (FG1 HART).

The above extracts make an assumption that the danger is visible and tangible. There is a primary focus on the procedural element, where there is belief that if the processes that are in place are followed, then being in danger should never happen. If danger is visible and apparent, then they are doing something wrong by putting themselves in that situation. The way this was said implied that if the team are in danger then it is their fault for not following procedure. There is also a reliance on experience and knowledge from previous exposure to inform when there is danger. Although the procedural processes are in place to mitigate the exposure to danger, the discussions in the teams also highlighted some contradictions. The next section addresses team coping processes in dangerous contexts.

4.4.5 Team coping processes

The level of trust and absolute commitment to the team safety is paramount to the cohesion of the team in terms of leadership. The team display leadership throughout with comments such as, *'you become protective over who you work with, you get close to them'* (FG5 PFA). Another bonding process is found in training. One team described that when they trained, if one person did something wrong, the whole team was punished. This would be a long time ago now (old school training) but the mind-set of those individuals will be ensuring that they get it right. During incidents, there is pressure to get it right as their decisions may affect everyone else. No-one is truly a standalone entity, particularly by the end of the incident.

Cohesion in a team was raised when facing danger and being able to cope with this dynamic. This translates through the teams because team members were concerned about being the ones that made a mistake when facing a dangerous context. Interestingly, in a culture of formalised debriefs, the main method of discussing incidents is informal. It is no less valuable, in fact it appears to be a form of drawing out concerns, getting team members to question themselves in a safe environment and being able to constructively criticise decisions made by other members of the team. This is where a lot of tea helps; interestingly, from the moment the focus group began, it was observed as a comfort and also reflects in the post-incident discussions in most of the teams.

> *'I think that's where we have a strong team and it helps us immensely with that because, we have our own therapy, we do you know- whether that's adequate or not, I have no idea but it helps us talk through things and we have a cup of tea'* (FG1 HART)

> '*We go through it and as long as you talk about it, it can get rid of it because you've talked about it. If you don't talk about it and you bottle it up'* (FG2 MR)

> '*I think drinking a cup of tea round the table is as good as anything. Personally, I think it's as good as anything because you're dealing with your crew'* (FG3 FS)

> *'For me, when you go to a job like that, you don't want to be the one that drops the ball'* (FG4 PFA).

Talking as a coping mechanism is a method described by all teams. This refers to talking with the team immediately following an incident and in the hours and days post incident. This also appears to be a way in which the team bond. As suggested earlier, there is some concern from leaders about PTSD in teams and this is an informal method adopted to help deal with the aftermath.

Teams also appear extremely supportive of each other. Team members display leadership, particularly in the form of experienced professionals when it comes to team

members coping with the circumstances. To do this, there is a heavy reliance on the social aspect of the teams, such as '*indulging in black humour*' (FG5 PFA). There is also a reliance on gallows humour. All teams pointed out that this is found in the majority of the teams in emergency services. Humour allows team members to discuss incidents and perhaps voice their concerns and inner worries to the team.

> '*we've always talked amongst ourselves, gone for a pint afterwards…indulged in the black humour which I think all of the emergency services do*' (FG2 MR)

> '*Black humour. So, if somebody goes for instance, didn't bother wearing his ballistic helmet and went to go to a firearms job, everyone would take the mickey out of them*' (FG5 PFA).

In the final extract above, black humour is also used to tackle issues where things have not gone to plan. Black humour only appears to work if the team is cohesive and this was demonstrated in the focus groups. The same humour was used in the interactions between team members when they described incidents during the focus groups. This example shows that they use humour not only to cope but to ensure that their valid point is remembered by the team member, if something wasn't right, they would joke about it with each other as a mechanism for ensuring the mistake didn't happen again. Therefore, even through the use of humour, there still exists a challenge culture.

Several types of danger have emerged in this study. Viewing the potential of danger in these different ways means that that danger can potentially be anything, anyone, at any time. If danger is conceptualised in this way, there are implications for leadership and processes employed to mitigate such circumstances. In an incident where danger is not perceived then, then a different response again will emerge that perhaps does not seek to mitigate the unexpected. Some incidents may include all perceptions of danger to different team members and therefore leadership processes, and resultant enabling responses become more complex and challenged.

Additionally, in contexts where dangers are tangible, teams view the concept of being in danger almost as a team failure; that it is a result of failing to follow procedure. Leadership in this case must be aware of these potential processes of assessment, to maintain a balanced view of the overall situation and to keep motivation high on scene during difficult incidents.

There is conflict in how danger becomes apparent. If danger is understood as being an unexpected outcome of a perpetrator or an external environmental issue, there is some acceptance in teams that this is unavoidable. In cases where they recognise they are in danger but the circumstance is familiar or expected, this led to teams questioning processes and questioning the role of leadership. In some instances, the teams were so used to being in the dangerous circumstance, they had become desensitised to it and

they did not see how they were in danger (until reflecting, as observed within the focus groups). In this case, the concept of danger is only what is not under control.

Understanding that an incident that usually consists of an expected series of events can quickly become an unexpected series of events, might lead teams to not see the danger present until it is too late, and this potentially has implications for leadership. Seemingly, there is perhaps an over reliance on being able to predict situations (discussed in the previous section) based on previous experience.

There are several areas of consideration for leadership in this instance focusing on the team. Based on the type of danger in the incident, teams may choose to take risks and to put themselves in harm's way deliberately, if they feel ultimately responsible for saving someone. In contexts where there are victims of a fire, there may be relatives nearby putting extreme emotional pressure on the team to save their son, daughter, mum, dad or sibling from burning. Team members have described situations where they would run towards the danger to save someone. By implication, if one is running, it appears a reaction rather than a considered response.

This section has focused on the detailed perceptions and constructions of danger by the teams participating in the research. The next section addresses the influence of danger on leadership. This is essential to explore next as it provides findings for the implication of danger on the emergence of leadership processes and subsequent responses.

4.5 The influence of danger on leadership

This section presents the expectations of leadership by teams in dangerous contexts and discusses the complexities of working under dangerous conditions. This section aims to address the third research sub-question,

'*How does danger influence leadership processes?'*

There are limited discussions about the concept of leadership in dynamic contexts and the processes employed in leadership in comparison to normal working environments (Hannah *et al*, 2009). Military studies have addressed leadership in this demanding dynamic context (Yammarino *et al*, 2010), however, there is limited analysis of studies into their understanding of the types of danger present in these contexts, their perspectives of danger or what danger is to the team members and subsequently how to respond to it (Burke *et al*, 2018). In the previous section, team conceptualisation of danger was explored to better understand the findings of this category: what being in danger does to leadership.

The sub-themes that emerged were not purely from the answers to this question in the focus group; they are a synthesis of data emerging during the discussion of specific incidents and grouped where they met the criteria for that theme. In this category, accountability and enabling trust have emerged as sub-themes and social processes of leadership alongside dealing with uncertainty and reliance.

Table 4.4 – Summary table for the category 'influence of danger on leadership'

Category	Theme	Sub-theme
Influence of danger on leadership	Expectations of leadership	Enabling trust
		Accountability of leadership
	Challenges to leadership in dangerous contexts	Dealing with uncertainty

4.5.1 Expectations of leadership

A theme that emerged was around what all teams expected a leader to be. Focus groups were keen to discuss what they expected from the designated leader in the discussions of leadership, and therefore, I have presented this first. Leader traits are not an area of focus of this study but as these came out prominently in the discussions, I have included these. It is important to understand traits of leaders; different leaders display different traits and this has an influence on the type and quality of leadership enacted. Focus lies in the dynamic between the perceptions of what good leadership is, the operational role of the team and the dangerous context. For example, in the following extracts, teams described a leader as being rational, calm and collected under pressures of danger:

'Predominately, you'll get someone who's quite cool and calm and if XXX calm, and we're all calm natured anyway, that's how it runs' (FG3 FS)

'in terms of what leadership is, it is calmness. That calm, rational approach which is needed'. (FG4 PFA)

'*Clear, concise, where the team knows exactly what situation we are in, where everyone knows exactly what they are doing, so there's no mistakes, there's no ambiguity'* (FG4 PFA)

'I think it's being that little bit more calm, confident being your own and teams' abilities and being able to rationalise really, calm under pressure' (FG5 PFA).

There was consensus from the teams in the focus groups but FG4's statement echo's other respondents for leadership in dangerous contexts. The process of removing ambiguity emerges here (Yukl, 2008), discussed in literature focusing on normal teams. In the above verbatim comment, the team are referring to communication as a pivotal

leadership process with the purpose of providing concise instruction across the team. In danger, there is consensus and there is no room for error or confusion. This is perhaps an idealistic statement when we consider the dynamics of working in dangerous contexts as the anticipatory nature of these provides significant challenge for leadership. Conversely, it is useful to understand how teams continue to strive for this ideal when working in these contexts and the expectation that leadership will evolve when facing dynamic situations.

One team suggested that leadership changes from incident to incident: *'I think it's incident based…. the kind of leadership you get'* (FG5 PFA). This team recognise that the type of incident is an influential factor in the leadership presented. Unexpected and unanticipated events can create a surprise reaction in any team member and this is potentially where the danger may emerge without warning. As presented previously, there are different leaders for each team in each organisation, all of whom will all have different leadership traits and therefore differing styles and approaches to leadership. Despite this, all the teams stated that the characteristics of calmness, rationality and displaying confidence in the team's abilities were key factors to leading in dangerous contexts.

In dynamic dangerous situations, if the team sense that the leader is panicked, this will in turn filter to the team as described in the example below. After one team had received an urgent call regarding an immediate threat to a person's life, the leader *"...started shouting at us "Get your kit now, get straight to scene". Everyone felt the hairs on the back of their neck. His panic went through all of us. Everyone started rushing to get their kit together, we all rushed on the scene'* (FG4 PFA). FG5 further emphasised the first response where threat is perceived:

> *'Your first response is either fight or flight which is built into all of us, and then after that, you've got your experiences built in so when you deal with it more and more, it helps your leadership in these jobs because you've got that experience and knowledge to help you deal with the next set'* (FG5 PFA).

Teams acknowledged that with regard to leadership there is a 'fight or flight' mechanism in all human response to danger. However, despite all teams being trained to remain calm, teams in this research believe that the leader's response to the incident has a prominent influence on the team. This is a similar finding to the study of military teams in dangerous contexts (Ramthun & Matkin, 2014), wherein that particular context, their argument for adopting a shared approach to leadership was enhanced by the concept that another team member was able to step up in the leader's place in the event of a problem. If leaders adopt a calm and rational approach to the emergency response incidents, then this filters through the team, thus not triggering the necessity for shared approaches as described by Ramthun and Matkin (2014).

The example by FG4 PFA demonstrates how in real situations, unexpected behaviours can influence the way of operating in this context. The response to panic in a leader is prominent because it is unexpected in a command structure. This is a surprising finding emerging from this study and has implications for leadership in dangerous contexts. The finding indicates that despite the extent of the scenario training, leadership is not straightforward and not always appropriately 'directive'. In this example, although they likely knew that this was a panicked response, the urgency implied in the direct command means that this response was not questioned until later.

Training in different scenarios is frequent for all emergency response teams and therefore this reaction was not anticipated from a designated command position. Training in this case may not have a significant focus on, or include the loss of the leader (through panic, loss of communication or even injury) in the incident, as suggested of military training (Ramthun & Matkin, 2014). As stated earlier, teams would expect leaders to be confident and competent in their role, give the appearance of it or revert to the trained responses of a scenario that was nearest in nature to the incident. The response described places doubt on the experience level and exposure, or lack of, of the leader to the pressure of incidents requiring immediate action.

The previous verbatim quote suggests that this working environment is in a top-down leadership structure, which has influence on the levels of responsibility felt by the team members and is a potential barrier to speaking up. Leading on from this point is the feeling from the team when communication from the leader is deemed incorrect. The reaction of the team seems to be based on firstly the level of the leader's reaction (panic) and secondly, the respect and trust that the team have currently for that person in that role. As previously mentioned, the experience of some team members of working at incidents and their level of exposure to danger is considerably higher than the designated leader or the command in overall charge. The more experienced team members in the focus groups found this a challenge in terms of trust and respect for the leader and this has the potential to influence the necessity for a voice culture, where their experience in some instances could inform decision making during incidents.

Ramthun and Matkin (2014) describe how military teams experience issues where the leader makes a mistake, describing some incidents of flight crews when things have gone wrong. They acknowledge that the military rely heavily on contingency planning before engaging but also acknowledge that this is not possible for every incident. In this case, the leader appears to panic, as there is no pause for planning and contingency, throwing the team into reciprocal panic.

What is interesting is the finding that experienced team members who had significant exposure to these types of incidents, responded to the panic of the leader with reciprocal panic by just doing as they were told. In a culture of accepted directional leadership, such as the military, this is perhaps anticipated, but there appears to be a dichotomy between the conditioning of being part of a rank structure (doing as you are told) and working in a team where you might need to step in or up and display leadership (even if it's not their designated role).

The next sub-theme in this section is the process of 'enabling trust'. This is discussed under the theme of expectations of leadership as an essential process of leadership in dangerous contexts. Trust is discussed in literature as important in teams, however, there are differing elements emerging from this study based on the constantly changing dynamic of threats present in the working environment for emergency response teams.

4.5.2 Enabling Trust

Further discussions around leader traits, included the need for leaders to be credible role models for the team. Trust, conceptualised here as a leadership process, has been briefly referred to in several other themes so far. Often linked to discussions regarding cohesion, trust has been reviewed in literature in teams, but primarily from the perspective of the leader and the necessity to enact behaviours that instil trust in team members.

Discussion regarding trust in this study, however, appears from several different perspectives in team working: trust in the leader, trust in self, intra-team trust and trust from the leader. I refer to these dynamics as team trust. Trust as a theme warrants its own discussion as an important element of understanding how danger can influence leadership.

During discussions of trust, one team states how trust is developed between their team members, stating, '*because we depended on each other, and looked out for each other, that builds trust and cohesion'* (FG4 PFA). In dangerous contexts, the team state that there is a dependence on each other. Dependence in this instance relates to the trust in each other in their application of knowledge to a situation and looking out for each other, meaning that they make decisions that will not put each other in harm's way.

When working in danger, team members learn that they can rely on their team-mates to do this, thereby building trust and a cohesive bond. In relation to attending incidents, leaders of teams assert that trust between the team is critical in dangerous situations, stating:

> '*you have to have trust in each other, otherwise you'll have a big problem'* (FG4 PFA).

'I think we're good in that we are open and we do have trust between each other. You can't dictate the situation in the house from outside the house. You can't micro-manage every situation. You have to be able to say "I need that house cleared" and trust the team you are sending in' (FG4 PFA)

'It helps with trust doesn't it? and it helps to make sure you're doing it right and safely, because you're not just worried about getting yourself hurt, you're worried about the repercussions on your team' (FG5 PFA)

'You've then got trust in the fact that they considered all those things. It then breaks down the trust if you were in the same sort of situation again. How can you take for granted all those things that you did take for granted?' (FG6 HART)

'Decisions trust. You want to know that you can ask a question to whoever it might be, a team leader, and want to know that they're going to make the right decisions quickly and communicate those to you' (FG6 HART)

'you should be able to give people who are working the trust that me or XXX is looking after safety, so they don't have to worry about their safety' (FG6 HART).

All teams indicated that trust was an essential component in dangerous contexts. One of the most prominent issues around trusting the team to do their job was about the safety of team members and ensuring that all team members were aware of potential repercussions of their actions. FG4 PFA described how there can be a sudden loss of control in leadership, and highlight that this is where the concept of team trust is essential. Similarly, the fire service discussed house fires and how there is a sudden loss of leadership control when their team enters a building. Once they are through the door, there is nothing more the designated leader can do. If the team have not been properly briefed or given the correct information then this can create a big problem for them from a safety perspective. For example, if they were told there was no-one in the building, they would make a different plan of entry on that basis. When they are in the building, if they then hear a shout from someone, instinct is to go to that person. Therefore, the plan changes in-situ, rapidly, and communicating is challenged.

In this example, the implications for leadership is that team members must be able to take this control in-situ, to step in. The findings from this study suggest that despite working in a hierarchical structure of leadership, incident dynamics mean that it cannot be purely directive in approach. In this example, leadership responsibility for the team and the processes employed under the conditions of that incident is delegated to the team members going into the burning building. This is the case for all emergency teams, where all had examples of 'leaving' the leader to complete the rescue. Examining trust in this instance; if something happens at an incident to create distrust within the team, it is difficult to regain this.

Teams acknowledge that in-situ, if a mistake is made, there is little opportunity to re-assess or change your mind. The time frame between decisions and actions can be

seconds and therefore the consequence of the action made is the one the team must deal with. Post- incident, there is an opportunity to debrief and this is the time to question decisions and to challenge the sequence of events. The teams are keen to learn from any mistakes made or simply recognise where they could have performed better.

Reference to honesty is made several times by teams. As mentioned previously, issues of trust are raised if the team do not believe that the leader, command or other team members are being honest. If this happens it is possible that teams will not take opportunities to challenge decisions, as their understanding of the individual is that they will not be truthful about events. These comments imply there must be a level of openness and honesty fostered by the style of leadership in the teams, to achieve this dynamic.

In FG6 HART, the concept of trusting other team members is raised. Teams need to trust the leader but they also need to feel capable themselves. There is a need to feel like they are trusted to do the job; that the leader has confidence in their abilities. It is trust from the leader to the team. The leader must be able to trust and depend on the team's ability to do the job. Conversely, in the case of clearing a house from a firearms perspective, the team must have an inherent trust in their leader. They must believe that the leader would not knowingly send them into an incident or scene that they knew was dangerous, or that they were not equipped to deal with.

If trust is lost during an incident as in the example described, it creates further issues for leadership and decision making during the remainder of the incident; it disturbs the equilibrium of team dynamics. As stated in the previous quote by FG4 and its subsequent analysis about building trust and cohesion, it will be unlikely that the leader would delegate responsibility to team members in the future or until further training is received. In the case of all incidents, whoever is leader, team members feel that trust in the decision-making ability of the person in control is essential.

These comments clarify that they identify as a team and therefore mistakes affect the whole team and the teams' professional image. The term 'trust' emerges in this statement implying that the team are under threat of making mistakes. Similar to the leader not putting them in the situation again, team members are concerned that the other team members will think they cannot make the right call and will not put them in the position of making a decision of that type again. Several teams described how they felt more confident in their leadership if mistakes were admitted and learned. Trust was developed between team members by teams having the ability to do this, learn from the consequences and move forward.

The designated command leadership role is often in a 'removed' position from the incident. All team leaders in the focus groups described how their role was primarily to

have an overarching view of the team members, what they were doing, how they were doing it and to gather incident intelligence to disseminate where appropriate. Trust is often placed on the designated leadership position to keep communication and intelligence flowing. Depending on the type of incident, this can sometimes mean putting their lives in the leader's hands.

For example, identifying the location of an armed suspect whilst searching an area. There is often air support, information from the public and ground command support. The information may be relayed by helicopter to the team leader on the ground, who then relays the information to the team members. The information containing the location and situation of the armed suspect must be as accurate as possible to avoid team members walking into an extremely dangerous situation with no contingency, opportunity to plan how to apprehend, or find a method of escape.

If communication to the teams suddenly halted during the incident because the leader was unsure of the next moves, this would be a problem. The expectation of the leader would be to relay this issue so the teams would know to stand still or back. Schmutz *et al* (2018) describe the difficulties of reflection in the heat of the moment in healthcare emergency teams. There is the potential for leaders to freeze or panic because they are unsure what to do and therefore communication stops, or, communication may stop because they are reflecting and thinking of a solution.

Both scenarios' mean that the team is vulnerable to threat. Ramthun and Matkin (2014) acknowledge that this is when a 'speak up' culture is important. Their concept of 'mutual influence' (Ramthun and Matkin, 2014), is pivotal in averting disaster, where a team member may step in at that moment and take the lead. The next section examines the concept of accountability and how this emerges as a leadership process in dangerous contexts.

4.5.3 Leadership Accountability

Assuming responsibility emerged as a leadership process, also described as 'being accountable' and as a result, looking after the wellbeing of the team. The teams understand leadership as being expected to take responsibility for the team. '*One of the major challenges is if something goes wrong, It's massive. It comes back to whoever is in charge'* (FG5 PFA). This is an expected finding as 'setting direction' is an identified leadership process (Morgeson *et al*, 2010), associated with defining objectives and establishing goals.

Teams are looking for someone to take charge of a situation and take responsibility for the decision made in difficult circumstances. Leaders are viewed as requiring strength of

character as they need to withstand scrutiny of their decisions from a range of stakeholders, including the public and media. If the leader is unable to make decisions, due to a fear of getting it wrong, this was viewed as a significant challenge to operational performance:

> *'Someone had fallen badly over a waterfall onto the rocks...the inherent danger in that task was enormous. You've got helicopters overhead, you've got slippery rocks, you've got water, you've got injured people and the pressure to get that person out starts to take over'* (FG2 MR)

> *XXX said one of the biggest things we are looking for from a leader is decisiveness, but another thing is responsibility for decision making'* (FG4 PFA)

> '*It comes back to them officially because they're the ones that said this is what we're going to do. It's a big thing on their shoulders to get things right and to make sure that they've thought of everything'* (FG5 PFA)

> *'I think in that way there's probably pressure on if you're working to someone who's a lot more senior to you; there's pressure on them'* (FG5 PFA)

> '*It comes back to the leadership. If you have the responsibility overseeing, and you really believe this is a replica firearm, why have you got fully armed cops on the scene? And a full siege model'* (FG4 PFA)

> '*There's public pressure as well on top of you. So, if you get a job like that, where there's hundreds of people standing round and you're thinking 'it's too dangerous to go in there', there's that moral pressure, public pressure to go in, take a risk. Probably like the twin towers, they probably knew they were going to their deaths, but they had to get in there and be seen to be doing it'* (FG7 FS).

There is a conflict present between taking responsibility for the team, their safety and the pressure that is *'on top'* of the team at a dangerous incident. Teams want to be effective and resolve the situation, but in dangerous contexts, there is often a moral conflict between what is the correct course of action (not going in a burning building if it is too dangerous), and the expected course of action (feeling of having to go in because the public are expecting teams to take the risk to save others). Pressure is an added complexity for leadership and does not only emerge from the command structure or professional codes of conduct; it can be from multiple additional sources such as the public at an incident. This resonated with many of the teams. Public pressure can also intensify threat levels at an incident, with many people comes additional complexity and unpredictability.

From the previous example, pressure on team members emerged from multiple sources within an incident, either to be perceived to be doing the 'right thing', which is itself highly subjective, or just to be seen to be doing something. This action could go against better judgement; as there are many perceptions of what outcomes are 'possible'. Responses

may be a reaction to a combination of these stimuli, which has significant implications for leadership, as these external influences are dynamic and largely uncontrollable.

The above examples help to explain how the level of pressure on team members may invoke a '*superhero*' response, as discussed earlier in the presentation of data around danger. There is an overwhelming pressure to extract another human being from harm, as they know no-one else can or will. There is, however, an inherent fragility and internalised conflict to this, as the team members are not, as they acknowledge, impervious to physical or mental harm.

Although challenges to leadership have been addressed throughout the chapter so far, the next section specifically focuses on key challenges to leadership, caused by danger.

4.5.4 Challenges to leadership in dangerous contexts

This section presents detailed findings of how leadership operates in teams in dangerous contexts. This is grounded in teams' construction of danger, perceptions of leadership, and what constitutes effective leadership in emergency service teams. Continuing the conversation around danger, and its influence on danger, one team stated:

> '*It challenges it, to see whether that person can cope or can't cope. In that sort of situation, its sink or swim or maybe just float around in the middle. A good leader will swim quite easily and someone who's not so good will sink*' (FG5 FS).

Danger challenges leadership; all teams stated this. The above extract demonstrates the expectation from the team that leaders must personally cope with danger, with the concept that 'good' leaders are able to cope. This relating of mental strength and effective leadership relates back to the concept of a 'type' of individual being appropriate for these teams. It is important to remind the reader why there is focus placed on these specialist teams. These teams adopt a unique identity distinguishing them from other areas of the emergency services. They have a belief that they are the elite, stating:

> '*All of these have much more experience than the normal cop on the street. So you find that if these turn up, the normal cop on the street will generally step back at let us lead because we have more experience in first aid or dealing with people who are mentally ill – we've got more experience than them - these would lead in that kind of situation*' (FG5 PFA).

The issue with this concept of being elite is the potential for over-confidence. One of the biggest challenges to leadership in dangerous contexts is uncertainty, created by ambiguity in dynamically unfolding situations (Good & Sharma, 2010). The challenge for leadership is to employ processes that seek to remove ambiguous elements of a context as uncertainty disrupts the normal enactment of operational procedures. When teams are working in danger, unexpected events can suddenly occur, presenting issues for the normal provision of leadership. The next section explores this.

4.5.5 Dealing with uncertainty

The discussions in the focus groups suggest that the teams 'expect' particular types of incident, such as knife attacks or people brandishing a gun, stating, '*you just get conditioned to it. Maybe you shouldn't, maybe take it a different way but it's just you're expecting to go to it*' (FG3 FS). Described earlier as tangible incidents; the danger is measurable. For example, PFA described that once the perpetrator has been contained, the team has procedural options for capturing and detaining them; and is trained extensively for such incidents. In many cases, the perpetrator will do exactly what the team has anticipated.

The teams are conditioned to respond to certain likely responses from perpetrators. The benefit to this is that 'expected' behaviours enable the team able to pre-plan responses en-route to the scene, enhancing cohesive action. The issue with this, which the teams in the study are aware of, is danger from unanticipated and unexpected circumstances rather than those they are trained for.

In FG2 MR, the term '*out of the ordinary'* was used, meaning that this type of incident was not something that they would expect or anticipate. The clear implication being that teams are not able to pre-plan or train for all these types of circumstances. FG6 provide an example of how, despite having numerous procedures to counteract danger, danger can manifest unexpectedly in a real-life situation:

> *'For me it's something that's not necessarily controllable by procedures that we've got. So, you go to a car accident on a busy main road or a motorway, you know the sort of things you need to do to keep yourself out of danger, moving traffic and things like that; but a say a house fire, it could change in an instant. Where you have no control over it. To me, that's what constitutes a dangerous situation. Where the variables are not necessarily controllable'.*

> *'Possibly something that goes way beyond your procedures which you may have to rely on experience to deal with, the experience of the crew, operational discretion again*' (FG6 FS)

> *'It's unknown as well isn't it? You are going into an unknown, so you have to try and mitigate that every time. You do not know what you are up against. I think that is the thing. You don't know what's going to happen or what could happen*' (FG7 FS).

There appears to be an inherent conflict between the team self-belief in their training and preparedness, and their awareness that they will still be subject to the unexpected. Significant focus is placed by teams on the unknown and what they can't predict; namely those incidents that fall outside of procedure. The implication for leadership is the unexpected creates additional ambiguity and uncertainty in the team members, in

response to a perceived lack of control. This perception appears well founded as dangerous contexts are prone to uncontrollable events with many changeable variables to be considered and are usually accompanied with no prior information. FG7 FS states this, indicating that they often don't know what they are going to face and therefore are unable to pre-plan tactics, often needing to try to mitigate (or adapt to the circumstance) on scene.

As a working principle, teams working in dangerous contexts believe that they need to establish control of the situation to resolve the incident quickly and safely. FG7 FS provided an example of when they consider a context to be dangerous, stating, *'where you have no control over it. To me, that's what constitutes a dangerous situation. Where the variables are not necessarily controllable'* (FG7 FS). Dealing with the unknown puts team members under additional pressure, with concerns expressed of not being able to assure good outcomes, due to lack of control and clarity. Supporting this assertion, FG2 MR describes circumstances where they were placed in danger without warning and without upfront information to enable them to prepare:

> *'One occasion when we were searching around XXX in XXX, we'd been out looking for this chap who'd slipped out of there, and we'd been searching for quite a while in dark fields sort of just shining a torch round. Then a message comes over the radio to get everyone in as quickly as you can because it was suddenly brought to the controller's attention that the person was actually dangerous and wouldn't want to be found and we shouldn't be out there looking for them. That's the unexpected.'*

> *'Nothing happens on the town moor'…until cows start running at you. Nothing prepares you for that. I was working with an ex-dog handler… he said he'd never been so terrified because all you could hear was the thundering of them and you're spinning round to see where they're coming from. There's no amount of preparation you've ever done before.'*

> '*We had a missing person, thought possibly to be in the Tyne. This was shortly after storm Desmond. We had teams out, dog teams on the river for about 8-10 hours, it had got dark. The guys wanted to go and do a last stretch. They'd started to do that and basically, they were losing control… this is starting to get dangerous. So we pulled them out'* (FG2 MR).

The first example here states '*nothing prepares you for that'*. Throughout this findings chapter, incidents provided as examples of danger are predominantly where something unanticipated during the incident has occurred or there has been *'A dynamic change. You never know what you're going to'* (FG7 FS).

The findings here however, indicate that danger is not a deterrent to action. Team members will often find themselves in dangerous and unexpected circumstances. A particularly interesting finding, however, is that despite not always being prepared, teams will put themselves in dangerous situations with the purpose of mitigating a sudden

unknown change in the incident. This is often to prevent harm to others, and supports the finding of teams referring to themselves as *'superheroes'*; '*the situation could expand to involve other people or things and you've got to take mitigating action to stop that, which may or may not mean putting yourself in danger to stop that'* (FG7 FS).

In this instance, the fire services call a sudden or evolving changing situation, 'dynamic'. This is a term that is also used procedurally, as all emergency services conduct '*dynamic risk assessments'*. This is a formalised procedure which takes place pre-incident. It is a form of scenario planning where all perceived potential risks are assessed. Teams will draw from their experience and personal knowledge of situations to make judgements about the risks involved in these scenarios and *'we'll very quickly come up with some contingencies and some options'* (FG5 PFA).

However, the intrinsic nature of a '*dynamic change'* means that dangers may not be foreseen and therefore there is the need for ongoing and continuous dynamic risk assessment throughout the incident to mitigate risk.

The exploration of how emergency response teams understand leadership in dangerous contexts has generated emergent findings regarding dealing with the unexpected, and the unique pressures placed on the teams to respond to uncertainty in dynamically unfolding situations. This informs the teams' expectations of leadership.

Although specific focus on leadership 'traits' and 'behaviours', such as being calm, rational, clear and concise are not in the scope of the study, it has been essential to make reference to these and their relationship between leadership expectations and leadership processes, to honour the participant voice (Ponciano, 2013), because teams use these terms to construct what they mean by leadership and how by employing these traits, enables leadership to operate in dangerous contexts. Next, the final theme presented in this chapter focuses on the process of fluid leadership, discussing how leadership emerges in response to danger.

4.6 Fluid Leadership

The teams' construction of danger in the previous section informs the following analysis of leadership across the teams when facing danger. Themes emerging from discussions around incidents in the focus groups are integrated with processes identified in the subsequent process card exercise. Specifically, diagrams replicated from the photographs taken of the outcome of each process card exercise are integrated to support the findings of the focus group transcripts. Supporting narratives are provided to enhance the reader's understanding of how leadership in teams in dangerous contexts is enacted.

This section aims to answer the fourth and final research sub-question

'*What are the leadership processes of teams working in dangerous context*s*?*'

Previous sections in this chapter have presented team's construction of danger and the influence of danger on leadership. This section presents themes addressing how leadership has emerged in response to the influence of danger, its "unique causes and contingencies" (Hannah *et al*, 2009, p.898) and the context in which teams operate. It is useful to briefly remind the reader how the data was collected, as my method of collection and analysis supports my justification for the presentation of 'fluid leadership'.

Each focus group engaged in the team discussing a dangerous incident that they had worked in. Themes emerged through an inductive analysis of the transcripts of the incident discussion. Justification for this approach is embedded in the literature. Although focus is on identifying what processes emerge during incidents (Baran & Scott, 2010), it is also on how leadership emerges in dangerous contexts, the types of leadership, and processes wherein leadership is 'enacted'.

Klein *et al* (2006) presented four different types of leadership as emerging in their study of emergency trauma teams as a framework to explain how leadership and leadership processes appeared in those teams. Similarly, I have represented leadership as three emergent types to address the complex interplay of styles, types and non-linear social processes of leadership that emerged as part of the data analysis process.

The themes emerging in this section are: *self-directed leadership,* where the concepts of autonomy and responsibility for self are discussed; *adaptive leadership*, where focus is placed on social processes of risk assessing, sense making, and dynamic decision making; and the process of *shared leadership*, where changing leadership style, leader rotation, and the process of leadership through knowledge and experience is examined in detail.

Table 4.5 – Summary table for the category 'Fluid leadership'

Category	Theme	Sub-theme
Fluid Leadership	Self-directed leadership	Autonomy in team
		Responsibility for self in incidents
	Adaptive leadership	Continuous risk assessment and evaluation
		Sense Making for adaptive response
		Dynamic decision making
	Shared leadership	Leader and leadership rotation
		Leadership through knowledge and experience

Previous and recent studies in teams in dangerous contexts have described leadership as shared (Burke *et al*, 2018), distributed (Gronn, 2002), or adaptive (Marion & Uhl-bien, 2010) and each is discussed in isolation. In this study, fluid leadership is conceptualised as a series of dynamic interchanges; consisting of types of leadership and leadership as a set of dynamic inter-related processes. Hence fluid leadership is presented as a category containing these leadership styles, and sub-themes.

These emergent types of leadership are in addition to the concept of directional leadership, in recognition of an existing hierarchical structure in every emergency service and the identification of a designated leader. The first emergent type of leadership discussed is self-directed leadership.

4.6.1 Self-Directed Leadership

The necessity for teams to lead themselves became a prominent theme emerging from the data and was one of the most densely coded areas of the analysis. Despite the nature of working closely as a team, complexity is added when they acknowledge that team members as individuals are also '*autonomous practitioner[s]*' (FG6 HART). HART team members are viewed and view themselves this way because they are all trained as paramedics and are used to working independently.

They gained this medical expertise separately from working in their current team, and as an operational paramedic, they were trained to work independently as well as part of a crew (usually a two-person crew). Teams working in dangerous contexts have been established as tightly bonded. This concept of autonomous operation, however, suggests that even in a highly cohesive team, members retain significant independence. In addition

to this independence, teams believe in some part that because of this and the fact they work as a specialist team, and have more exposure to dangerous incidents, they need less formal leadership. One team stated, 'w*e don't need that much leadership'* (FG6 HART). In this example, the team indicated that they understand leadership as coming from a designated leader. I interpret this statement as meaning that the team does not believe they require much leadership from the command structure.

There is a conflict in this understanding when they face danger; in that teams originally stated that directive leadership is present throughout. It is possible that in dangerous contexts this is largely self-directed leadership, whereby the team is making authoritative decisions based on their experience.

Team members across all the teams may be tasked to do different roles on scene at an incident. Teams cross-train in doing a range of different roles in order to be able to take over from other team members. In this regard, they take charge of that role and the responsibilities that fall within that role, and therefore they essentially retain their independence on a task-by-task basis. This is useful as during an incident, they may be required to rotate roles and responsibilities due to circumstances. If one team member becomes incapacitated due to equipment or communication failure, another team member can swiftly assume the task. Previous findings stated have already established that this can often happen seamlessly, through team interaction and without necessarily relying on verbal communication, thus recognising that as a social process, communication goes beyond verbal interaction.

Retaining independence in-situ leads to the potential issue of multiplicity of voices being present on scene, with differing opinions. FG6 HART state that due to the nature of working in teams with designated leaders and rank structures, their suggestions as a team may lack weight in decision making. Their view is '*that can make it very difficult because everyone has got an opinion…and a valid opinion but at the end of the day, it has to be one voice sometimes'* (FG6 HART). Multiple voices can lead to conflict and confusion on scene. The role of the leader is to organise the path for the right voices to be heard at the right time, and to help remove conflict and provide clarity on the decisions made.

Reducing confusion and creating clarity is dependent on the leadership style of the designated leader. If their leadership style is directional and top-down throughout an incident, this is perceived as being unlikely to be achieved. Clarity in dangerous contexts is paramount to making decisions and achieved by ensuring the team all know and understand the situation. Clarity is essential, but so is the availability and knowledge of alternative options for action. It is established that teams defer to the more experienced

team members for situational input. Where this does not take place, optimal options can be missed.

Self-directive leadership emerges strongly in the team discussions particularly when discussing larger scale incidents. This appears to be a process embedded in every incident that the teams attend. Based on the size and complexity of some incidents, such as a larger fire in different sections of a building, the team may be spread out or split away from the rest of the team. For the team to operate and conclude the job successfully, there must be room for individual team members to retain their independent thinking, whilst working alone, with the ability to make their own decisions. Often this is due to time critical situations and difficulty in communicating at incidents if the team is spread out. In many cases the teams agree that:

'*Yes, just do it. We don't stand at the back of the vehicle and wait to be tasked, we task ourselves*' (FG1 HART)

'*What we've got is a lot of experience, so you don't really need that level of a person acting up as they all know their individual jobs that they have to do*' (FG5 PFA)

'*We get like a basic sort of direction from whoever's in charge that day but once we've been told 'this is going to happen' we tend to be like get on and not micromanaged*' (FG6 FS)

'*If you are first on scene, you have to perform that leadership, make those dynamic risk assessments, on yourself*' (FG6 HART).

Based on training and experience, teams point out that they generally know their jobs at an incident. In this case, inexperience does not mean that there is no self-leadership. Each team member is capable of leadership, working without directional command and will be accountable for their actions. The next section addresses the concept of adaptive leadership and the sub-themes that relate to this theme.

4.6.2 Adaptive Leadership

In order to navigate complex systems, leaders must stay ahead of the complex demands. Hannah *et al*, (2013, p.393) state that as a result, leaders must possess "*a requisite level of complexity that allows them to perceive and assess these complex and changing dynamics*". This study recognises that as the complexities of work environments expand, so to must the capabilities of leaders to adapt and challenge the existing processes and seek to utilise those that enable and support leadership in these contexts. Yukl and Mahsud (2010) focus firmly on the behavioural flexibilities of leaders in context but also discuss the importance of disruptive events as being influential to the adaptive

development of leaders. This approach has been found to be limited in the current literature, and therefore this study has sought to explore this adaptability.

The following processes were identified as sub-themes that support the capacity of leadership in dangerous contexts, emerging from data; Sense making, dynamic decision making and risk assessment and evaluation. The themes contain several sub-processes which are also discussed. The first for discussion is sense making as a process of leadership.

4.6.3 Sense making

Individual sense making is a process which receives some attention in the literature discussing leadership in dangerous contexts (Baran & Scott, 2010). Conversely, social components of sense making emerged from this study. Concepts which prompted discussion were primarily groupthink and the process of collective sense making in teams, which have received little attention in the literature. This section begins by presenting the understanding that teams need to understand what is required of them; *'if you're tasking a team, they've got to understand what they've got to achieve'* (FG1 HART).

Teams facing dangerous contexts need to collectively make sense of what is happening (Uhl-Bien, 2010). This process is to ensure that all the team are working together to a clearly stated goal. An interesting sub-theme of this study is the concept of Groupthink (Kayes, 1996). An example of this was discussed in one focus group but the concept of '*things haven't gone quite as they should have done'* resonated across all the teams:

> *'Thinking about specific incidents, I can think of two in the last year where things haven't gone quite as they should have done. So whilst I agree we have all these processes and procedures in place, we tackle them very professionally, there is this …it might be described as 'group think' you get in to when doing this. As a group, we're all going with that, and we don't necessarily challenge'* (FG2 MR).

Groupthink can be a positive phenomenon as it means that the team are thinking coherently as a collective. This is useful for teams facing danger, as this chapter has established, based on the cohesiveness of teams where sometimes communication is not even needed. When a team are so in tune with each other, this presents some really useful opportunities for leadership as the job will be done without question and every member of the team knows and understands where they need to be, and what is expected from them.

In the example provided, this can also present some challenges. If Groupthink is conceptualised as a process of enabling leadership in dangerous contexts, this process can lead to a lack of challenge to leadership. In previous studies of disasters, this lack of challenge has proved fatal. On scene, the emergency services do not challenge decision

making unless there is an obvious threat associated with that decision. Challenge may be reserved until post-incident, with the implication that adaptive processes may not be enabled.

The problem with groupthink is that threats may not be challenged, nor recognised. Groupthink as a process challenges the team's ability to see beyond their goal and look further than the immediate decisions. This is exacerbated where experience is perceived as leadership and decisions are instinctively trusted. Scenario planning may become overly narrow if the team have no concept that an incident can go another way. In this case, groupthink is a potential problem.

Another example of how this phenomenon manifests in teams is where teams internalise information sharing, excluding outside influence.

> '*You've been bombarded with information up to that point, but on the ground it's that discussion with your partner as to how you deal with the situation. It's our world. When another car comes into our world, it's then how the four of you deal with the situation*' (FG4 PFA)

> '*if we go to any incident, we'll always talk to the sergeant first, and he'll give us directions on this is what I want you to do and this is what's going to happen*' (FG5 PFA)

> '*It's actively encouraged for people to voice their opinions and sometimes those opinions are taken and sometimes they're not, which is what advice is all about, ultimately*' (FG7 FS).

A key concept is '*our world'*. If the team believe that what is happening is within their world, then their thoughts and opinions and decisions will be the ones that count. This can exclude the seeking of external sources of information which could prove vital. Prediction based on experience in this case could lead to potential complacency of teams and a lack of adaptive capacity when attending incidents where they believe the '*expected*' will occur.

Sense making literature refers to the process of helping teams to remove ambiguity. White and Shullman (2010) focus on the leader's effectiveness and ability to deal with differing degrees of ambiguity. In this study, it has become apparent that leadership is viewed as being about removing ambiguity rather than helping to make sense of it. Leadership is therefore situated in the team rather than within an individual.

There is, however, acknowledgement by the teams that in adapting to dynamic change, there is the need to seek to break with preconceptions and conditioning.

> '*Every incident is different. You try and put the skills that you've learnt or gained into other incidents, but there could be something at one incident that's just a little bit different, you can't use the tool that you wanted to, and then you have to adapt, improvise and overcome*' (FG3 FS).

Sense making is therefore a dynamic process which is essential to responding to change, adapting and leading the team towards an effective and positive result. The next sub-theme discusses this as dynamic decision making.

4.6.4 Dynamic Decision Making

Decision Making is a theme that emerged as an adaptive process, supporting the literature in this area (Good and Sharma, 2010). Decision making is addressed by the teams as a key leadership process, 'f*or me the definition of leadership in that critical situation is that ability to make the decision'* (FG4 PFA). This section addresses decision making both as a collective, and in terms of there being levels of decision making within an incident.

A finding of this study is that decision making is not a linear process, made at identifiable points within an incident by the leader. The process of decision making appears to be far more fluid, moving from one person to another depending upon the incident and the expertise of the team. A unique complexity is that decision making is often made within limited time constraints in dangerous incidents; *'it's over in 30 seconds. But in that 30 seconds there'll be a million and one decisions by the team'* (FG4 PFA)*.* Based on this comment, time is a key factor influencing leadership in emergency response teams. This study conceptualises decision making as a dynamic process of leadership. In dangerous incidents, the pressure to make decisions becomes paramount. In a normal general team working context, the repercussions of a failure to make the right decision is not life or death.

> '*within the team the people who rise to the top when the decision needs to be made, and there's not someone there to make that decision for the group of people'*
>
> '*That's the ethos we strive for. We want everyone in the team to feel they have the power to make those decisions* '(FG4 PFA).
>
> *Some people are better at making decisions and some people are more risk adverse'* (FG5 PFA)
>
> *There's a lot of levels to work through when you are decision making in a time critical situation, that might be quite challenging'* (FG6 HART)
>
> '*Each person on a watch has to be a decision maker as well. The way we train is sometimes very sterile, black and white. When you go to an incident that dissolves into various shades of grey'* (FG7 FS).

These examples describe how all team members need to be able to carry out the process of decision making throughout an incident. FG4 implies a difference in thinking to what

was expected from teams facing danger; that risk aversion can be difficult to overcome, particularly in incidents which are often time and resource critical. The person who is risk averse may in fact create more risk to the team through delaying decision making. A situation may rapidly become worse necessitating mitigating action.

Further to this, where decisions are coming from a person off-site (remotely) this may mean that team members may need to adjust these decisions as the incident unfolds. What is different about this process is that it is described as something that even training cannot teach, indicating that '*it's something you learn from an incident when you're surrounded by people screaming, my kids are in there*' (FG3 FS). Teams suggest that learning to make sense of a situation quickly is through the process of experience. This is the only way it can be contextualised.

The pressures of this situation cannot be substituted in training for the real emotions of a mother whose children are trapped in a house fire. The decisions that are made could result in their death. All the teams find it difficult to detach from the decisions that need to be made. They believe their purpose is to be there to help and it is difficult when this isn't possible. They face a great deal of emotion from those around them as they are not just drawing from each other to cope and understand the situation. However, the teams assert that leadership within the team is a part of dealing with this:

> *One thing that can be difficult for XXX in particular, is that you've got to make those decisions in quite contentious environments. You can be drawn in, you can be sucked in so easily by patients. People are there, they're screaming help, they need treatment, you're there to provide that treatment but sometimes that's not the right thing to do*' (FG1 HART)

> '*When you are in a dangerous situation, it's when someone has the ability to make quick-time decisions, because a lot of the time you'll have a long period of intelligence gathering*' (FG4 PFA)

> '*A split-second decision you take on the ground will be pulled to bits and that is where the real leaders step forward, and clearly state what they want to happen*' (FG4 PFA)

> '*danger just makes it incredibly difficult to make the decisions sometimes, without all the information that could be available. You don't have it to hand at that one given point so decision making is really difficult in dangerous situations*' (FG6 HART)

> '*As the complexity or size of the incident increases we try and limit spans of control of the Incident commander to 5 to ensure he/she does not get information overload when making possible important life critical decisions*' (FG7 FS).

It has been established that in large incidents a delegated leadership style is adopted, to manage the scope of control. Leadership decisions are made at varying levels of rank, expertise and experience, potentially all at one incident. Danger complicates decision

making at all these levels because of the unique challenges it presents. These comments show that danger invokes pressures on leadership decision making, such as time, lack of information and the level of complexity, proposing that leadership is the ability to make sense and adapt within this context. Interestingly, one team stated that up until a decision was made regarding the action they would take, their feelings were heightened:

> *'That decision, it was at that point during the incident where I was in a car with three other guys, it was strange that with just that one decision, an element of calm descended on the whole situation'* (FG4 PFA).

In this case, the commander had provided the options that they had and laid out what action should be taken in each eventuality. This resulted in the team knowing exactly what they needed to do in each scenario and there was a resultant calmness. In the case of a firearms incident, this decision removes the concern that the team will find themselves in a situation where they need to make the decision to shoot. Of course, there are times where that decision may not be made until the last minute. Concerns around this issue are valid as it is already acknowledged that procedurally, post incident, there are challenges made to decision making. The leader is essentially a problem solver for the team.

4.6.5 Problem Solving

'Solving problems' in the literature is a recognised leadership process in teams. These findings show that solving a problem influences the immediate danger the team faces. Decisions taken to resolve a situation are perceived as having a clear result in reducing the level of threat to teams.

> '*you need to rely on them. You look to them to say am I doing this right and they're hopefully helpful in saying yes you are'* (FG5 PFA).

Continuous dynamic risk assessments, discussed above, are key to solving problems. Although this is procedural, it is also a social process. Risk assessments are based on knowledge of previous exposure to incidents. This knowledge enables leaders to 'see' unanticipated issues, often before they become an issue of endangerment. This can provide solutions to problems and reassurance to team members with less experience.

> *'because if you've never been to a real incident before, this is your first time there – you just want that little bit of guidance, bit of reassurance to say yes that's right'*(FG5 PFA)

> *'We don't want our guys coming in worried about doing their job. Any concerns or hang-ups we need to help remove'* (FG4 PFA).

Resolving problems that occur on scene is rarely done by one individual. Resolving issues is a collective process where the team have a voice and there is significant emphasis

placed on the team voicing their thoughts and opinions. The repercussions of this are stated:

> '*you may have to take someone's life so for you, you have to know that everything is clear, so that when you make the decision, you are backed and doing what is asked of you, with no ambiguity*' (FG4 PFA)

> '*If you use the analogy, it's very rare that parents make decisions that benefit only them and not the family. Using that, if XXX and me are the parents, our decisions must be in the best interests of these guys*' (FG4 PFA).

The process of thinking through problems and potential obstacles informs decision making, reducing uncertainty of action:

> '*Everyone knows what they are facing, everyone know what outcomes can come of it. If he comes out with a gun, or he doesn't come out with a gun, or he's got it against someone's head. It's knowing exactly what to do*' (FG4 PFA).

This process is also useful if the team find themselves in an unanticipated dangerous circumstance:

> '*You just try and make sure that every step you take, you're thinking 'ok if I now slip, what's going to happen and if what's going to happen is I'm going to end up in the water, you don't take that step…but that's not a perfect situation, at night in the rain with a flood, with trees suddenly coming round the corner or whatever*' (FG2 MR).

Problem solving is an intrapersonal process, but as identified in this example, is also self-directing. Team members continually risk assess and scenario plan to anticipate danger. This example demonstrates the potential dangers that sometimes occur when trying to help someone else. Awareness of the potential problems is essential, so scenario planning continues alongside making decisions to limit the danger. This may be based on knowledge, scene awareness, risk types, and available skills or equipment.

When incidents don't go according to plan or there has been a large incident, the debriefing process is where problems can be identified and resolved before the next incident. As previously discussed, the debrief is a procedural process that helps teams to identify problems and promote discussion to deconstruct and resolve them.

4.6.6 Continuous risk assessment and evaluation

A social process and theme to emerge, as discussed above, was assessment and evaluation. This has elements of '*challenging the team*' (Morgeson *et al*, 2010), but is a more specific form of situational assessment to respond to danger. The main form of evaluation has been from risk assessments continuously performed during incidents. As a result, there has been continuous evaluation of the situation made at each stage. One team leader states:

'*Because we accomplish our goals, and in general we do it safely. I think if you look across our deployments, our overarching goal is to do our job safely. We understand there is a level of risk to what we do but if we are doing things safely, and we are getting the results, then we are effective*' (FG4 PFA).

As this example demonstrates, evaluation is the team perception of whether they were effective, based specifically on whether they achieved the job safely. Teams referred often to following procedure, such as post-incident debriefing. Most teams acknowledged that a formal debrief was not always necessary after smaller scale or run-of-the-mill incidents.

If the team had experienced a difficult job, they generally talk about it informally. However, after a large-scale incident or where there was a threat to life or firearm discharged, there would be a full formal debrief. These are viewed as challenging but are used as learning opportunities for future incidents. Debriefs offer the chance for procedures, actions and operational decisions to be scrutinised and updated. For example;

'*You'll be looked at under a microscope. This is hard because it's not something that you do often. For that incident for some of the lads it was their first. After your first post-incident your head is spinning*' (FG4 PFA).

The teams acknowledge the purpose of the debrief is not to assign blame, although this could be an outcome if unjustified actions are taken but are to understand incidents and generate learning. All teams discussed reflection as a team process*:*

'*Generally, if we have anything clinical which has involved a lot of the team, I'll write a reflection on it. That's just something I do for my own….like CPD almost. That's shared amongst the group if anyone wants to read it. If you read their reflection, it's probably different as they had a different job in that team. So I keep hold of things like that*' (FG1 HART)

'*It wasn't until about half an hour to forty five minutes later, after everything was finished, you're thinking "actually, that was pretty close that like*' (FG4 PFA)

'*We reflect after every job, we critically analyse ourselves. We're really harsh on ourselves. We do it without even knowing we're doing it. Have a job, we come back and we're reiterating a job, or the whole teams there and we're talking about a job and reflecting on it, looking at different sides*'

'*The culture of this department that you're always critiquing what going on…..if you think in the back of your mind that you weren't happy with where I was there then next time, you won't do that. Self-critique as you go*' (FG5 PFA)

'*Look at the failures there; you've got to reflect on the whole process*' (FG6 HART).

This is not a formalised process, but one which they decided to do for the purposes of learning from incidents. FG4 show that reflecting is particularly important where there have been near misses or failures in order to learn and inform future decision-making processes.

FG6 focus on viewing each incident as a whole. This is possibly so that the sequence of

how the incident unfolded and how decisions were made are transparent and potentially replicable. As a result, teams can seem harsh with their critical reflection of their own actions. Self-critiquing is viewed as being an essential element for personal growth in the team. Teams are quick to point out that this is now part of the culture of their team.

Continuous learning, individually and as teams is an emergent social process. To self-critique, team members seek peer feedback to analyse their thought processes that led to decisions made. Evaluating if there was something that could have been done differently is common across the teams.

> *'I don't think there would be anything I would have done differently last time but you know, it was just, the knife that he pulled there, he could have come down and stabbed anyone. I don't think you think about it until maybe after'*

> *'To be honest at the time I don't always know what I'm doing, in the moment. That's how we learn, by challenging our mistakes. We need to share that learning. It comes down to honesty. It's in the statement of values. The process needs to be described accurately'* (FG4 PFA)

> *'They all give their bits about what they did and then me and XXX would say "yes that is great, yes that's great, but maybes we could do this next time?'* (FG5 PFA)

> '*You've got to learn from past mistakes; you've got to be the type of person I think that's willing to take on that learning'* (FG6 HART).

Ensuring this learning process is continuous means they will retain this knowledge and experience moving forward which is essential for growth in the team. The process appears to be successful for the teams. Of relevance to this study is that they feel that evaluating all aspects of the incident, including themselves, is key to their effectiveness.

Every team conducts a dynamic risk assessment of the incident as procedure. Gathering information about what is happening, how it has happened and establishing the risks based on a range of potential scenarios. If a team member arrives at an incident, they can find themselves in unanticipated difficult circumstances, and they may be the least experienced team member.

Decision-making is a theme that has been addressed already in the chapter but in this case, there is significance raising it here because it's an essential process to team members enacting self-directed leadership based on their own risk assessment and evaluation. The word 'freedom' used in the example below is unexpected due to the rank structure and heavy procedural parameters surrounding what these teams do. They also refer to '*operational discretion'* which means that team members or the team can make decisions based on their own assessment of the situation. There is emphasis on their being able to provide explanation for these decisions and justification for choices made, they do not go unchallenged, but this is a post-incident process:

'*You have to be able to take some criticism without a doubt and you have to be strong enough to put your point across as well, but in the right manner*' (FG3 FS)

'*Historically as a service we are quite unique. We do have a rank structure, but the amount of freedom to use discretion and make your own decisions*'

'*if you are sent into the area, and the authority hasn't been given, we are in as much danger as anyone else, as we aren't armed at that point. You might have to self-authorise that and make your own decision*' (FG5 PFA)

'*Sometimes you've got to go against procedure to get the job done. If that means someone lives or dies, that's sometime when you have to break that procedure. But then again, if you think someone's going to get killed doing that, you think…*' (FG7 FS).

There is consideration in the focus groups to the breaking of procedure. However, due to the critical nature and dynamics in this context, this would be expected if it was life or death of the public. However, there is more consideration for the safety of the team members, many teams stating that their work safety is priority. This makes sense given that if they are injured, then there are more casualties to deal with on scene, and less responding resources.

In some instances, there is significant risk involved in self-directing based on personal evaluation. In the PFA example above, the team are talking about the risk of needing to self-authorise shooting someone. This is an unlikely circumstance, but they live with the knowledge that this is what they may have to do one day. However, if they are in danger yourself, they have the right to protect themselves.

This comes with significant risk of danger physically and psychologically. One of the key areas raised in terms of self-directed leadership was the ability to take constructive criticism based on the actions taken and be able to defend your actions. Extensive scrutiny may be a damaging process to the team and individuals. For example, the level of extremity of the repercussions are severe to teams, '*If he slashed her throat whilst you are on scene, it's you that has the questions to answer*' (FG4 PFA).

The next section for discussion is Shared leadership, which addresses how leadership operates in the team as a shared process and presents how this influences the enactment of other leadership processes.

4.6.7 Shared Leadership

Shared leadership appears in the team literature described as a process (Bergman *et al*, 2012) and it also appears in this study as a theme comprising several component parts such as knowledge and experience, leader rotation and leadership as a distributed process. In this study, shared leadership appears as an important aspect. To start this

discussion, a finding of this study is that despite the rank and a command structure, leadership is not purely found in the designated leader. As focus groups pointed out:

> '*leadership doesn't always have to come from the top*' (FG3 FS)

> '*I think as a crew, we've all got leadership skills in our own right and everybody has got a voice*' (FG7 FS)

> "*When there's a firearms incident though there's a command structure which can then take away the rank, it supersedes the normal rank structure, you have bronze, silver and gold. Bronze command can be a PC who is giving direction to a sergeant up to Inspector. You can have an Inspector in a car, taking direction from a PC during a firearms deployment. Then you've got silver command and gold commander*" (FG4 PFA).

This statement is supportive of the rank structure way of working but is different in that it appears that leadership is situational, and incident specific. The rank structure does not automatically marry up to the command of the incident. As there is a clearly defined structure in terms of command and therefore accountability, this is a deviation to deal with danger. The adoption of a fluidly shared leadership where the incident criteria 'supersedes' rank structure, was an unexpected finding of the study.

It appears there can be accountability regarding the outcome of the incident which is potentially in conflict with rank and position. For example, if a lower in rank team member assumes a leadership role, full accountability is also shifted to this position. All teams discussed this shifting of leadership based on the necessities of an incident. Based on the above discussion about the skills required the implication for leadership is that all team members need to have requisite leadership abilities.

Teams also concur that there are challenges for leadership in teams because it is not simply roles and responsibilities that rotate. There is a rotation the role of the leader and therefore the responsibilities of that role:

> '*There are challenges of having a rotating leader in that a lot of people on the unit think that they know what they are doing……and you do get that rub and conflict because you haven't got one leader. It switches around, and you do get people thinking they know better*' (FG4 PFA).

This example clearly establishes that leadership '*switches around*'. This finding presents a complex dynamic for examining leadership in teams. If leadership is viewed as comprising of differing types, which is suggested in these findings, then the leader switching could create different dynamics each time it switches from one team member to another. This means that different processes of leadership may be drawn upon by different types of leadership.

If there is any rotation of leadership role responsibility, this is often but not always, established at the beginning. In situations where there is uncertainty, this is where the process becomes more complex:

> *'The first car that gets there could be the two newest cops on their first shift, and they might find that they can't deal with the situation. They might then communicate this back and make the decision to move the RVP to a more secure area. That's not the bronze commander or area command, that's the newest guy on the shift stepping up, which is necessary'* (FG5 PFA).

If leadership is viewed as not merely being the person in command, this means that any person in the team can step into a leadership role, without possessing the rank structure or designated title of 'leader'. This step up is what would be expected to happen procedurally, however, if the leadership changes then the processes employed with this new leader may also differ.

Specific situations, as described here, also prompt the necessity for all team members to be capable leaders of a situation, to assume control, to make assessment of a situation and to make further decisions of next actions, in the absence of a formal leaders' presence. However, in the example above, the team member does not have the access to draw on more experienced team members. As a result, further discussion in the focus groups demonstrated the nature of leadership as a natural emerging process within individuals in the team:

> '*When there's decisions to be made, with the complexities of the job, the bronze commander is not able to make every decision which needs to be made, sometimes you've all got to be leaders, cause you all have to make those decisions for yourselves. The leaders of the group are those that naturally rise to the top to make those decisions, the ones that are motivated continually, the ones who volunteer, who step forward'* (FG4 PFA).

This statement clearly recognises that leadership is shown by those who have the ability to take charge of decision-making, are willing to put themselves forward and are motivated to do this. Also, some jobs are too big for one commander to be making every decision and micro-managing the process and therefore leadership must be distributed to the team (Gronn, 2002). In this example, leadership is distributed to team members because they are first on scene. A clear example of distributed leadership follows;

> '*I think everyone needs an element of leadership. I think in this role as well because part of our role is to respond to major incidents… so a car could arrive on scene first of all and you would have to take charge of that scene so you have to lead…you know, show your leadership skills, deal with public on scene. You have to take control until which time you can pass that on to the leader or officers or whatever. There has to be leadership within you, to take on the response to that role'* (FG6 HART).

In this section, it is important to consider the emerging sub-theme and process of

leadership emerging through the application of knowledge and previous experience of team members. This concept is discussed in detail in the following sub-theme.

4.6.8 Leadership through knowledge and experience of team members

The concept of leadership processes encouraging team members to relay on the knowledge and experience of other, longer serving team members is not a new one in conventional contexts, however, in dangerous contexts (Baran & Scott, 2010) there is little research to support that this is a process occurring. One exception is Baran and Scott (2010) who found that more experienced firefighters played a vital role in the sense making processes of less experienced firefighters.

Therefore, leadership through experience is a prominent emerging leadership process. In the focus groups, less experienced team members were quieter than more experienced team members. The transcripts demonstrated this as more experienced members dominated the discussion. This dynamic resonated with the following sub-themes in this section; confidence emerging from experience; looking to others with experience; experiential learning; strength of team through knowledge and safety from experience. One focus group focused on leadership in dangerous contexts and stated:

> *'leadership in dangerous contexts is one of the things that makes you feel safer, because you have that underpinning capability, underpinning knowledge and you have confidence in the people around you'* (FG2 MR).

The comment implies that the belief comes from trusting the judgement of the leader. Leading through experience is an important process working in these teams. Experience appears to be a currency that instils confidence and respect from those around you. In this case, the person with the most experience is rarely the designated leader of the team. This may create an interesting power play but teams are clear to say that the hierarchal rank structure will defer to those that have the knowledge:

> *'It's that accumulative effect you get over time basically, that gives you the confidence to then lead. It's the experience, which you only really get from time served and jobs done, and from that you build confidence that enables you then I suppose to lead and to assume those roles'* (FG3 FS)

> '*people would maybe gravitate towards the person with the most experience, which is the aspect of respect really as you've earned your way to that position because then, you've been there and done that and you've dealt with it a lot of times and everyone knows that. They've got there, not by accident, but they've come in and they've worked their way through and that's why that is so massively important I suppose.. If you've got that strong leadership and respect there then that is massive'* (FG3 FS)

> '*It's not hierarchical; it's just that experience level'* (FG4 PFA)

> '*Getting direction from someone more experience and has knowledge of the way he wants the job to unfold*' (FG5 PFA).

There is a clear emphasis on exposure to incidents, complexities of these and time served. However, this does not always correlate with the levels of experience in the hierarchal positions whereby not all those in command have extensive experience. Skill base is essential to the team working effectively, regardless of position. For example; teams understand that newer members bring with them their own skills and training, which often serves the team well. Newer members are more in touch with new technology and will help others on the team if needed, just as the newer members will look to the more experienced members of the team for jobs that have unexpected turns of events. One team described how new team members influence the dynamics of the team and it is necessary:

> '*Over the years that some of us have been in, you've felt that its best when you have a new cohort, generally younger people (laughing) but people are keen and the dynamic of the team changes quite significantly at that point*' (FG2 MR)

> '*When you've got new blood on the shift, by teaching the new starter you refresh yourself as well… and it forms a healthy squad then*' (FG3 FS)

> '*XXX (our probationer) couldn't lead a team into a building but he can go in as a number two, with a senior firefighter or a crew manager, so he'll always be learning off someone with more experience*' (FG3 FS)

> '*You've got individual people on each shift with their own particular strengths, which comes to the forefront depending on the incident*' (FG7 FS).

FG3 concurred with the other statements as they felt new members provide the team with a healthy balance of different personalities and skills. Leadership in this instance requires the ability to recognise these different strengths and apply them appropriately within an incident. Change in the teams does not appear to be received with resistance. Where change becomes problematic is where the team keeps changing and team members keep getting moved. The problem is then in the bonding processes, where they are unable to form that level of trust in the new individuals. Data has established that this is a longer process and takes considerable time to achieve.

A further interesting finding about these teams is that experienced team members will also give way to let the less experienced gain the experience. If someone has not led before, they will give them the opportunity to lead and develop their skills.

> '*There'll be someone who'll say "you need the experience, do you want to go number 1 and I'll stand right behind you and keep you right". So we don't always have to wait and think "XXX is always number 1" but he might be 20 miles away and you would have to wait until he got there. It's good to spread the roles around*' (FG4 PFA)

'I'm quite happy to look at anyone in this room and have them mentor those with less experience rather than continually looking at me and XXX leading from the top down' (FG5 PFA)

'Leading that way rather than saying 'you need to get that bit of equipment and do it like that' they're doing it and showing that way' (FG7 FS).

As the findings have already established, spreading the roles around is primarily achieved through training processes until they gain confidence. In contrast to training for experience, in FG7, more experienced team members state that they develop the team through leading by example. There is some evidence here that teams respect an earned position on the team and see that as strong leadership. The context of the dangerous working environment has the potential to be disastrous if decisions are wrong. All teams were able to talk about how despite this potential issue, there was (in most cases) a strong level of respect for the knowledge and experience of the team members, many who had been in the services for over twenty years.

'A person calls the police; it comes through the control room. The control room then advise the boss to say there's a firearms incident ongoing. I sit up there with the boss and the boss says, this is the information we've got so far, there's a man in the house with a gun, he's threatened someone, we need to arrest him and we need to safeguard the people. So, he asked my advice on how to deal with it' (FG5 PFA).

Teams felt a potential disconnect between levels of command fully understanding the role of the teams and what they may face. Structurally, they potentially face the situation where the experience of senior management is far less than the teams on the ground. However, from a rank structure and therefore procedural position, this means that decisions can be made without the expected expert level of knowledge. Respect for experience and knowledge is clear, particularly when teams face dangerous situations.

From the above example, there is a shift from the leader towards the team member with the expertise to provide the leadership in this instance. Based on the nature of the incident, this would happen very quickly and expertise, experience and knowledge of the circumstance in this instance become critical for leadership, rather than only a hierarchal approach.

Experienced team members may also need to feel supported. In this case, the designated leader role is in the background. If self-directed activity requires further support, there is the option to gain a second opinion from the leader of the team. Despite the fact they have more experience, during an incident, it is difficult not to get caught up in the job they are doing and not to get involved emotionally. The role of the leader becomes greatly important in this instance as they are generally more detached, having a holistic view. This enables them to give a clearer opinion:

'I think the differentiation for us is that in a big job, we can work by ourselves as you've said but if things go pear shaped or there's things we're not sure about, we can always get in touch with the team leader and say 'what do you think'? Someone else who's taken a step back, and we can ask them and they're not as emotionally involved as we are' (FG6 HART).

Experience and knowledge of incidents is a vital component of leadership in emergency response teams. Those that lead are often in leadership positions, but this is not always the case. This then falls to the dynamics of the team and the ability to look beyond rank and command to achieve the goal. The teams are clear to distinguish themselves as having the strength of experience as a team, of dealing with specialist incidents and because of their exposure and training feel that the ability to resolve difficult incidents lies within their teams. They stated, '*you've got people shouting and there are only certain people that can take charge of the situation and assess it correctly and you generally find those people work here'* (FG5 PFA). The next section addressed the fluidity of the identified leadership processes.

4.6.9 Fluidity of leadership processes

Some of the processes identified in this research are not static entities that appear in one stage; pre- incident, in-situ or post-incident. The figures below show that processes can appear in more than once stage, being employed dynamically as the incident unfolds.

Figure 4.4 – Visual representation of cyclical movement of leadership processes

The literature of leadership in teams displays processes in a linear way, particularly in normal teams (Morgeson *et al*, 2010), focusing primarily on the functional approach of leaders and categorising them as transition based or action processes. If leadership within a dangerous incident rotates then the natural assumption is that the processes of leadership will also rotate.

This is a finding demonstrated in this process card exercise diagram, which shows how within an incident, processes are cyclical in nature. In addition to being cyclical, the results of this game also demonstrate that transition and action processes do not fall into one

prescribed state or stage of incident. Action processes emerged throughout all stages of an incident. Transition processes, although primarily described as processes that would be expected pre-incident, appear across all stages of incidents, including post-incident. This was unanticipated.

In this example, the team accept that some of these processes are present but the team wanted to demonstrate how these processes did not happen in isolation or fit into an exact structure of pre, in-situ or post incident categories and that the nature of the context drives the fluidity of movement of these processes. In the case of a change within the incident, the team show that they will review objectives, look at resources and in one focus group, they added a new process around sector management. This relates to the immediate incident which has been cordoned off to public, where there is a need to re-assess the area for safety and manageability. This re-assessment could mean repeating all the processes placed in-situ. This is a continuous cycle until the incident ends. The fluid nature of processes corresponded to the fluid nature of leadership.

As is seen in both diagrams the aspect of fluidity is visible. Figure 4.5 depicts fluidity using arrows to demonstrate how the processes move in a cyclical way. The focus group called the movement of processes across the stages of an incident 'fluid leadership'. Therefore, this study has adopted this terminology to be aligned with the emerging themes.

Figure 4.5 – Visual representation of processes fluidly moving across incident stages

KEY		
Original Process – provided to FG		
Emergent Process – from FG		

Pre-Incident			**In-situ**			**Post-Incident**	
		Train and Develop Team		FLUID		Train and Develop Team	
Provide Resources	Structure and Plan	Define Mission	Monitor Team	Shared Leadership	Team Building	Support Social Climate	Provide Feedback
Encourage Self-Management	Solve Problems	Compose Team	Challenge Team	Structure and Plan	Encourage Self-Management	Take Responsibility	Provide Clarity
Provide Clarity	Sensemaking	Establish Expectation/Goals	Solve Problems	Provide Feedback	Compose Team	Monitor Team	Challenge Team
		Manage Boundaries	Take Responsibility	Provide Clarity	Perform Team Task	Welfare	Shared Leadership

'It's the fluid leadership of being flexible to each person's experience and skill-set. Bowing to each other's experience and knowledge. That's really important in our team' (FG4 PFA).

As can be seen, the processes of leadership stretch across all stages of an incident and the teams described that these move around as the incident unfolds. In support of this,

teams provide numerous examples of how leadership is passed from one team member to another, based on several factors that may emerge before or during the incident. The word 'bowing' implies a respect level of the experience in the team. This may not just be because of the length of time someone has been in the service; it may also be because they have other interests outside the job role. For example; if someone is qualified in electronics, they would be deferred to:

> '*Although we all have a good working knowledge of procedures and things, some specialists within the team who can advise on different situations, such as working at height. XXX knows about working at height, if she got a job which was working aloft, she can advise, take an active leadership role in the team and setting up equipment in that area*' (FG6 FS).

In this example, leadership is delegated based on the size and complexity of the factors to consider:

> '*I'm in charge of an incident, I can't deal with every aspect of the incident. So, that could be communications, it could be tactical, it could be rescue procedures, it could be health and safety… so I'll appoint people. So I'll take one of those things out…XXX might be dealing with 2 or 3 and XXX might be dealing with 1. I can't deal with all those spans of control effectively so I'll delegate*' (FG7 FS).

This shows how all team members need to have leadership capabilities. To manage the span of control at incidents, leadership is not just delegated but it is shared in the sense that the team must be working as a collective. One team member action may influence the decisions of another team member leading in a different area. The statements below reinforce this concept that all team members must have leadership capability to be able to work effectively in these teams:

> '*Every person in this room could be an operational commander at a major incident of any size*' (FG6 HART)

> '*when you get a number that's not fixed for the whole of the day. The number's rotate constantly so that each member will take charge. This rotates a lot in each job. So that everyone has a fair experience as leader*' (FG4 PFA).

These examples demonstrate several types of leadership style, fluidly interacting and integrating; shared, directional, self-directed and adaptive leadership. These styles are not new to the literature. However, the dynamic rotating, interactive and integrative nature of leadership within a dangerous incident provides a unique perspective on leadership. The fluidity of the way the four types of the loci of leadership merge into an integrative flow is an unexpected finding. FG5 provide an example of this:

> '*It can quickly change going from one room to another where the number 4 becomes the number 1 and he becomes the leader for that particular area*' (FG5 PFA).

Upon searching a house (directive and delegation), the rotation (sharing) of leadership is made clear. First person in the building leads, flipping to first person out of the building leads. If the team come across something during the search that promotes uncertainty in the next action, leadership may then be taken (distributed) by the person with previous experience of the situation and thus will be looked to as the leader at that point. In this case, there is devolution to experience from team members:

> *'Sometimes for the benefit of the search, the leader can step back from their own idea and allow another to lead just to get the team moving again'* (FG5 PFA).

This form of leading appears across all teams in the emergency services. Adding to the complexity of this, there is still the command and rank structure present between the team members. Leadership is presented here as fluid; it is shifting during the incident to different team members, often in a matter of seconds, as the situation unfolds. This relies heavily on the understanding of the team that they will need to be skilled in this way.

This section has presented the findings for the category of 'Fluid leadership'. The examples and analysis introduce fluid leadership in the context of danger and attempt to explain the uniqueness of teams and leadership working in this context. The next section addresses the analysis of the process card exercise conducted in the focus groups.

4.7 Process card exercise analysis

In this section, I present the findings from the analysis of the process card exercise. As a reminder of the reasoning for the process card exercise, it presented findings that are separate from the main themes and sub-themes emerging from the focus groups. After conducting three focus groups (one in each emergency service), themes and sub-themes were forming which were rich in detail, capturing the voice of the teams but I still felt further detail could be captured from the teams regarding processes of leadership and how these emerged during incidents. Essentially, I wanted to ensure that the teams had the opportunity to show me where they employed leadership processes within incidents, in their teams.

After discussion with my former supervision team, I decided to create a card exercise whereby the remaining five focus group teams would be provided with process cards depicting leadership processes identified in the literature. The card exercise was conducted before data analysis took place. The process card exercise in this research served as a useful analytical tool to enrich knowledge of the processes appearing in the literature. Teams were able to place the process cards where they wished in order to show (in their own way) how processes appeared during different stages of an incident.

This answered Burke *et al* (2018) who called for insights into which processes are employed over the stages of an incident.

The processes were placed by the teams based on the stages of incident, mapped out on paper, and the focus group placing the process was identified. Figure 4.6 below shows a compilation of the five focus groups, in terms of the stages of the incident they identified, and the leadership processes applied in each.

Figure 4.6 – Results from the process card exercise-processes from literature at different stages of incidents
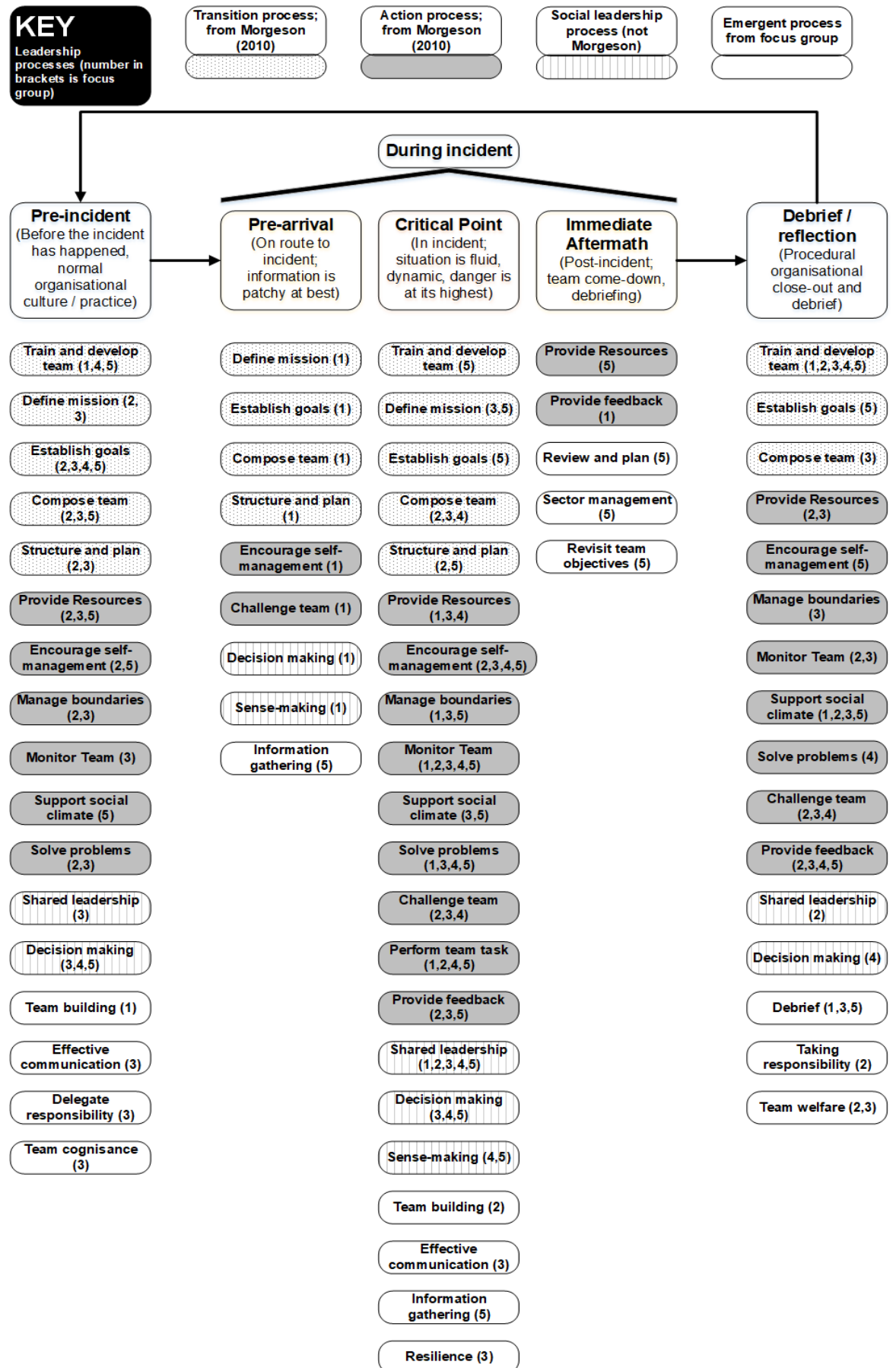
The processes are texture coded to represent where the literature distinguished between types of process; for example, dotted boxes represent transition phase processes and grey-shaded represent action phase processes (Morgeson *et al*, 2010). The lined boxes contain leadership processes compiled from seminal studies of dangerous contexts, such as Weick (1995) and Baran and Scott (2010). The white boxes show where new processes have emerged in the focus groups which were not found in the review of the literature.

A finding of this study related to the stages of an incident. The focus group teams felt the three stages identified by Hannah *et al* (2009), namely pre-incident, incident and post-incident, to be prescriptive and not representative of the complexity of dangerous contexts. Therefore, another two stages of incident were added to the three stages by the teams, specifically identifying a pre-arrival stage, when teams are en-route driving toward the incident, and an immediate aftermath stage. This five-stage approach identified is represented above in Figure 4.6.

Leadership is described as fluid in these contexts, and using the concept of fluidity and liquid, I felt it was appropriate to talk about levels of danger metaphorically using the temperature of liquid. For example, pre-incident is blue or cool, representing cold environment in terms of low levels of threat. Moving through the stages, they turn to amber and then at the critical point in the incident, I talk about the stage being red, representing significant 'heat' or the boiling point and high levels of threat.

The critical point is where teams are in-situ and assuming their roles and responsibilities on scene, at the point of danger. The aftermath stage has been identified because teams immediately begin to deal with the stress responses from the incident and de-briefing and discussion sometimes takes place in the dangerous environment. Continuous de-briefing can take place in the form of continuous risk assessing between team members in dealing with the immediate aftermath of an incident. This is demonstrated in the Figure 4.6 as '*sector management'*. For example, a fire might be out, but the building can still not be entered by anyone due to structural complications. This stage is essential to a proper understanding of leadership processes in this context, as processes in this stage might be to protect the public, other emergency services, as well as themselves.

Figure 4.7 below is useful, as it shows how the team have placed the process cards into stages of an incident; pre-incident, In-situ and post-incident.

Figure 4.7 – Visual representation of process cards placed at multiple stages of an incident

KEY

| Original Process – provided to FG |
| Emergent Process – from FG |

Pre-Incident

Team Conscience	Structure and Plan	
Delegate Responsibility	Compose Team	Solve Problems
Manage Boundaries	Define Mission	Sensemaking
Shared Leadership	Provide Resources	Monitor Team
Effective Communication	Decision Making	Establish Expecation/Goals

In-situ

Resilience		
Provide Resources	Compose Team	Effective Communication
Solve Problems	Define Mission	
Decision Making	Provide Feedback	
Perform Team Tasks	Encourage Self-Management	
Monitor Team	Challenge Team	
Manage Boundaries	Support Social Climate	Shared Leadership

Post-Incident

Compose Team	Provide Resources
Provide Feedback	Train and Develop Team
Challenge Tam	Monitor Team
Manage Boundaries	Support Social Climate
Debrief and Evaluation	Welfare

Figure 4.7 also shows an added process to the In-situ stage; resilience. Integrating a verbatim comment from one focus group, an example of when this is paramount is:

> *'The worst rescue is probably an ice rescue, where someone's fallen through the ice in the middle of the river. You've got a crowd of people watching, and there's a child in the water. And we haven't got the gear on the appliance to deal with that. The public pressure, child at risk, it goes wrong in seconds'* (FG2 MR).

This example demonstrates the distressing nature of some incidents which teams deal with. Although only one team discussed this example, it is apparent that all team members working in danger have a level of resilience to external pressures and internal scrutiny, and the ability to keep going to overcome these issues. The wellbeing of the team becomes a primary responsibility for leadership. The process card exercise was useful for the teams to provide a visual representation of the incidents they discussed and an opportunity to add new insights.

Figure 4.6 shows the finding that transition and action process phases as identified by Morgeson *et al* (2010) appear across all numerous stages of an incident. Transition phase processes did not appear in the fourth (immediate aftermath) stage, however. Categorising leadership as transition or action processes does not therefore demonstrate the more cyclical nature of leadership in a dangerous context. For example, as shown in the compiled process diagram (figure 4.6) teams do not only structure and plan at the beginning of an incident. The process of planning occurs continuously throughout the stages as the incident changes dynamically and is therefore fluidly responding to that change.

Figure 4.8 – Example of providing resources process cards placed across multiple incident stages
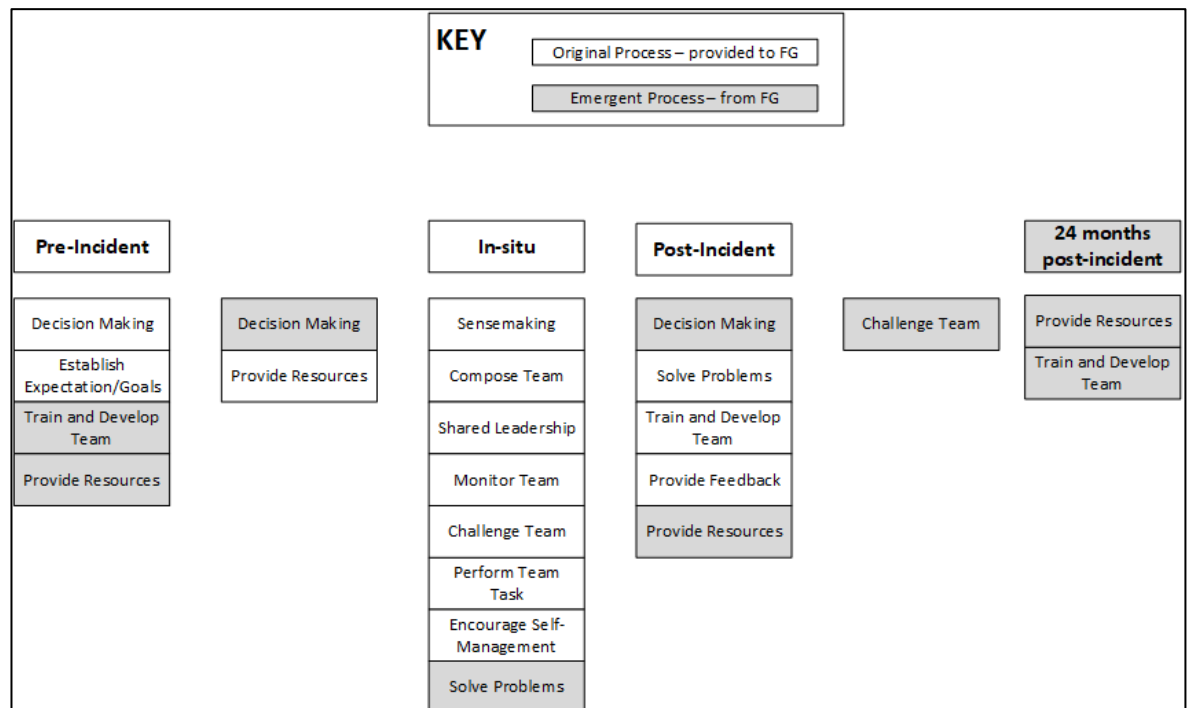
Supporting this concept, the diagram above highlights the process of solving problems and it shows that this team view solving problems as a process that happens during different stages of an incident. The diagram highlights two additional columns of processes which have been identified as the pre-arrival and immediate aftermath stages of an incident. As previously emerged in the thematic discussion, decision-making is understood by teams as a dynamic process, with continuous review of outcomes and redefining the criteria upon which to base decisions. The next section summarises the main findings of this chapter and presents the overarching themes and sub-themes.

4.8 Summary of the main findings in this chapter

The categories and emerging themes have been presented and discussed in this chapter. In the next chapter, I will discuss synthesis of the literature and my findings and therefore the contribution of this research. It is important to highlight why my findings are important to the leadership theory and acknowledge how they contribute to answering the research question. In order to develop a synthesised discussion, I now summarise the key findings of the study.

- Leadership is multi-level in emergency response teams, where the normal rank and command structures do not always apply. The context of leadership was essential to discuss first as the data provided insights into the structure of emergency response

teams, which was helpful to understand what participants consider to be their 'conventional' way of operating. These teams face the potential of danger in their daily operations, and therefore the threat of facing danger could be considered as their conventional working environment. The norm however is the expectation that they may face dangers, rather than the danger itself being normal. In this respect, there are similar features in emergency response teams to military teams in terms of structure and expectation of potential dangers. However, there are significant cultural differences. This is most apparent in the process of shared leadership, where rank structures can be *'superseded'* by emergency response team members during a dangerous incident. Emergency services shift the normal rank structure to specialist teams in specific contexts. Team members in the normal rank structure become leaders in specific contexts.

- Team cohesiveness and trust**:** team interactions developing cohesiveness and trust between members, supports that of military studies (Yammarino *et al*, 2010). However, the ability of emergency response teams to fluidly adopt leadership roles in response to danger is a finding which differentiates from the military context. Team cohesion and the level of cohesiveness described, is unique to the context of working in dangerous contexts, where there was less focus on communication and interactions of team members as a result of this bond. A leadership process called 'predicting actions' was identified as extending current understanding, with the interest of this aspect emerging in emergency response teams highlighted.

- This study's conceptualisation of danger extends current theory. Conflicting constructs of danger poses some challenges for leadership and how leadership is conceptualised. Danger influences leadership processes of decision-making, risk assessment, evaluation and sense making within incidents (Hannah *et al*, 2009), based on a range of complex causes and requiring contingencies to be fluidly developed by emergency response teams. Danger in the context creates an additional cohesion dynamic where team member's lives are each other's responsibility. This study has highlighted that danger prompts the necessity for varying adaptive responses. Whilst this aligns with the literature (Uhl-bien, 2010), a new finding emerging from this research is that there is an inherent conflict in the teams' construction of danger. Although the focus groups were able to list what represents danger, and teams face these situations regularly, they often struggled to see the danger that is inherent in their role. Emergency response teams have an intriguing, conflicting constructions of danger as a duality. They understand that they operate facing physical and mental danger but find it difficult to reconcile this with their own personal experience, due to what appears to be natural coping mechanisms of

detachment and desensitisation. The role of leadership therefore appears to be a balance of ensuring team members can perform their roles in these contexts whilst mitigating against potential complacency. This has important implications for future research, which will be outlined in chapter six.

- Leadership is conceptualised as moving fluidly between these different types of leadership dependent on the changing situation. This study presents leadership as different emergent types in dangerous contexts, extending understanding of leadership in dangerous contexts. A key finding is that processes do not appear in a linear fashion in dangerous incidents but are instead 'fluid'. Focus groups themselves used this term as they understand leadership, processes of leadership and in turn leadership responses to danger, to be cyclical in nature; continuously moving (fluidly) between the different stages of an incident, continuously assessing and evaluating as the incident develops.

- This study identifies leadership types in emergency teams as being directional, self-directed, adaptive and shared. Considering leadership in one incident, it has been described as potentially moving from person to person within the incident, often rotating this responsibility within seconds in the presence of danger. In the same incident at the same time, leadership types will also change to adapt to the dynamic of an unfolding situation. The fluidity of leadership emerging in this study is contextualised in emergency response teams and extends current knowledge of how social processes of leadership are enacted within teams in dangerous situations.

- The results of the process card exerciseprovide emergent findings. In addition to identifying additional processes, teams also identified new stages in incidents which presents an extension to current literature in teams facing danger (Hannah *et al*, 2009; Morgeson, 2010). In summary, the process card exercise actively engages teams in defining how leadership works in dangerous contexts. Demonstrating leadership processes by this visual method, based on the discourse (Rose 2001) of emergency response teams, is novel to this context..

Following the discussion of the emergent findings of the research, I present the overarching themes and sub-themes of this chapter, with their meanings in the summary table 4.6 below.

Table 4.6 – Thematic template of overall themes

Category	Theme	Meaning of the Theme
Context of leadership This theme considers the nature of the context in which teams operate.	Directional and Command Leadership	The way in which command and directional approach to leadership in service organisations influences their expectations and actions when responding to incident types.
	Team Culture and Training	The way in which the culture of emergency response teams, their structure and training, influences their expectations when responding to incident types.
How participants construct danger This theme provides insights into the way that danger is constructed and recognised by teams	Tangible Dangers	This refers to the team understanding that danger can present a tangible physical threat to lives of individuals, their team, patients and/or public. Such threats include stabbing, gunshots and other types of incidents that could result in physical harm.
	Mental Dangers	This refers to the team understanding that danger can present a mental threat by affecting the psychological wellbeing of individuals, their team, patients and/or public
	De-sensitisation to Danger	The way in which the team becomes used to danger and unconsciously employ a range of coping mechanisms.
The influence of Danger on leadership This theme identifies how danger affects the way in which leadership operates within the team.	Expectations of Leadership	The ways in which the team describe leadership as a set of their expectations in dangerous contexts.
	Challenges to Leadership	This refers to the ambiguous or uncertain way in which an incident can unfold and the ways in which this affects team leadership processes within an incident, whilst the team is under considerable pressure and scrutiny
Fluid Leadership and processes This theme provides insights into how leadership is understood in the team	Self-Leadership	The ways in which individuals must take responsibility and accountability for their own actions. Furthermore, making autonomous decisions, and the influence of these on the team.

Category	Theme	Meaning of the Theme
context; identifies and describes the nature of how leadership operates within the team when they are working in a dangerous context. It identifies the emergent styles of leadership, identifies social processes and details the fluid nature of leadership processes and responses to the inherent contextual complexities.	Adaptive Leadership	The way in which the team adapts to the fluid and dynamic nature of dangerous contexts.
	Shared Leadership	The ways in which leadership is shared amongst the team based on role, experience, training and specific situational needs and knowledge.

4.9 Conclusion

This chapter has presented the findings of the research in four overarching categories; context of leadership; construct of danger, how danger influences leadership and fluid leadership. I then presented the results of the process card exercise. Situational complexities and the challenges to leadership embedded in the context of dangerous working have also been addressed throughout the chapter as narrative has emerged. Chapter five, discussion and contributions, will synthesise the findings from the process card exercise, the themed focus group transcripts, and the review of the literature. This process will further extend current literature and enrich current knowledge of processes of leadership in dangerous incidents. I will also discuss my contributions to leadership literature, and research methodology.

Chapter 5 – Discussion and contributions

5.1 Chapter Introduction

This chapter comprises a synthesis of the current leadership literature, analysed in chapter two with the research findings presented in chapter four. The chapter also addresses the fifth and the final research objectives:

- **To add to the existing theoretical area of leadership in dangerous contexts by identifying leadership processes.**

- **To develop a theoretical framework with the intent of contributing to theoretical and practical bases for enacting leadership in dangerous contexts.**

Throughout this chapter, I have highlighted in bold where there is a contribution to the current theory arising from this synthesis. The chapter presents the contributions of the research, demonstrating where it extends, builds on and challenges current literature in the leadership field. The chapter addresses the key themes that emerged within the study, including: the contextual nature of working in emergency response teams; the team's construction of danger and the emergence of fluid leadership within those teams. The chapter also addresses the inherent challenges to leadership, discusses the challenges danger poses to leadership and the influence of these challenges on emergent processes of leadership. The chapter draws from extracts of the data set for illustrative purposes and includes summary tables throughout to highlight specific contributions to theory.

5.2 Recap of study aim and research questions

It is useful at this point to remind the reader of the aim of this study, to provide clarity for the contextualisation of contributions set out in this chapter. The aim was to examine how leadership is 'enacted' in emergency response teams. To achieve this, it is also useful to remind the reader of the following four research sub-questions, which were used to structure the following discussions and in answering the overall research question:

- How do teams working in dangerous contexts construct leadership?
- How do teams working in dangerous contexts construct danger?
- How does danger influence leadership processes?
- What are the leadership processes of teams working in dangerous contexts?

Literature discusses the changing world for leadership, with increased threat levels and the necessity to respond to increasingly complex contexts (Hannah *et al*, 2009; Yukl, 2010; Morgeson & DeRue, 2006). Emergency services teams in this study highlight the increasing number of threats in current society, from cyber-attacks to physical forms of threat such as bombs, knife attacks, and biological weapons or in more recent attacks, the use of vehicles to injure. To set the scene of danger, one focus group provided a perspective of danger in the current climate:

> *"The risk has changed now, the threats are different now. I think from what they were, in terms of dangerous situation that you're likely to stumble across"* (FG1 HART).

Types of threats and forms of danger are not always anticipated, immediately obvious, nor expected. Chapter one highlighted the recent pressures to understand new threats, to find new and adaptive ways of responding as teams face a new world with intensification of danger, and of what can be considered 'dangerous' (Hannah *et al*, 2010; Yukl and Mahsud, 2010; Norton, 2010). This changing environment brings with it the concept of a new 'conventional' way of working, with many implications for leadership in emergency response teams.

Enhancing understanding of what is 'conventional' to teams operating as emergency responders through conducting primary research with teams operating in environments characterised by uncertainty, is a necessary endeavour to further understanding of the context specific leadership, and how this may have implications for leadership theory as a whole.

Most studies of leadership have focused on hierarchical structures of teams operating in conventional environments, such as traditional business organisational settings; specifically where there is no form of anticipated threat to the operational context on a day to day basis. There have been limited empirical studies focusing on emergency response teams, the nature of their working in danger and their leadership processes. There is, however, an expanding interest in researching teams working in extreme environments (Burke *et al*, 2018). Recent literature and current studies that have addressed team working in dangerous contexts (Burke *et al*, 2018; Golden *et al*, 2018) has primarily been focused on the military or teams operating in extreme environments such as polar expedition, climbing or sailing teams. Leadership of these teams has warranted particular attention due to the lack of previous research studies and understanding (Burke *et al*, 2018) of how, in practice, leadership operates in these contexts. As mentioned in chapter two, contemporary literature has not explored the processes of leadership in these contexts, particularly during dangerous incidents. This is important to understand if leadership in emergency response teams is to respond adaptively and effectively to dangerous contexts.

5.3 Methodological process and contributions

In order to answer the question how leadership is 'enacted', posed at the beginning of this study, initial research focus was placed on identifying the 'processes' of leadership emerging in the literature (in other words, what do teams 'do' in dangerous contexts). These were mapped as a matrix of leadership processes against the articles as a process map. Using Morgesen *et al*'s (2010) functions of leadership as a basis for the mapping was useful, as a picture began to form across the leadership and team leadership literature regarding the present landscape of discussion and research into processes of leadership in dangerous contexts.

Following this, studies were narrowed down to those focusing on teams and leadership contextualised by danger. Few studies have been published, but for those which were identified (see table 2.2), analysis was undertaken to investigate how team's construct leadership, danger, what danger does to leadership, and the leadership processes that appear in dangerous contexts. The answers to these sub-questions were intended to provide insight into how leadership is 'enacted' in these contexts.

To remind the reader, the unit of analysis in this research is the team and therefore the focus is on the social processes of leadership rather than a single leader. The process of mapping the literature (outlined in chapter two, section 2.3.3) showed the limited amount of study of leadership in dangerous contexts, and therefore demonstrates a gap in the literature. A number of authors (Burke *et al*, 2018; Lichtenstein *et al*, 2006; Hannah *et al*, 2009; Baran & Scott, 2010; Samuels *et al*, 2010) called for future studies to address this gap, highlighting the comparatively little research on leadership in teams operating in dangerous contexts. This is necessary to address so that leadership is able to respond to different forms of threat effectively.

Primary research with the individuals who operate in dangerous contexts, especially at the intra-group level such as a focus group, have not been used as a method to explore leadership processes; most of the studies are post-incident reviews drawn from textual sources (Hannah *et al*, 2010). To address this methodological and empirical gap, focus groups were chosen as the data collection method for this study. The visual method used to represent teams discourse (Rose, 2001) of incidents for the process card exercise discussed in chapter 4 are novel to research in this context. The method of involving the emergency response teams in identifying leadership processes in a visual way, enabled the opportunity to guide data through their opinions and experiences and support reader understanding of the way in which leadership is understood. This is novel to research in this context.

Data from the transcriptions of eight focus groups was analysed through the process of abduction and this resulted in interesting findings. Firstly, structuring the study using one overarching leadership theory and conceptual framework was found not to be appropriate. For example, if the focus was on extending knowledge in shared leadership, if a purely deductive approach had been adopted, processes emerging through the focus groups could be aligned with the three leadership types identified in complexity leadership; administrative, enabling and adaptive leadership (Uhl-bien, 2010). This would be too constrictive, however, and not reveal the true complexity of the phenomenon. Due to the lack of research conducted in this theoretical area, context and level of analysis, it was important to adopt a study that was exploratory in nature but which resulted in a critical examination of the phenomenon.

In contrast, adopting a social constructionist and inductive approach reveals that leadership in dangerous contexts is not a linear process that fits neatly into an existing conceptual framework. Undertaking an inductive approach has resulted in understanding leadership in dangerous contexts as a far more complex dynamic interplay of leadership processes.

The following discussions are structured by the emergence of themes from the focus groups and process card exercise discussions. Reference to the literature is made throughout. Themes are also discussed based on my philosophical positioning and underpinning assumptions laid out in chapter three. Adopting an inductive approach is appropriate because the study intends to offer its own conceptual framework specific to emergency response teams, focusing on emergent areas that have not been captured in the current literature. In order to interpret data from focus groups and provide an integrated discussion of meaning making, it is important to address the team demographics and the dynamics within the teams and highlight potential influences from team members.

5.4 Group Complexity

Eight focus groups were conducted from four different emergency services. It is important to discuss similarities and differences between the teams, particularly demographics in the teams, as these demonstrate the group complexities (Hannah *et al*, 2010) present and if this had any influence on team cohesion. They are also relevant when discussing the co-construction of knowledge from data in the study; forming contributions to theory and addressing data credibility.

Despite being located in different emergency services, all teams were structured in similar ways. The teams were structured and operated on a daily basis by hierarchical levels of rank and associated levels of responsibility. All teams were 'on call' and worked in shifts,

generally retaining the same team members for long periods of time. Teams across all organisations described their way of working and incidents with a similar use of language. There appears to be common 'argot' across the emergency services, with similar phrases and procedures from training. This would be expected as they train for incidents with similar protocols and standardisation. For example, attention was drawn to their Joint Emergency Service Inter-operating Procedure documentation (JESIP), in which procedures for cross service operation are clearly laid out in terms of structure and command.

The team members were predominantly male, with only five females included in the focus groups in total, out of sixty-one participants. No females were present in the voluntary organisation focus group. Gender was not in the scope of this study and therefore this was not explored in the data analysis stages. However, this is key to note and will inform proposed areas for future research in the final chapter. Ages of team members ranged between twenty-five and sixty years old. In the focus groups where there were females and particular gaps in ages present, I was keen to observe any differences in dynamics in the team. There were no distinguishable differences between male and female interactions in the team, but there were differences in the engagement of older team members and younger team members. Older team members (forty+) had more stories or examples to share in the focus groups, and I found that this was largely due to them being more experienced.

In some instances, older team members provided more challenge over the discussion of particular decisions that were made during incidents or they provided more contextual information to enable sense to be made from the incident description. One explanation for this is that because they were more used to scrutiny and more experienced in telling the story of the incident in a way that covered all probable future questions about the incident outcome and their decisions. The older team members' however, were not always the team leaders. In some focus groups there appeared an element of resentment from the much older members, towards those in hierarchy of the organisation, rather than towards the team leaders. For example, there was some side discussion around examples of the hierarchy not demonstrating understanding of how the teams operated because they were not as experienced. Despite male and female team members, differing age ranges and experience levels, there appeared to be no difference in the cohesive nature of the team as all team members were engaging in similar bonding techniques, such as humour, 'mickey-taking' and team or personal 'in jokes'.

The following discussion of key themes will take each thematic area in turn. A small summary table will be presented at the end of each theme to demonstrate the areas of

leadership I am contributing to. Table 5.1 below, for instance, summarises my contribution to methodology. The first theme for discussion is the context of leadership.

Table 5.1 – Methodological contributions to current literature

Area of Contribution	Contribution
Methodologies in dangerous context literature	Focus groups with emergency response teams
Methodological approach	Process map as a thematic tool for demonstrating the 'gap' in leadership and leadership process knowledge of dangerous contexts, through empirical studies.

5.5 Context of leadership

A debate in the current leadership literature is how the context changes leadership, how leadership is enacted in teams facing danger, or outside what is considered a 'normal' working environment (Hannah *et al*, 2009). Questions such as what danger does to leadership and what is effective leadership in dangerous contexts were posed in a special issue of Leadership in military contexts (Campbell *et al*, 2010). Ramthun and Matkin (2014, p.251) offer a suggestion that dangerous dynamism has a negative impact on team processes and leadership. The concept of facing danger is acknowledged as placing unique pressures on the enactment of leadership.

This study found that there is limited empirical research to explore how leadership manifests in teams working in dangerous contexts. Current studies addressing leadership and danger have focused primarily on military contexts (Yammarino *et al*, 2010; Ramthun & Matkin, 2014; Samuels *et al*, 2010; Sweeny, 2010; Fisher *et al*, 2010; Veestragenter *et al*, 2014). Other studies have focused on extreme teams and extreme contexts. These studies focus on extreme sports such as mountaineering, sailing or polar expeditions (Kayes, 2006; Burke *et al*, 2018).

Studies are beginning to address emergency teams working in potentially dangerous environments, and those operating in a post-danger environment, for example, leadership of teams in hospitals (Klein *et al*, 2006). Hannah *et al* (2009) provide a useful conceptual typology to show the unique antecedents of danger to leadership, in comparison with normal environments. As stated previously, much of this current knowledge appears to be conceptual, or based on post-incident reports. **This study extends the current**

knowledge of leadership in dangerous contexts, how teams perceive and conceptualise danger and therefore develop adaptive responses, as a result of inductive research capturing the participant voice.

There are several problems with comparing studies of leadership in danger, with 'conventional' working environments, also differentiated as dangerous and non-dangerous (Hannah *et al*, 2010, p.159). The first issue is that it is difficult to define a normal non-dangerous working environment. A comparison of leadership enacted whilst working in an office environment would not seem appropriate to this study, despite the findings potentially building on current literature. This research can, however, provide some transferability of insight to inform leadership in conventional working contexts, as although still rare occurrences, those operating in conventional contexts are facing dangerous incidents with increasing frequency (Hannah *et al*, 2010), for example, terrorist attacks.

Another issue is that when researching teams working in dangerous contexts, their concept of what is conventional is understood differently. Military studies are the most prominent studies tackling the concept of working in danger, with little focus being on other types of teams or individuals that may face a threat to life. Therefore, discussions of the dangerous context in literature appear to group teams working in danger together. For example, studies state that the focus is military or crisis management but that the discussions could also apply to emergency teams or extreme action teams (Hannah *et al*, 2009; Uitdewilligen & Waller, 2018).

This study challenges the assertion that the military context is transferable to the emergency service context. Assumptions of normality for soldiers and emergency response team members are far more nuanced and have some significant variances. For example, despite there being some overlap in the contextual nature of danger in military and extreme environments, there remain fundamental differences between those operating under military structures and public service emergency response. These are referred to below.

Ramthun & Matkin (2014) highlight that the levels of extremity of danger faced by military personnel is not in direct comparison to those in emergency response teams, for example, military teams may face several days of combat operations cramped in damp, cold and isolated conditions which they need to operate within to successfully complete a defined mission and often to survive. Emergency response teams in this research do not (under conventional) circumstances face this extremity exposure level for their survival. Also, soldiers have little or no choice in facing danger, whereas emergency response teams have a commitment to their own safety and can refuse to enter a dangerous context.

In addressing danger in the context of emergency response, this study is sympathetic to the contextual variances from different types of teams identified in the literature and that took part in this study. This study did not seek to provide comparative data between the teams included in the study and other teams in the literature. Inductively, comparative areas have emerged from the data, providing a richer picture of leadership and its similarities and differences to other explored teams. The next category discussed is the team's construction of danger.

5.6 Construction of Danger

This study of the concept of danger and dangerous contexts by exploring the construction of danger extends previous explorations in significant depth and integrating the team member voice. First, all focus group teams were asked what they understood by 'danger'. Their responses were supportive of current understandings, that there was a threat to life and a list of potentially dangerous hazards that pose this threat, such as knife attack or terrorist activity. All focus group teams concur that danger challenges leadership:

> *'It challenges it, to see whether that person can cope or can't cope. In that sort of situation, it's sink or swim or maybe just float around in the middle. A good leader will swim quite easily and someone who's not so good will sink'* (FG5 FS).

Returning to their discussions about what is understood as 'conventional' exposure to danger, to the focus group teams, the concept was an interesting discussion. A dichotomy between what is classed as dangerous and what the teams acknowledged to be 'being in danger', emerged quickly. Focus group teams would on one hand acknowledge that there was danger present but in conflicting data, acknowledged that they were not in danger. Conflictions in teams' construction of danger, is a theme that stood out. Campbell *et al* (2010, p.3) defined dangerous environments in a similar way to extreme contexts as "those in which leaders or their followers are personally faced with highly dynamic and unpredictable situations and where the outcomes of leadership may result in severe physical or psychological injury (or death) to unit members". Most studies in dangerous contexts have adopted this definition (as discussed in Chapter two - Literature Review), as the base line approach to antecedents to dealing with danger. For example, military studies continue to use this definition focusing on the concept of a threat to life. These in-depth discussions around their construction of danger and what is considered dangerous was a finding of this study. The teams keenly explored what they believe to be dangerous, why they believe it is dangerous and how they respond to the perceived danger(s). Their discussions indicated that there had not been previous reflection or analysis by the teams of what they considered danger to be.

If the definition of danger by Hannah *et al* (2009, p.3), where "those personally faced with highly dynamic and unpredictable situations and where the outcomes of leadership may result in severe physical or psychological injury" is adopted, in taking an interpretive stance, this study challenges this construction of danger. Based on the findings of this study, the concept of the unexpected enables this study to build on current definitions of danger. Danger is therefore, conceptualised as the *occurrence of unexpected or unanticipated events unfolding that pose a serious threat to the life or the individual or collective wellbeing of the team, characterised by a lack of time or resources to reasonably considered adjusted leadership processes and mitigating responses.*

Table 5.2 - Contributions to the construction of danger

Area of contribution	Contributions
Context of danger	Extends literature on dangerous context as current understanding of what is dangerous is unique to emergency response teams
Construction of danger (Hannah *et al*, 2009)	Builds on current definitions of danger, recognising that danger is often as a result of the unexpected and unanticipated within unfolding events.

Current studies of leadership in dangerous contexts acknowledge, "no one set of papers, no matter how large, could address all the implications that danger and threat pose for leadership" nor that a single overriding theme could be developed (Campbell *et al*, 2010, p.S6). Danger influences leadership to the extent that the solutions to mitigate danger are not and cannot be prescriptive. The incidents described by the teams suggest the possibility of unexpected events unfolding, which no one set of studies can account for all possible contingencies and implications of danger during an incident. In the time of a few seconds, an incident can become dangerous, thereby adversely influencing 'normal' leadership processes.

Hannah *et al*, (2010) suggested that dangerous contexts are not homogenous but multifaceted. This study provides evidence to support this assertion, understanding that danger can come from various sources "forms, levels, probabilities and other typologies" (Hannah *et al*, 2010, p.S159). Types of danger were identified as physical, whereby there are tangible threats to team members whilst responding to an incident. Mental dangers were also discussed which was surprising as although mentioned, this is not focused on in

the literature in detail for emergency response and was therefore not part of the questioning strategy for this study.

Also identified is the concept that the teams themselves pose a danger to the public, based on the type of equipment they use. This is not previously mentioned in the literature and was a surprising finding, which is specific to the context the teams operate in. For example, part of managing incidents on scene is to manage the public by cordoning off the incident. Another aspect of incident management is to ensure correct handling of emergency response equipment, for example, a member of the public who found themselves in the firing line of a water jet from a fire engine would likely obtain serious injury from the water pressure. Following on from discussions of conflictions of understanding danger, the next area for discussion is the concept of desensitisation to danger.

5.7 Desensitisation

The desensitisation of team members to danger became a prominent theme in the findings of this study. The concept of desensitisation is well established in the field of psychology, particularly in studies addressing post traumatic stress (Kitchiner, 2004), but less so in studies of management. Focus group teams concur that desensitisation often occurs as a result of training processes, whereby they are repeatedly exposed to potential scenarios of danger. Scenario based training in this instance means that in some incidents, leadership responses to unfolding events are pre-programmed in teams. For example, teams forward plan, based on the information they have about the incident before they arrive on scene. Teams plan for 'what if' scenarios and through these processes of training, scenario planning and information gathering, desensitisation is maximised.

If desensitisation is discussed in this way, there are positive implications for teams. Firstly, teams will respond in-situ to unfolding events with all possible known scenarios considered and practiced, based on their previous exposure and training. This means that teams will have higher confidence levels and quicker processual responses to an incident than a normal ambulance crew of two. Secondly, desensitisation is a process by which team members cope with difficult events or the mental dangers of emergency response. As a result, they are able to respond in a more detached way and adopt a more objective approach to incidents, not becoming too involved emotionally, when they face difficult incidents.

In contrast to the positive implications of becoming desensitised, the concept also raises some issues for leadership when operating in dangerous contexts. There is some failure to recognise danger or what could be dangerous at every stage of an incident. There was a conflict in all focus group teams whereby they initially recognised the context they work in as dangerous and gave examples of this danger, but later stated that they did not feel 'in danger'. Interpreting this aspect of the discussion, desensitised teams with repeated exposure to similar dangerous scenarios in training or from experience, will not feel danger in the same way as a normal team. In essence, as similar events repeat, this begins to become the normal way of working.

Building on this and aligning with the broad social constructionist position of this study, the aspects of an incident categorised by the team as dangerous is based on their perception of this exposure. Team members may fail to see danger unfolding as they expect the unfolding incident to follow a previous pattern. Decisions are often made prior to attending the incident on the basis of this expectation and any information that concurs with this risk assessment. Focus group teams display confidence that if a scenario has happened many times, it will happen again. There is significant focus placed on the equipment used by the teams to carry out emergency response, particularly ballistic equipment or the use of a fire arm. All focus group teams discussed feeling less in danger when they had their equipment on. If danger is perceived as reduced due to having the correct equipment and ballistic protection, it is likely that teams will enter into environments with increased levels of extremity, thus further desensitising team members where these are successfully managed.

The findings of this study focus on the 'unexpected' aspects of an incident as being the most dangerous components within an incident. The unexpected events are often a result of lack of intelligence information being fed to the team. Teams place significant focus on pre-planning prior to arrival on scene but described many incidents where they have little information to make informed decisions. As discussed, in this instance, teams revert to experience and prior patterns of similar incidents. In contrast to the previous discussion, if danger is perceived as a result of unexpected or unanticipated events unfolding within an incident, there is little scope for planning processes that can be done prior to the incidents. Examples described in the focus groups highlighted danger where there was little or no warning of an event that rapidly unfolded.

> *"…..started shouting at us "Get your kit now, get straight to scene". Everyone felt the hairs on the back of their neck. His panic went through all of us. Everyone started rushing to get their kit together, we all rushed on the scene'* (FG4 PFA).

Danger in this example stems from the leader. As discussed in chapter four, teams question leadership if danger is present and whether to be in that situation was avoidable. If danger is unexpected, then teams do not have time to question and thus tend to follow the command structure of the team. In the example above, the leadership response is unexpected.

What is surprising here is the concept that experienced team members who, as previously discussed, usually have significant previous exposure to these types of incidents, responded to the panic of the leader with reciprocal panic and by just doing as they were told. In a culture of accepted directional leadership, this is perhaps anticipated but there appears to be a dichotomy between the conditioning of being part of a rank structure (doing as you are told) and working in a team where you might need to step in or up and display leadership (even if it's not their designated role).

It can be argued that at this point in an incident, the team members and their interactions or social processes, are paramount. Illustrative extracts from the data presented in chapter four (Findings and Analysis) demonstrate that when the unexpected happens such as leader panic, processes such as team cohesion and trust are essential but can also be disruptive as formal direction then becomes unclear. Further processes such as decision making, sense making and therefore risk assessment are used to mitigate further misunderstanding in-situ. Processes are thereby contingencies to the unexpected and must remain fluid in order to provide adaptive responses to the example presented above.

The next thematic area for discussion is the fluidity of leadership, whereby a theoretical framework is presented to further extend current literature in our understanding of leadership in dangerous contexts.

5.8 Fluid Leadership

This study has explored how leadership is formally structured in emergency response organisations and specialist teams and the unique way the command structure flexes in response to incidents with different levels of extremity. The study has also discussed the concept of danger and how teams working in dangerous contexts understand danger. This provides a useful foundation for the next discussion. This section discusses in detail, fluid leadership; how leadership works during dangerous incidents and provides greater insight than previous studies into the unique dynamics of working in an emergency response team.

To justify my approach to the research, it is necessary to remind the reader how this research understands leadership and how the concept is applied to the context of this

study, namely one that is dangerous. Drawing from the current theoretical literature, the definition of leadership that is adopted for this study is: *The social process of intra-personal and intra-group interaction to achieve goals, by reducing contextual ambiguity and generating adaptive outcomes* (A synthesis of Lichtenstein *et al*, 2006; Baran & Scott, 2010; Bardis, 1979; Eberly *et al*, 2013).

5.8.1 Social processes of leadership

Examination of leadership processes in dangerous contexts is limited (Hannah *et al*, 2009). Reference is made to processes although they are rarely discussed in detail, and meaning extracted from their use in dangerous contexts. Baran and Scott (2010) draw from Complexity Leadership in their study of near miss reports of firefighters in New York. Their premise was to explain the complex nature of contexts such as dealing with fires. Despite adopting a complexity leadership approach, their study is predominantly framed by a focus on three overarching sense making processes originating from Weick (1993)

As a reminder, the definition of leadership processes that is adopted for this study is: *Structured interactions generating outcomes adaptive to need. These include, directive/action-based, and inter-personal/social interactions, such as recruiting, planning, visioning, directing, sense-making, motivating, coordinating, monitoring and enabling* (A synthesis of Morgeson *et al*, 2010; Fleishman *et al*, 1991; Weick, 1993; Day *et al*, 2004; Lichtenstein *et al*, 2006; Uhl-bien, 2006; Barnett & McCormick, 2012).

Referring back to chapter two (Literature Review), Baran and Scott (2010) emphasise that the discussion of processes can be enhanced in the following ways:

- By discussing the importance of processes in the dangerous context leadership field,
- By defining these specifically as they present themselves in context, under conditions classed as dangerous,
- Showing how they integrate within a given situation,
- By discussing the relationships/complexities surrounding processes and their influence based on how they unfold within an incident.

Lichtenstein *et al* (2006, p.2) found leadership to be "a dynamic which transcends the capabilities of individuals alone…product of interaction, tension and exchange rules". They found leadership processes to be social, inter-subjectively created and enacted. The key impact to this study of this social dynamic is that individual behaviours and traits are excluded from the concept of leadership processes, as the phenomenon of leadership is the social interaction. It is useful to remind the reader that for this study leadership functions and processes drawn from the literature are interchangeably referred to as leadership processes. For example, the functions defined by Morgeson *et al* (2010) are

effectively the same social interactions taking place as Baran and Scott's (2010) processes. Individual leader behaviours and traits, although acknowledged within the theory and captured within the analysis as contributing to processes, are not being investigated as leadership processes.

Based on the limitations posed in the literature, the identification of processes in the focus groups and the process card exercise analysis, **extends knowledge of leadership processes in dangerous contexts** (Hannah *et al*, 2009, 2010).

First, the importance of leadership processes is discussed with reference to their emergence in dangerous contexts. In this study, incidents are used as a mechanism to demonstrate where social processes of leadership appear during the identified stages of incidents. A combined synthesis of processes emerging from the focus groups and from the process card exercise was presented in chapter four. This demonstrated empirically that processes did not appear in linear fashion in definitive stages of an incident but that processes such as decision making, shared leadership and sense making appeared across four identified stages.

Secondly, within the identified stages, processes did not happen in isolation, nor did they occur only once. Processes appear to operate fluidly and adaptively, as demonstrated by figure 4.6 in the findings chapter (p.180). The findings of this study support previous definitions in the literature, of specific processes emerging from the analysis. Where this study differs is the nature by which these integrate in dangerous and critical stages of incidents. Fluidity in this case refers to the interactive nature of processes moving from one to the other depending on the criticality of the incident unfolding. The following discussions of leadership types and how leadership emerges in dangerous contexts, inherently addresses how processes are influenced by situational dynamics and the complexities of danger.

Thirdly, adding to Hannah *et al*'s (2009) three stages of an incident, two additional stages of incident were identified by focus group teams whereby processes emerged. These stages are pre-arrival and immediate aftermath. These stages were important to identify as they broaden understanding of the build-up and wind-down of criticality at incidents. Linking to the idea of convection as described in the process card exercise in chapter four (Findings and Analysis), as criticality builds, danger (heat) intensifies. In this case, processes of leadership act as a cooling agent to the danger, such as sense making, dynamic decision making and continuous risk assessing.

To discuss the concept of fluid leadership and implications for fluid leadership processes, it is useful to first discuss the findings based on the command structure and multi-level structure of leadership of the emergency response focus group teams.

5.8.2 Command, directional and multi-level leadership

A further area of exploration into leadership in emergency response is the multi-level operational capacity of leadership. This finding supports Yammarino *et al* (2010) in that leadership can be enacted at different levels of rank in the hierarchical structure. In this study, leadership is enacted by all levels, including the lowest ranks in the team. This study builds on current literature of teams in dangerous contexts, addressing team structures, by finding that in these specialist teams, a lower ranking team member may suddenly supersede a high ranking officer based on the type of incident they attend.

> *"When there's a firearms incident though there's a command structure which can then take away the rank, it supersedes the normal rank structure, you have bronze, silver and gold. Bronze command can be a PC who is giving direction to a sergeant up to Inspector. You can have an Inspector in a car, taking direction from a PC during a firearms deployment. Then you've got silver command and gold commander"* (FG4 PFA).

Based on the findings of this study, there is not only a multi-level approach to leadership, but rather the adoption of an intra-team leadership approach where the normal structures do not apply. Leaders in the team do not simply encourage this from their team members, it is expected. Although in some cases leadership was often described as becoming authoritative during dangerous contexts, this did not detract from the expectation that all were able to assume a leadership role. This could be for the task they were doing at the moment of danger or by challenging the authoritative figure or by assuming the leadership role within a situation.

Based on a review of current leadership literature in dangerous contexts, this is a finding that appears unique to specialist emergency response teams. Similar to studies of conventional working environments, studies in dangerous contexts to date have focused on top down hierarchical structures where there is a designated selected leader in control of teams. Leadership that occurs within the team is therefore controlled in this type of environment. For example, responsibilities are delegated by the selected leader and therefore prompt leadership processes such as 'monitoring team tasks' (Morgeson *et al*, 2010).

In another example, where shared leadership occurs within the team, the study is referring to the leader "accepting influence" from the team members (Ramthun & Matkin, 2014, p252), rather than team members adopting a leadership responsibility. For example, current studies of leadership have focused primarily on the emergence of leadership as the selection of a leader in a leaderless group (Ramthun & Matkin, 2014). Shared leadership was discussed in chapter two and is a process which has been previously acknowledged within teams working in dangerous contexts (Klein *et al*, 2006; Ramthum &

Matkin, 2014; Yammarino *et al*, 2010). However, shared leadership, adaptive leadership, directional and self-directed leadership also emerge as types of leadership in dangerous contexts in this study. Shared leadership processes alone cannot be enough to conceptualise leadership in dangerous contexts, as leadership appears as multi-faceted and complex, as discussed in the next section.

5.8.3 Leadership types emerging from the study

This study presents leadership in dangerous contexts as different emergent types. In comparison to Klein *et al* (2009), who identified shared, hierarchical and de-individualised leadership types in a study with trauma teams, and Yammarino *et al* (2010) in their study of dangerous military contexts who identified a multi-level model of leadership pragmatic, individual and shared leadership, this study identifies leadership types in emergency response teams. Leadership in dangerous contexts is multi-faceted, being directional, self-directed, adaptive and shared leadership with associated leadership processes and presents themes and sub-themes emerging from the focus group, to aid discussion of each type. This combination of emergent leadership types is novel as a finding of this study in emergency response teams. To address these leadership types effectively, this section discusses the social processes of leadership identified in this study and leadership styles, to demonstrate the integrative and fluid nature of leadership in dangerous contexts.

Following data analysis, the study adapted to acknowledge the concept of leadership types because this emerged naturally from the data. Focus on leadership types became prominent as a way of thematically grouping processes emerging in teams in dangerous contexts. For example, sense making and dynamic decision-making processes fall under the leadership type of 'Adaptive leadership' based on the concept that these team leadership processes are enablers for leadership and its ability to adjust to the dynamic characteristics of an incident.

The complexity of leadership is framed and discussed by leadership type; a process by which social processes of leadership emerge and interact. Yammarino *et al* (2010) asserts a conceptual multi-level model of leadership and team dynamics which examines leadership in dangerous military contexts at the individual, dyad, group/teams and organisational levels. Day *et al*'s (2014) suggestion that one leadership approach alone is not sufficient to meet the demands for leadership in dangerous contexts is supported by this study. For example, leadership needs to be pragmatic and there is also a need to work on a one to one basis with team members and at times the group, therefore individual and shared leadership are also essential components for successful leadership.

There was consensus in the focus group teams, that an incident is completed successfully when all team members return unharmed and the patient/public survived. As mentioned in

chapter four, behaviours and traits were captured as part of the data collection of the study and are used to inform the study of the team members' understanding of leadership and their expectations for the leadership role. This is useful to inform the study of the challenges to leadership in dangerous contexts but is not discussed beyond this. Future post-doctoral research can further analyse this data to consider effective leaders and leadership in dangerous conditions.

Previous and recent studies in teams in dangerous contexts have described leadership as shared (Burke *et al*, 2018), distributed (Gronn, 2002), or adaptive (Marion & Uhl-bien, 2010) and each is discussed in isolation. In this study, fluid leadership conceptualises leadership as a series of dynamic interchanges; consisting of type of leadership and leadership as a set of dynamic inter-related processes. First, this study recognises that every team member can adopt leadership and could 'supersede' their normal working command structure, as identified by FG6:

> *"Every person in this room could be an operational commander at a major incident of any size"* (FG6 HART).

This study identifies themes in adaptive leadership, directional and self-directional leadership and shared leadership. This theme provides insights into how leadership is understood in the team context; identifies and describes the nature of how leadership operates within the team when they are working in a dangerous context. It identifies the emergent styles of leadership, identifies social processes and details the fluid nature of leadership processes and responses to the inherent contextual complexities.

Within an incident, these leadership types, do not operate in isolation of each other. This study identifies that they do not operate in a linear pattern. As discussed in chapter four (Findings and Analysis), these styles are not new to literature; however, the dynamic rotating, interactive and complex integrative nature of leadership within an incident, provides a unique perspective on leadership. **The fluidity of the way the four types of the loci of leadership merge into an integrative flow is a finding that extends current knowledge of leadership operating in dangerous contexts.** The complexity of leadership approach was summarised well in the following extract from a team in the police firearms section:

> *"It can quickly change going from one room to another where the number 4 becomes the number 1 and he becomes the leader for that particular area"* (FG5 PFA).

Upon searching a house (directive and delegation), the rotation (sharing) of leadership is made clear. First person in the building leads, flipping to first person out the building leads

(adaptive). If the team come across something during the search that promotes uncertainty in the next action, leadership may then be adopted (shared/adaptive) by the person with previous experience of the situation and thus will be looked to as the leader at that point (self-directed).

To fully explain how fluid leadership operates; firstly, the designated hierarchical leader of the team may issue instructions for a house to be searched for an armed gunman or other occupants. This is a directional leadership style where authority has formally been given to enter the premises. A finding of this study is the loss of control that suddenly happens upon entry to the house and the uncertainty presented, and this is where the concept of team trust is essential. Upon entering a dangerous context, the importance of and reliance on team trust is magnified.

Another example which the fire service discussed was house fires and how there is a sudden loss of leadership control when their team enters a building. Once they are through the door, there is nothing more the designated leader can do. At this stage, the teams are entering the in-situ stage of an incident. This is where this study argues, fluid leadership is needed the most. Once in the house a new team dynamic begins to operate. There is no single leadership style but a dynamic interplay of delegated, shared, adaptive and directive leadership approaches.

5.8.4 Shared leadership

Leadership is shared through the team with responsibility placed on skill, experience, training, and trust. Shared leadership is conceptualised here as the way in which leadership is shared amongst the team based on role, experience, training and specific situational needs and knowledge. A team can be sent into a building to achieve one single goal (rescue and survival) but have different leadership responsibilities to enable that goal to be achieved. For example; one team member is first in the house making initial risk assessments, another team member is listening for sounds of anyone in the building, another is on point looking for potential dangers, another is there because they have expertise in electrics and there may be exposed wiring. Together they operate using their training for scoping a building but leadership as a process is operating in a shared and collective way.

Leadership processes are also fluidly applied throughout the incident. Processes such as continuous risk assessment, where all team members are continually scanning for potential changes in the circumstances of the team and the incident that could pose new threats to the team and the goal. One example used was if a team member in this situation heard a cry from somewhere in the house, they would immediately divert their

attention to assessing the risks of amending the plan of scoping the house to locating the source of the cry.

In the case of police firearms, they may do this with little communication as they are in-situ, where the possibility of an armed gunman being in the house with them is probable. Communication in this instance is silent and through physical movement. Processes such as decision making and risk assessment in-situ at an incident will occur continuously, simultaneously and in a matter of seconds, in order for the team to respond to the developing situation. In a similar incident with the fire service, responses will again be quiet in order to hear any cries through smoke, which poses a severe threat.

In the example of the police firearms, leadership also moves fluidly between one person to another person in the team in a matter of seconds. The first team member in is not necessarily the designated leader of the team but has adopted this leadership responsibility in this instance. As the teams point out, this could be any member of the team as they are all capable. Although the concept of leadership rotating within a shared leadership style has been referred to in the dangerous context literature (Ramthun & Matkin, 2014), this is not something that has been explored in depth, especially due to the challenge of accessing emergency response teams (Burke *et al*, 2018).

In this study, several focus groups identified the issues of differences of understanding of the situation, multiple interpretations and some team members thinking they know better than others. Whilst this may be present in this case, based on different levels of experience present, the process of rotating leadership can cause some disruption in terms of leadership style in the teams. Every team member will adapt their own way of leading for the responsibility they have. However, leadership is challenged by others in the team, based on experience or on the basis that the team members are not sure of the directive they have received. Their perceptions of the way leaders lead, informs how teams respond to leadership. When one leader appeared to panic, the teams responded but further leadership command was likely questioned and not trusted by the team. Based on the premise that no task in a dangerous incident can be done in isolation or without impact on each other, team members will be responding directly or indirectly to different styles of enacting leadership within the span of thirty seconds within an incident. For example, the process of rotating leadership can be within seconds and therefore, the team's ability to provide an adaptive response can be hindered. The combination of new information presenting by a cry out in another room, what other team members do in those seconds, formulating a response as a team to the cry, and the time pressure to respond appropriately.

The unique aspect of this sharing of leadership is the immediate, adaptive and fluid nature of the handover. This process will not normally involve communication other than the previous leadership turning to walk out of the room. **Processes such as 'predicting actions' of team members were identified in this study, which have not been identified in current leadership studies addressing dangerous contexts.** Aspects of team cohesion through training, have referenced the nature of team dynamics and the interplay of collective understanding leading to action in 'normal' working environments. 'Predicting actions' is an additional process in the context of emergency response. It is unusual. Danger challenges leadership and therefore when facing potential danger and the possibility of the unexpected, the ability to predict any of the unfolding situation would seem unlikely. Yet, the process emerged across several focus group teams and this was attributed to trust, team cohesion and their deeper knowledge and experience of each other.

5.8.5 Adaptive leadership

Adaptive leadership is inherently contextual. In this study, adaptive leadership is conceptualised as the way in which the team adapts to the fluid and dynamic nature of dangerous contexts. Hannah *et al*, (2009) highlight the importance of context and identify that different contexts will require different forms of leadership and leaders must be able to adjust (Baran & Scott, 2010). This study acknowledges that research into different contexts is an ever changing endeavour and is continuously evolving to provide researchers with a richer understanding of leadership (Hannah *et al*, 2009). Mumford *et al* (2007, p.539) also state the importance of further research into domain specific approaches by saying:

> "*interaction among variables operating in different domains needs attention, in part because it will provide a framework for the development of more sophisticated theory and better interventions to help leaders think about problems*".

An example of this in an emergency response setting is from one team leader who indicates that in a complex incident, retaining control of every aspect is not possible and therefore delegation of leadership is essential:

> "*I'm in charge of an incident, I can't deal with every aspect of the incident. So, that could be communications, it could be tactical, it could be rescue procedures, it could be health and safety… so I'll appoint people. So, I'll take one of those things out…XXX might be dealing with 2 or 3 and XXX might be dealing with 1. I can't deal with all those spans of control effectively, so I'll delegate*" (FG7 FS).

In an example like the one stated above, leadership styles continue to operate adaptively, simultaneously and in tandem with each other. If leadership is shared amongst the team members based on task, ability and experience, then leadership styles are operating

collectively. Adding to this discussion, incidents that are large, complex and wide spread, geographically benefit from leadership tasks and responsibilities being shared across the team.

During dangerous incidents, an action of one team member can influence the reaction or action of another team member. Focus group teams raised the issue of team dynamics and the necessity to have an acute awareness of this influence. For every decision made individually, other team members need to be able to quickly adapt to the new presenting situational dangers and set of decisions that need to be made in its wake.

Ambiguity created by the unexpected, is the result of "multiple plausible interpretations" (Weick, 1995, p.45) which leadership must collectively filter in order to provide an adaptive response. There is little to explain how leaders respond or interpret the "multiplicity of stories" (Maitlis & Christianson, 2014, p.95) that are drawn from multiple interpretations and the ambiguity that this must create surrounding the context. Building on the uniqueness suggested by Hannah *et al* (2009) and Baran and Scott (2010), the context of leadership emergency response is unique with its own particular risks. Emergency response teams are often negotiating complexity. For example, making timely decisions in ambiguous contexts; concerning the safety of all individuals in the team, the patients, the public and themselves.

> *"Everyone knows what they are facing, everyone knows what outcomes can come of it. If he comes out with a gun, or he doesn't come out with a gun, or he's got it against someone's head. It's knowing exactly what to do"* (FG4 PFA).

Sense making is defined by this study as the way individuals process and create meaning in the face of ambiguity and subsequently, the need to adapt. It is a key leadership process of "ordering force in the face of chaos" (Maitlis & Christianson, 2014. P80), which in turn is inherently ambiguous and creates feelings of uncertainty. Focus group teams discussed the potential sudden absence of leadership in critical situations. Schmutz *et al* (2018) describe the difficulties of reflection in the heat of the moment in health care emergency teams. There is the potential for leaders to freeze, panic because they are unsure what to do, or to simply stop communication because they are reflecting and thinking of a solution. Both scenarios mean that the team is vulnerable to threat. Ramthun and Matkin (2014) acknowledge that this is when a 'speak up' culture is important. Their concept of 'mutual influence' (Ramthun and Matkin, 2014) is pivotal in averting disaster, where the team suddenly needs to adapt. At this point adaptive and shared leadership types occur, where a team member may take the lead.

Although the teams may not go searching for danger, by the very nature of the role, danger finds them because of the types of services they are and therefore the unusual situations they find themselves in:

> '*It was a situation with HART, coastguard helicopter, ambulance, police and our guys. The only people who could actually get that person out was this team, because of where they were. But it's about the inherent danger in that task, it was enormous*' (FG2 MR).

FG2 also raise questions about the nature of danger at multi-agency incidents in the quote above. They indicate that a lot is happening at once on scene. This provides a complicating dimension to incidents where there are many complicating factors to consider when managing an incident. Each emergency service in this case is a variable, which needs to be managed alongside the inherent danger of the rescue task. This makes danger inherently complex due to the amount of factors to consider, seen and unseen and dynamic, because of the fast, changing nature of the circumstances.

During an incident, sense making is a continuous process adopted by all team members throughout the incident. The possibility of the unexpected happening and presenting new dangers means that teams collectively seek information to inform their current understanding of the incident. Rapidly unfolding events and the potential of danger, makes this a difficult process.

Uitdewilligen and Waller (2018, p.13) state that the process of information sharing within teams is to "encourage proactive behaviours". This refers to a specific phase in team communication processes whereas in dangerous incidents this information sharing can be disrupted in teams by dynamic and rapidly unfolding events. In a context where rapid decision making is necessary, lack of information to make sense of unfolding events hinders team leadership processes and forces team members to make decisions based on out of date information and therefore hinders adaptive leadership responses. **This study supports previous studies in the importance of the sense making process, particularly in incidents where decision-making processes are dynamic and under significant pressure, and builds on current constructs of leadership under the unique pressures in emergency response.**

5.8.6 Self-directed leadership

Self-directed leadership, referred to as 'individualised leadership' (Yammarino *et al*, 2010), is the ways in which individuals must take responsibility and accountability for their own actions, making autonomous decisions, and the influence of these on the team.

> *"Everybody here is a paramedic. So, as a paramedic, you're an autonomous practitioner"* (FG6 HART).

This statement encompasses the view of all focus group teams, that they are individuals working in a team. Despite the inherent closeness of team members and the display of profound cohesion, they are all individually trained specialists in that emergency service, that have then been allocated a team on arrival to the division or unit. Self-directed leadership is viewed as a leadership style operating within the collective of a team environment.

Focus group team members refer to the teams not needing '*much leadership'* (FG6 HART), stating that they retain their independence as working within a team. The inherently dangerous nature of the context for these teams means that self-directing processes are an essential part of the team role. In incidents where the team may be spread out, team members are individually responsible for conducting their continuous personal risk assessments and assessing the influence different scenarios will make to theirs and the team's success. Focus group teams are also referring to the dynamics of some dangerous contexts requiring team members to take responsibility for a single team task.

Interpreting the statement that they do not need much leadership, it is probable that due to the fluid nature of leadership moving between team members, there is often little need for a designated leader. The teams are continuously adopting leadership roles and therefore a formal approach to leadership becomes a rare occurrence. This view supports the process view of leadership adopted in this study and challenges current literature, as studies of leadership in dangerous contexts place significant focus on the importance of the hierarchical leader, specifically in military studies. A process view focuses on team members' enactment of leadership as it is required.

Despite self-directed leadership emerging as a thematic area in this study, there are several challenges with this to leadership in dangerous contexts:

> "*That can make it very difficult because everyone has got an opinion…and a valid opinion but at the end of the day, it has to be one voice sometimes*" (FG6 HART).

The presence of multiple interpretations leads to the presence of multiple voices in-situ at an incident. This is problematic. In complex dangerous incidents, focus group teams identify that one voice is sometimes preferable to multiple voices or opinions. There is no discouragement of articulating concerns or posing ideas, but as has previously been established, the expectation of leadership is the removal of ambiguity from complex dynamic situations. Problems with self-directed leadership continue into processes such as decision making and the influence of these self-decided actions on the rest of the team. Autonomy is purposeful when working on a patient individually, therefore lending itself to particular job tasks at an incident. In some cases, a decision to offload a firearm can be an

individual decision that has significant consequence. Although not the normal procedure for firearms teams, firing a weapon without permission based on an individual's assessment of a situation is plausible, but this decision will come under immense scrutiny.

A theme that appeared in the literature was referred to as '*Encourage team self-management'* (Morgeson *et al*, 2010). In contrast to the discussion here, this was described primarily as a leadership function but as a function from a leader perspective. **The theme presented in this study differs from current literature in that data here suggests an extension of current understanding; the team encourages its own self-management within incidents by having this ability to rotate roles and responsibilities within the team**. A fluid framework for leadership in dangerous contexts will now be presented.

5.8.7 Fluid framework for leadership in dangerous contexts

As previously discussed, there are much wider implications from the context, on leadership approach and leadership processes (Osborn *et al*, 2002). This study builds on the knowledge that one type of leadership approach does not conceptualise the integrative nature of leadership in dynamic and dangerous contexts. Supporting Osborn *et al* (2002), Day *et al* (2014, p.64) state that "developing effective leadership processes involve more than simply deciding which leadership theory is to be used to motivate effective development".

In essence, teams need to understand complexity dynamics to determine how to respond in each situation (Porter & Uhl-Bien *et al*, 2007; O'Connell, 2014), specifically the capacity to remove levels of ambiguity appears to be paramount in emergency response team leadership, rather than sense making providing a range of possible options. Considering leadership in-situ in a number of incidents, it has been described as complex and dynamic, as potentially moving from person to person within the incident, often rotating this responsibility within seconds in the presence of danger. The dynamic nature of this is the quick time in which this takes place. To add complexity, in the same incident at the same time, leadership types will also change to adapt to the dynamic of an unfolding situation. **The fluidity of leadership emerging in this study is contextualised in emergency response teams of how social processes of leadership operate within teams in dangerous situations and extends current knowledge**.

Table 5.3 - Contributions to leadership in dangerous contexts

Area of Contribution	Contribution
Concept of fluid leadership	Conceptualisation of a new leadership framework in which a range of leadership styles fluidly inter-act in response to a dynamic environment. The leadership styles being a mix of directional, self-directed, adaptive and shared leadership.
Concept of the stages of an incident	Two additional stages of an incident were discovered enabling greater understanding of incidents and how their criticality fluctuates.
Nature of leadership in dangerous contexts	Challenge to the predominantly military studies which suggest hierarchical leadership is the norm in dangerous contexts, whereas leadership as a phenomenon is far more nuanced and complex. See fluid leadership above.
Nature of leadership processes in dangerous contexts	Contribution is both (i) the allocation of processes to the stages on an incident and (ii) the understanding that processes are cyclical, repeated and collective.
New leadership process	Predicting other team member actions was found as a new process, not currently identified in the literature.

5.9 Summary of chapter and contributions to leadership

Based on the analysis of the findings in chapter four (Findings and Analysis) and chapter five (Discussion and Contributions), figure 5.1 below is a visual representation of how this study conceptualises leadership in dangerous contexts. A discussion of this conceptualisation follows below.

Figure 5.1 – Visual representation of leadership in dangerous contexts
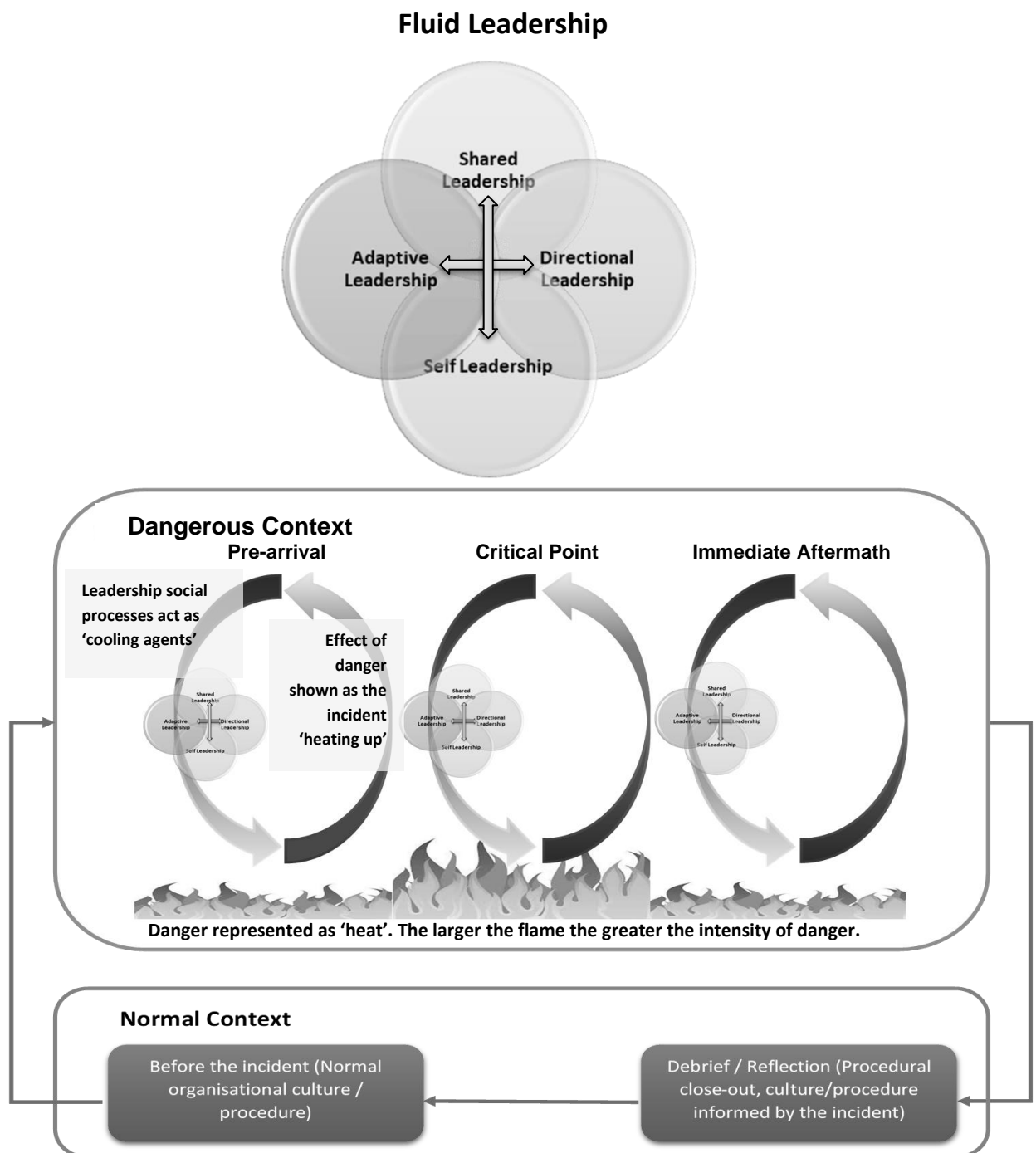
Building on the incident stages identified in figure 4.6 in chapter four, where the focus on social processes was clarified, this diagram shows the five stages that are identified by the study. Two stages depict normal and routine operation where procedures are followed and three of the stages represent working in a dangerous context: pre-incident, critical point and aftermath.

Drawing further from figure 4.6 in chapter four and the idea of danger in incidents heating up and cooling down, the study adopts the concept of thermo-dynamics and convection, whereby the three stages representing working in a dangerous context are demonstrated by the process of heat (danger) applied to a fluid rising and cooling down. Criticality within the incident is demonstrated by the intensity of the fire underneath. The heat is rising pre-incident, reaches peak heat at the critical point in the incident, where danger is most present, and subsides as the moment of criticality passes.

In this study, type of leadership and social leadership processes are placed as the cooling agents to this critical heat (or danger) to the participants, whereby they seek to reduce the danger. The blue down arrows demonstrate the cooling of the danger. Leadership is conceptualised as directional, self-directed, adaptive and shared across the three stages. The diagram demonstrates that this is a fluid, cyclical process of leadership continuously being applied across the three stages. Where leadership fails to either identify or manage the incident, the heat keeps rising and the participants are further exposed to danger.

Fluid leadership is represented above as a Venn diagram, demonstrating that leadership types and processes do not happen in isolation. The overlap of the diagram shows that there is continuous movement of the four types of leadership throughout each incident stage. Similarly, social leadership processes that have been found within leadership, are fluidly moving backwards and forwards through the incident stages to counteract the growing heat of danger. The diagram demonstrates the contribution of conceptualising leadership as fluid, to understanding of leadership in dangerous contexts.

Leaders that work in dangerous contexts face the potential of threat to their lives and those to whom they are responsible (Hannah *et al*, 2009; Busby & Iszatt-White 2014). Leaders in emergency response teams often arrive at scenes that are disturbing, dangerous to them and others, have high levels of ambiguity and are chaotic, or what this study identifies as the characteristics of a dangerous context. An effective leadership role in these circumstances is to create order from this chaos (Weick, 1995). As previously discussed, dangerous contexts have unique causes and contingencies (Hannah *et al*, 2009) which make the leadership role to create order in complex and challenging circumstances. Leadership must respond to contexts that often grow in intensity and extremity, have unknown and unexpected risk factors and face situations where the

actions of team members can have unintended consequences, negative or positive, and where there is significant potential for error.

Despite over twenty-five years of researchers examining contextual influences on leadership, there remains little empirical data on how leadership operates in dangerous contexts (Osborn, 2014; Campbell *et al*, 2010). This study has responded to the "call to arms" (Hannah *et al*, 2010, p. S158) to study leadership where there are severe risks of harm to organisational members. This thesis also responds to the call for research into new and novel contexts (Grint, 2005; Osborn, 2002), specifically exploring what the influences are in these uniquely defined contexts and how these influence cognitive adaptive responses of leaders. Most research in dangerous contexts conducted is from historical documented sources or from sources that experienced the aftermath of the danger, rather than the danger itself. Campbell *et al* (2010) categorise emergency response teams as those that attend post-danger as the danger is not to them but to the patient that experienced the incident. This study challenges this assertion by demonstrating that when working in emergency response, the danger has not necessarily passed when attending on scene, nor is the concept of rescue, a non-dangerous context. Teams also see themselves as dangerous and pose a threat to others.

In-situ is where fluid leadership is prominent, and the process of fluidity becomes interesting as team leadership dynamics flow interchangeably in several dimensions. This study presents leadership as different emergent types in dangerous contexts. In comparison to Klein *et al* (2006) who identified shared, hierarchical and de-individualised leadership types in urgent but non-dangerous contexts, this study identifies leadership types in emergency teams as being directional, self-directed, adaptive and shared. Leadership is conceptualised as moving fluidly between these different types of leadership dependent on the changing context.

Considering leadership in one incident, it has been described as potentially moving from person to person within the incident, often rotating this responsibility within seconds in the presence of danger. In the same incident at the same time, leadership types will also change to adapt to the dynamic of an unfolding situation. The fluidity of leadership emerging in this study is uniquely contextualised in emergency response teams and extends current knowledge of how social processes of leadership operate within teams in dangerous situations.

A key contribution of this study is that social processes of leadership do not appear as static within definitive stages in dangerous incidents, but instead are 'fluid'. Focus groups themselves used this term as they understand leadership, processes of leadership and in turn leadership responses to danger, to be cyclical in

nature; continuously moving (fluidly) between the different stages of an incident, continuously assessing and evaluating as the incident develops.

The results of the process card exercise indicate several emergent findings. In addition to identifying additional processes across multiple stages, teams also identified new stages in incidents (pre-arrival and immediate aftermath) which present an extension to current literature in teams facing danger (Hannah *et al*, 2009). In summary, the process card exercise actively engages teams in co-constructing how leadership works in dangerous contexts. Examining leadership and leadership processes by this visual method, is a novel method in the context of emergency response and dangerous context study.

5.10 Chapter Summary

This chapter has discussed the key themes of this study and outlined the main methodological, theoretical and practical contributions of this study. A framework of processes for working in dangerous contexts has been presented and discussed. The next chapter provides an evaluative framework for the research, addresses the limitations of the study, provides concluding comments and finally provides a comprehensive reflective account of challenges faced by the researcher.

Chapter 6 – Conclusions and reflections of the study

6.1 Introduction

This chapter outlines the conclusions of the research. The chapter also provides a summary overview of the research study and shows how the study has addressed the research aims, objectives and research questions. An evaluative framework is provided, addressing credibility of the study. Limitations of the research are discussed alongside identifying opportunities from the literature and this study, for future post-doctoral research. A comprehensive reflective account from the researcher is also presented.

6.2 Overview of research

The following section provides a summary overview of the study and outlines how each chapter sought to address the overall research question and sub-questions.

6.2.1 Revisiting the research aims, objectives and questions

This study has responded to the limited amount of research studies of leadership in dangerous contexts (Hannah *et al* 2009; Burke *et al*, 2018). A review of contemporary literature of leadership in dangerous contexts, raised questions of how leadership processes enable the enactment of leadership. Therefore, the broad research question that this study sought to explore is: *How is leadership enacted in dangerous contexts?*

The four additional sub-questions below related to the overall research question, and were addressed through the study:

- How do teams working in dangerous contexts construct leadership?
- How do teams working in dangerous contexts construct danger?
- How does danger influence leadership processes?
- What are the leadership processes of teams working in dangerous contexts?

Chapter two identified several areas that influenced the research questions which are useful to state again here:

1. There is limited understanding of the processes of leadership enacted in dangerous contexts, specifically in emergency response. The study of how leadership is enacted within a team in dangerous contexts, will be a useful area for research (Mumford *et al*, 2000 & Mumford *et al*, 2007)

2. There is a lack of knowledge about how leaders think within teams and how teams understand dangerous contexts (Mumford *et al*, 2007)

3. There is a need to focus on identifying further enabling processes that will explore how leaders reduce ambiguity of "multiple plausible interpretations" in an effort adapt to the context of working in emergency services to minimise errors (Baran & Scott, 2010; Wolbers & Boersma, 2013; Colville *et al*, 2013).

In order to address the research question and sub-questions, research was conducted into leadership processes in teams facing dangerous contexts. Eight focus groups were conducted across four emergency services. A total of sixty-one participants engaged with the research. This thesis addressed six research objectives and was structured in the following way:

Chapter One – Introduction: This chapter provided an introduction and overview of the thesis. The chapter outlined the theoretical focus of the study and contextualised this, giving some initial consideration to the gap in the current literature and then addressed the motivations for undertaking this study. Finally, the research question, sub-questions and six objectives that will guide the study were outlined.

Chapter Two – Context of team leadership and leadership processes in dangerous contexts: The chapter addressed the first two research objectives:

- To critique and build on existing theory of Leadership by developing the concept of leadership in dangerous contexts.

- To explore the theoretical area of leadership in dangerous contexts by identifying existing leadership processes in the literature.

This chapter meets the above objectives by critically reviewing contemporary leadership literature, drawing from current theoretical bases of teams, leadership processes and dangerous contexts. The review conceptualised these terms for the purposes of the study and highlighted the limitations of current studies in these areas.

Chapter Three – Methodology: The chapter addressed the third research objective:

- To adopt a relevant qualitative methodological framework for data collection and analysis to capture the participant voices.

This chapter meets the above research objective by addressing the methodological approach, study design and methods used to undertake the study. The researcher's philosophical position was discussed and the process adopted for thematic analysis was reviewed. Any ethical considerations were addressed towards the end of the chapter.

Chapter Four – Findings: This chapter addressed the fourth research objective:

- To conduct thematic analysis of data to generate in depth understanding of leadership in dangerous contexts through the lens of teams.

This chapter meets the above objective by presenting the findings of the study. Findings were shown by category, themes and sub-themes that emerged during the focus groups and were discussed in detail with verbatim comments, capturing the participant voice.

Chapter Five – Discussion and contributions: This chapter addressed the fifth and the sixth research objective:

- To add to the existing theoretical area of leadership in dangerous contexts by identifying leadership processes.

- To develop a theoretical framework with the intent of contributing to theoretical and practical bases for enacting leadership in dangerous contexts.

This chapter meets the above objectives by presenting an integrated discussion of the main themes in the findings chapter and current literature in chapter two. This chapter highlighted where findings of the study challenged, extended or added to the existing knowledge base and provided a theoretical framework for leadership in dangerous contexts and outlined the methodological, theoretical and practical contributions.

Chapter Six – Conclusions and researcher reflections: This final chapter revisits the research question, sub-questions and objectives and outlines how the study addresses these. It also outlines areas for future research. The chapter discusses the evaluative framework adopted by the study to ensure issues of credibility, reliability and validity in the research are addressed. Finally, the researcher outlines key reflections of undertaking the study and highlights important lessons learned throughout the process.

6.3 Summary of the research contributions

This thesis provides theoretical, methodological and practical contributions from conducting primary research into leadership in dangerous contexts. This study has established that there is limited research into leadership in dangerous contexts and therefore, there is insufficient knowledge about how leaders operate in dangerous contexts and HROs (Hannah *et al*, 2009). Furthermore, there is a lack of understanding of the processes of leadership in dangerous contexts (Baran & Scott, 2010) and understanding of how leadership is enacted is limited. As a result, further research of leadership in contexts characterised by danger, threat and risk was required (Hannah *et al*, 2009).

This research responds to this limited research. Viewing leadership as a social process, the study focused on the social processes by which groups understand and operate in dangerous contexts. Eight focus groups were conducted in emergency service response teams from the ambulance, police, fire and mountain rescue service. Following data analysis of the transcripts, categories, themes and sub-themes were presented and discussed in the findings chapter. A synthesis of the literature and the findings was undertaken in the discussion chapter and areas where the findings challenged, extended and supported the existing literature, were presented. In this chapter, a summary of the main contributions to leadership in dangerous contexts is outlined, followed by the evaluative framework used to address issues of credibility and reliability of the data. The following table (6.1) provides a summary of the main contributions to leadership in dangerous contexts.

Table 6.1 – Summary of contributions of the research to leadership in dangerous contexts

Area of Contribution	Contribution
Context of leadership	Leadership in dangerous contexts is relatively under explored. There are few studies focusing on emergency response teams. This study builds on the current empirical knowledge to offer insights into the challenges and expectations of leadership in emergency response teams and challenges the concept of directional and command leadership suggesting that leadership is multi-faceted and fluid.
How participants construct danger	This study builds on the definitions of danger by Hannah *et al*. (2009) to recognise that danger is often as a result of the unexpected and unanticipated within an incident. Based on a limited knowledge of emergency response teams, further addition to knowledge is the concept of how emergency response teams view themselves; as dangerous and superheroes.
The influence of danger on leadership	This study extends current constructs of leadership (Hannah *et al* 2009; Morgeson *et al*, 2010) in dangerous contexts through the identification of two additional stages within incidents: Pre-arrival and immediate aftermath stages. This study builds on current understanding of leadership processes in dangerous contexts, inductively exploring relational processes of leadership within incidents. Further contribution is the placing of social processes at different stages of an incident and understanding how the levels of criticality fluctuate within those stages and influence social processes. An additional process of 'predicting other team members actions' was also identified. This study further offers the concept that leadership and leadership processes are the method for counteracting this danger and leadership is thus conceptualised as a complex, dynamic and fluid process.
Fluid Leadership and processes	This study conceptualises a new leadership framework in which a range of leadership types fluidly interact in response to a dynamic environment. Extending current understanding of leadership in emergency response teams, leadership is conceptualised in dangerous contexts as directed, self-directed, adaptive and shared.

6.4 Evaluative framework

This section discussed the evaluative framework adopted by this study. The table below highlights an evaluative framework by Lincoln and Guba (1995) and which has been adapted to demonstrate how this study responded. This evaluation offers techniques that can be employed when conducting focus groups and conducting a thematic analysis of the data. As mentioned above, the table has been adapted for the purposes of this research and a column has been added to demonstrate how this research has addressed these issues of credibility, dependability, transferability and confirmability.

Table 6.2 – Evaluative Framework - Sourced and adapted from Morrison-Beedy *et al*, (2001, p.51)

Criteria (adapted from Lincoln & Guba, 1995)	**Suggested Techniques**	**Technique used**
Credibilty • Truth Value • Confidence in the truth of the data • Reflective of multiple constructions of reality	• Conduct multiple focus groups • Use detailed interview guide • Encourage participants to share their perspectives; consensus is not the goal • Go back to group leaders for verification of findings • Triangulate data collection and analysis methods • Debrief with every team member after each focus group session	• Multiple focus groups used with different emergency services • Participants shared perspective of an incident • Participants were asked to confirm the findings at the time of research and team leaders sent the transcripts of the focus group • Processes through data generation and analysis methods were mapped out. • Focus groups were de-briefed
Dependability • Stability of findings over time • Met if findings are credible	• Analyse data independently (sub-team) then together (full team) • Use same interview guide with each group • Prepare transcripts promptly • Overlap methods	• Independent coding and analysis then secondary person coded – Agreed descriptions of processes made • Same interview guide was used in each focus group • Transcripts were done concurrently to data collection • Multiple methods used in the focus

		group to extract and verify processes.
Transferability • Applicability • Fittingness	• Use direct quotes when presenting findings • Provide thick, rich data slices for descriptions • Describe sample and setting so potential appliers can make transferability decisions	• Direct quotes from focus groups were used to form descriptions of processes and context • Transferability will be to other emergency service providers nationally. Research will be disseminated in appropriate context
Confirmability • Auditability • Neutrality of the researcher • Process Criterion	• Provide detailed audit trail of what was done and why • Note agreement amongst investigators on transcriptions, codes and themes • Keep notes on processes, procedures and researcher thoughts • Return to the data to verify concordance of findings with the raw data	• Methodological process of identifying processes has been highlighted • Agreement has been reached on process meaning and description • Researcher has kept notes throughout the research process and focus group data collection • A mapping process against the literature has been conducted to identify new processes.

Several methods were utilised to ensure that the research was credible and reliable, which are outlined below.

Supervision arrangements: I engaged in supervision meetings every month with my supervisory team. This was an essential part of the doctoral processes. This process enabled my supervision team to give feedback on my work consistently through the doctoral progression process and to question my approaches at each stage of the thesis. This helped me to position myself philosophically as a researcher and justify my research decisions at each stage. For example, I was asked to demonstrate my coding process and to show how I had collapsed codes into the themes I presented (A worked example of the coding process can be seen in appendix G).

Peer feedback: I have received constant peer support and feedback throughout the doctoral process and at each stage of my work. Annual progression points provided the

opportunity for my work to be read by peers and to get feedback on the content and structure of chapters. I attended the Newcastle Business School Doctoral Methodological Summer School in July 2017, which provided the opportunity to focus on my philosophical positioning and my use of language as a consequence of this. I embraced this chance to fully engage with this chapter and to ensure that my methods were appropriate to my positioning as a researcher.

In order to ensure reliability in my analysis of data, I asked a colleague, who had just finished her PhD to code a section of one transcript to check that similar codes were generated. The same peer also read the main chapters of my thesis and provided useful comments and feedback to ensure I was justifying my approach and to assist me in critical writing skill development. My overall thematic template generated from my coding strategy was viewed by my peers, my original supervision team (who departed from the institution during the summer, 2018), my progression panel and my new supervision team, to ensure the robustness of my data analysis process.

I had two research abstracts accepted for conference paper presentation: one at the University Forum for Human Resource Development (UFHRD) conference (June, 2018) and one at the International Studying Leadership Conference (December, 2018). The conferences were useful as they provided the opportunity for peer support, feedback and questions from my presentations, which I used to ensure that I had framed my research appropriately. I also presented at the Faculty Doctoral Conference, and won best research poster presentation (June, 2018), demonstrating positive peer feedback on my emergent findings.

Participant involvement: One team member from each focus group was asked to review the focus group transcript. They were able to share this with the team but not anyone outside of the team. Due to the size of the teams, this was deemed the most appropriate approach to enable the management of responses. They were given the opportunity to highlight if there were any inaccuracies in the incidents described and to confirm that this was an accurate reflection of what was said. No teams amended the transcripts.

As previously discussed in the methodology, the participants of the focus groups were asked to take part in the process card exercise. This was a sense checking exercise that enabled the participants to be involved in placing the existing process cards at the stages of the incident they described. They were also able to add processes in the exercise. This was a method of checking the reliability of the data and highlighting the transferability of the findings.

6.5 Limitations, practical implications and future research opportunities

6.5.1 Limitations

Retrospective accounts of incidents: There is a restrictive nature in the retrospectivity of qualitative research, as highlighted in the limitations of the research. Access to teams working in dangerous contexts is difficult as it is near impossible to be in the dangerous context in real time to observe the team in action. This study explores the retrospective accounts of teams working in dangerous contexts, which similarly may not present an accurate reflection of the incidents. The strength of the study is the integrative nature of the participant voice. Teams in emergency response are rarely explored and the use of focus groups adds a new dimension to exploring teams in this context. Additionally, participants were able to become involved in exploring the processes of leadership in the process card exercise, based on an incident of their choice that they could recall well.

As previous mentioned in chapter two, access to observing teams in dangerous contexts is difficult. However, studies observing the teams' interactions in simulated dangerous environments would extend the study of leadership processes in emergency response teams further.

A limitation is presented in the generalisability of the study. The study is located in the North East of England and this poses some challenges for generalisability to other emergency services. Additionally, a sample of incidents discussed in the North East of England may not be representative of operational emergency response teams in other parts of the country. They may not respond in the same way to incidents, nor may they have the same types of incidents. The research adopts an interpretivist approach that allows theoretical transferability, but limits formal transferability, to other studies (Gill & Johnson, 2010). Other emergency services may not operate in the same way as those in this demographic. The leadership framework may potentially be transferrable, however, participants in this study describe leadership as they experience it and based on the incidents they attended, this may not be representative of all emergency response teams. The use of focus groups however, has provided a significant sample size for this doctoral research, providing credibility to the findings that have emerged.

6.5.2 Practical implications of the study

Hannah and Matthews (2010, p.S181) highlight that further studies and future knowledge in dangerous contexts must translate into "usable forms for practitioners who operate in dangerous contexts". Their call is particularly for partnerships between scholars and practitioners. In response to this call, this study has considered the practical implications for emergency response teams throughout the research. Conversations with senior

operational managers in these organisations revealed that they place significant value on research of this nature and the findings are important for them in the following ways:

- **Reviewing the way leadership is constructed by emergency response teams and informing new approaches to recruitment, selection and training leaders**: There is limited focus on leadership as a concept in emergency response teams. Although there is multi-level leadership enacted in the teams, there is still a primary focus on the hierarchical organisational structure. There is no structured leadership training within the teams and the theoretical understanding of how leadership works and the formal vs informal nature of the concept, is not considered in a formal capacity. Understanding the processes of leadership will help in the future recruitment and selection of team members, ensuring competency of leadership processes, support training of leadership in the teams and act as a supportive step to help them understand what they do within the capacity of an adaptive framework.

- **Improved team cohesion, succession planning, and therefore morale, performance and effectiveness**: Further understanding of leadership in the teams and how leadership is enacted, will enhance cohesion and morale in the team. There is a strong emphasis on performance in the teams, as the result of a bad day can be the difference between life and death of the patients and/or themselves. Enhanced understanding of how leadership operates within the team (not purely by the leader) has the capacity to increase team effectiveness.

- **Enhancing the structuring of emergency response teams, their processes and sense making efforts:** Enhanced understanding of how leadership is enacted in times of danger and how it influences leadership processes will support their sense making of unexpected and unanticipated events unfolding within incidents. An increased awareness of the processes employed by themselves and their team members in danger, may support training efforts to enable effective dynamic decision making and produce adaptive responses when faced with rapidly unfolding incidents.

- **Breaking down barriers in multi-agency working, leading to improved information sharing and use of information**: Although this is outside the scope of the study and has been highlighted for future research, there remain issues with multi-agency incident presence and the processes enacted across emergency service teams. Cross-agency understanding of leadership and processes will enhance their collective processes to share information, leadership responsibility and respond to danger effectively.

This section has described the potential practical implications for this research. The following sub-section discussed the implications for future and further research in leadership in dangerous contexts.

6.5.3 Implications for further research

Undertaking this study has raised several areas for potential future research:

Comparison of military and civilian emergency response teams: This study has focused on emergency response teams, whilst acknowledging the potential overlap of leadership processes in military contexts. Future studies might explore the leadership processes at incident stages in military contexts as a useful comparison to emergency services. Further studies might also address the influence on processes of leadership of military contexts on civilian emergency response teams and vice versa. This would highlight the differences in how processes are enacted under these contextual dynamics.

Research focused on gender, age and experience: In this study, there were five females and fifty six males participating in the research. The level of recruitment of females in the emergency response teams is low and would therefore warrant further investigation into the reasons for this. Future studies in dangerous contexts may also explore the dynamics of a team with female members and the influence of gender, age and levels of experience on leadership processes.

Critical incident method: As the strategy was for focus groups to focus their discussion on chosen incidents, I previously considered adopting a Critical Incident technique (Flanagan, 1954, p.327) to this research. However, this was not the strategy adopted, as the focus of the study was not an analysis of the incident itself, rather of the team within the parameters of a dangerous incident. To achieve this, it is necessary to explore specific incident dynamics (as opposed to team dynamics) in detail and incidents that the team deem to be dangerous.

Multi-agency incident analysis: Future research would look at multi-agency attendance at identified incidents. Studies addressing one particular incident attended by all emergency services would be useful to understand leadership further and also studies focusing on wider scale and/or longer term incidents would benefit extend existing knowledge in this area. There remains limited understanding about cross-agency working in dangerous contexts despite this being a common occurrence in practice. This study highlights that there are issues with information sharing and conflicts of enacting leadership across incidents

6.6 Reflective account of conducting the research

This section provides a comprehensive reflexive account of conducting the research from the researcher perspective, discussing how I have influenced the research and how my interaction with the research has influenced me. This is also an opportunity to discuss my intellectual journey (Trafford & Leshem, 2008) and provide a reflective analysis on my development as a researcher.

My thoughts were captured through the process of reflectivity, consisting of researcher diary notes (Nadin & Cassell, 2006) made throughout the study. This was a useful exercise to provide evidence of my personal growth as a researcher and to highlight the challenges of researching and lessons learned. As a new early career researcher, the doctoral process has been a steep learning curve and one which I have found challenging but equally rewarding. Undertaking a study of leadership in dangerous contexts has led me to research knowledge that was previously unfamiliar to me. Dangerous context literature was new to me as was adaptive and shared leadership, and the in-depth study of processes of leadership, for example, sense making. These new areas of leadership challenged me to critically analyse my approaches to the study and it was an iterative process to design a methodological framework that aligned with the research.

There have been several areas throughout the study that posed a challenge. I initially had concern about accessing teams in the emergency services. Although I was fortunate enough to have a contact working in one organisation, in order to gain ethical approval, I needed to speak to the management of the organisation and then the team leaders. I decided to organise a visit to each organisation and speak to the relevant managers that would grant access. This also made access to the teams below much easier. However, in one instance, I was surprised how one team manager wanted to bargain a professional reciprocal arrangement for my access to the team. This was not possible and caused me some concern as I was not in a position in my organisation to provide this. The management of the organisation supported my study, so this issue did not become a problem.

I learned that gaining access to organisations can be a lengthy process if the organisation is unfamiliar to you as a researcher. As managers, they wish to see you first and gain some assurance of your motives towards the organisation and character. Being referred by a mutual contact was essential as emergency service organisations pride themselves on their reputation. Once access was gained to the teams, the next challenge was to gain their trust and openness in order to take part in the focus groups. In a couple of instances, I was able to meet the teams before the focus group. However, in most cases, I had to gain access to their trust at the time of the focus group. This was difficult and I had to think

it through before conducting the focus group. I made one diary entry after one focus group that demonstrates this point:

> "Me: As a novice researcher, going into these group settings is very difficult if you are not confident about what you are doing and within yourself as a person. I felt that after doing pilot focus groups earlier in the year, I was much more aware of the pitfalls of researching, which was useful. Post Methodology summer school, I feel more sure and confident about the method I'm adopting. This confidence is evident as I didn't falter during the focus group and I was able to explain my purpose to their sergeants. One issue is that they don't know me and I don't know them. It is necessary to establish a rapport immediately. I was keen not to influence them as much as possible. For example: they suddenly were trying not to swear, but I didn't react when they did because I'm not trying to influence the dynamic of the group. I think my not reacting to anything, even before the focus group started, created a better and less restrictive environment".

The teams in this study appeared to be very bonded. Most teams knew each other very well as they almost lived together at the station on long shifts and they interacted socially. I felt that to gain their trust, I needed to discuss how I and they fitted into the research process. Teams visibly relaxed when I stated that I was not reporting back to their hierarchy and I was not there to judge their performance. Naturally, they were concerned that a stranger was coming in to talk about leadership in the team.

Another role of the researcher is to evaluate the dynamics of the team. Every team appeared to 'test' me in some way, to ascertain my humour level and general character. For example, one team gave me a rude cup for my tea. Another team placed my chair in the middle on the room and insisted that was where I was sitting. Making a judgement and not wanting to seem 'weak' in their eyes, I picked up the chair and moved it to the edge of the room stating that I was not going to be in the middle as the focus group was not about me. Gauging the dynamics in the team was useful in order to place myself in the research. Within thirty seconds of entering the room in the first focus group and meeting the team, I saw that they were all drinking tea from a huge silver old fashioned kettle. I used this as my bonding technique, asking them to put the kettle on, as a method of breaking the ice. This worked every time.

There were some questions from the teams about the nature of academic work and how they fitted into the process. The very mention of the term 'PhD' or 'research' by their team leaders, to some of the teams, created some uncertainty. They felt they were not intelligent enough to take part. The following diary entry demonstrates how I changed my approach to counteract this:

> "I found that having set questions were useful so that I knew what I wanted to know but also restrictive as I found that I needed to re-phrase things quite often to get the point of the question across. As a result, I possibly asked more probing

questions in this group. The group pointed out that just because of what they did, it didn't make them intelligent. They joked that I either needed to get more intelligent people or ask easier questions. However, I think they were overthinking the academic nature of this and this stunted their responses at times. I felt it was my role to ask the question a different way".

In response to this issue I made the following notes:

"Me: I am very aware of the reactions of others to what I'm doing. I have a good sense when others are struggling. This means that the questions, although similar in nature, were tailored to each group as I anticipated the dynamics. I felt that the set questions would not all be understood, so I had alternative ways of asking the same thing".

The nature of conducting research in these organisations has some additional challenges. Often, the teams were 'on call' and if a 999 call came in, the team had to go out on the job even if the focus group was still in progress. On a couple of occasions, I was left in the station day room as the teams were required on a job. At one point I was locked in a station and not able to leave as my car was stuck in the compound. I thought I would be there for hours so I put the kettle on and waited until they returned. Interestingly, I worried that this would disrupt the flow of the focus group, perhaps undo some of the trust that I had built in the previous hour. However, the team members walked back in, took the same seats again and we carried on. If anything, the teams were more energised and keen to discuss incidents and issues they faced. They also saw that I was serious about the research because I had waited and respected that they needed to do their jobs first and foremost.

After the focus groups, I received some excellent feedback from the teams, particularly the designated team leaders. It was useful to interact with the teams and gain their thoughts on the research. All teams said they enjoyed the focus groups and they said it was a useful study to do and they were interested that they were the voices in the research. They all felt they would benefit from the results of this study and would like me to disseminate the findings. I will be doing this in a way that is appropriate to each organisation.

As part of my efforts to ensure data credibility, I asked one participant from each focus group to read over the transcript of the focus group. This was to ensure that it represented an accurate reflection of what was said. No focus group changed the transcript. However, one team leader requested the transcript, despite not being part of the focus group. They wanted to check what had been said to ensure that there was nothing that could discredit the organisation. As the researcher, I was under ethical obligations not to disclose this and therefore refused. I was concerned that they would then withdraw from the study and this would have been very disappointing at that stage. I provided a full explanation of how

the data was used, that the transcript was not going to be published, and I believe that this satisfied the team leader.

The above examples provide a reflexive account of how I have developed as a researcher and the challenges I have faced. Demonstrating integrity as a researcher is important to me and I believe I have shown this throughout the research process. My knowledge and skills of researching have developed by interacting with the doctoral programme sessions over the last few years, gaining peer feedback on my work and by undertaking primary research with teams working in dangerous contexts.

6.7 Summary of chapter

This chapter has provided an overview of the research study and has discussed the evaluative framework adopted to ensure robustness and quality of data throughout the research design, data collection and analysis methods. The limitations of the research have been addressed and the implications of this study on future research opportunities and further research areas have been identified. A reflective account of the research, identifying areas of significant influence on the research, and the researcher, has been presented; this comprehensive analysis highlights the strengths of the research as well as the methodological and practical challenges of conducting this study.

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Appendices

Appendix A - Leadership processes in conventional contexts

Process	Sub-processes
Compose Team	Selection of highly competent/motivated team members
	Selects team members with good history of joint working
	Ensures appropriate skill mix within the team to achieve team functions/goals
Define Mission	Emphasizes how important it is to have a collective sense of mission
	Ensures a clear team mission/purpose and direction to achieve
	Develops a clear vision of the team direction
Establish Expectations and Goals	Clearly determines what is expected of the team by the organisation/ environment scanning/forecasting
	Clearly defines and communicates what is expected of the team to achieve performance
	Established challenging and realistic goals for the team and individual members
Structure and Plan	Defines and structures own work and the work of the team, including critical activities
	Works with the team to develop the best possible approach to its work/task performance strategies
	Works with the team to develop best approach to work, defining standardised processes
	Ensures all team roles are clearly established
Training and Develop Team	Ensures new team members are trained to carry out their duties, including task specific instruction
	Ensures team members are continuously trained and developed
	Provide stress exposure training/scenario planning
	Ensure the team learns from events/experience
	Teaching individuals or team for team effectiveness
Sense Making	Facilitates team understanding of events/situations and their implications
	Framing/ help the team make sense of ambiguity
	Heedful interrelating/collective sense making
	Adjusting/adaptability
	Groupthink
Provide Feedback	Communicates business issues, operating results and reviews team performance results with the team
	Provides constructive feedback, either positive or corrective action
	Provides rewards for positive action
Monitor Team	Monitors team external environment, including what other teams are doing
	Monitors individual and team performance and interactions, ensuring team stay focused on task/coordination
	Requests task relevant information from team members
	Notices flaws in task procedures or team outputs and suggests improvements
Manage Boundaries	Buffers the team from the influence of external forces or events
	Helps different teams communicate with one another, resolving difficulties/obstacles
	Acts as advocate and representative of the team with other parts of the organization
Challenge Team	Reconsiders key assumptions in order to determine the appropriate course of action
	Emphasizes the importance and value of questioning team members
	Challenges the status quo, suggests new ways of working, and improvements to team functioning
Perform Team Task	Will actively become involved in team working to ensure tasks are completed
	Will intervene directly to help individuals undertake core functions
Solve Problems	Implements or helps the team implement solutions to problems, task and interaction/inter-personal
	Seeks multiple different perspectives when solving problems
	Participates in joint problem solving with the team, enabling team members to create solutions
	Gathers information to support team in problem solving tasks

	Decision Making
Provide Resources	Obtains and allocates resources (materials, equipment, people, and services) for the team
	Seeks information and resources to facilitate the team's initiatives, including 'expert' resources
	Sees to it that the team gets what is needed from other teams
Encourage Team Self-Management	Encourages the team to be responsible for determining the methods, procedures, and schedules with which the work gets done
	Urges the team to make its own decisions regarding who does what tasks within the team
	Encourages the team to assess its own performance
Support Social Climate	Responds promptly to team member needs or concerns
	Engages in actions that demonstrate respect and concern for team member's wellbeing
	Engages in actions that demonstrate respect and concern for team member's wellbeing
	Develop trust in the leader
	Develops a positive group culture/social cohesion
Shared Leadership	Shared Leadership/role multiplicity/Locus of leadership
	Influence
	Intragroup Conflict
	Consensus Building/coordinated action
	Team Cognition/Macro-Cognition/collective metacognition/mental models
	Intragroup trust/shared belief

Appendix B – Leadership processes in dangerous contexts

Process	Sub-processes	Definition
Define Mission	Ensures a clear team mission/purpose and direction to achieve	Direction setting includes information search and structuring and information use in problem solving. Information search and structuring refers to the leader's search for information, analysis, organization and interpretation of information inside and outside the team (Fleishman *et al.*, 1991), (Barnett & McCormick, 2012)
	Develops a clear vision of the team direction	
Establish Expectations and Goals	Clearly determines what is expected of the team by the organisation/ environment scanning/forecasting	
Structure and Plan	Ensures all team roles are clearly established	
Train and Develop Team	Ensures team members are continuously trained and developed	
	Ensure the team learns from events/experience	Using information from both prior experience and training to purposely guide action (Baran & Scott, 2010)
Sense Making	Facilitates team understanding of events/situations and their implications	Leader sense making involves identifying important environmental events, interpreting these events given the team's performance situation, and offering this interpretation to the team (Zaccaro *et al.*, 2001) (Morgeson, 2005)
	Framing/ help the team make sense of ambiguity	Use of formal and informal authority to influence adherence to policies and procedures, encouraging vigilance as a social norm and properly directing actions of those involved in the situation (Baran & Scott, 2010)
	Heedful interrelating/collective sense making	Personally enacting examples of mindful behaviour

Believing in the reliability of co-workers and depending upon them when necessary

Reducing ambiguity through behaving in accordance with expected roles and using the expected division of labour to anticipate others' behaviour

Personally enacting examples of mindful behaviour (Baran & Scott, 2010)

Collective mind is conceptualised as a pattern of heedful interrelations of actors in a social system. Actors in the system construct their actions |

Process	Sub-processes	Definition
		(contributions), understanding that the system consists of connected actions by themselves and others(representation) and interrelate their actions within the system (subordination)" (Weick & Roberts, 1993)
	Adjusting/adaptability	Maintaining Cognizance of surroundings and the environment Rapidly adjusting behaviour due to changing conditions (Baran & Scott, 2010)
	Groupthink	A style of thinking that rendered them unable to consider all the necessary components and consequences' (Burnette *et al*, 2011)
Monitor Team	Monitors team external environment, including what other teams are doing	
	Notices flaws in task procedures or team outputs and suggests improvements	
Perform Team Task	Will actively become involved in team working to ensure tasks are completed	Leaders main job is to do, or get done, whatever is not being adequately handled for group needs (McGrath, 1962)
Solve Problems	Implements or helps the team implement solutions to problems, task and interaction/inter-personal	Information use in problem solving refers to the use of information for problem identification, development of a plan, which coordinates team member expertise, and the communication of the plan to team members (Fleishman *et al.*, 1991), (Barnett & McCormick, 2012)
	Seeks multiple different perspectives when solving problems	
	Decision Making	
Encourage Team Self-Management	Encourages the team to be responsible for determining the methods, procedures, and schedules with which the work gets done	
Support Social Climate	Responds promptly to team member needs or concerns	
	Engages in actions that demonstrate respect and concern for team member's wellbeing	
	Engages in actions that demonstrate respect and concern for team member's wellbeing	
	Develop trust in the leader	
	Develops a positive group culture/social cohesion	

Process	Sub-processes	Definition
Shared Leadership	Shared Leadership/role multiplicity/Locus of leadership	Dynamic, Interactive influence process among individuals in groups, for which the objective is to lead one another to the achievement of group or organisational goals or both (Pearce & Conger, 2003) Multiple members of a given team or unit or organisation may enact leadership informally, even in the presence of a formally designated leader (Ramthun & Matkin, 2014)
	Consensus Building/coordinated action	Team members must share and integrate diverse knowledge and perspectives and eventually reach agreement on the best course of action (Bergman *et al*, 2012)
	Team Cognition/Macro-Cognition/collective metacognition/mental models	Macro-cognition is "the interaction between intra-individual and inter-individual cognitive processes". Team-cognition is "knowledge representations and transformations on those representations occur not only within an individual mind but also between individuals and the environment" (Fiore *et al*, 2010, p.204) 2 a team mental model is the structural representation of an individual group members' knowledge and level of expertise concerning key elements of his or her team environment...enabling them to anticipate one another's actions and coordinate these actions in complex, high pressure situations in which there is insufficient time for communication and planning". (McIntyre & Foti, 2013, p.47)
	Intragroup trust/shared belief	

Appendix C - Focus Group Questioning Strategy

Focus Areas	Literature Support	Focus Group Questions	Possible Probing Questions
Overall Justification	Baran & Scott (2010.,p43) "comparetively few have focused on leadership processes employed within extreme events characterised by high ambiguity, such as those faced by leaders in high reliability organisations"		
	Morgeson et al, 2010, p.9) "what is needed is a framework that integrates existing team leadership research and describes the full range of ways in which leadership can manifest itself within a team"		
Team and Leadership - General	Baran & Scott (2010.,p44) Considering leadership within the boundaries of CLT - " shifts the theoretical grounding of leadership away from a focus on individual leaders…" Zaccaro et al,(2001.,p453) "the difference amongs team forms probably alters the specific display of particular leadership activities..."	Can you describe the team you work in?	How do you know that you are effective as a team?
	Generic question to understand participant views of leadership as there are many ways of defining the term (Day et al, 2006)	What does the term leadership mean to you?	
	"...leadership occurs when interacting agents generate adaptive outcomes" (Lichtenstein et al 2006, p.3) - *Previously asked question (Endrissat & von Arx, 2013)*	How is leadership accomplished in the team ?	
Dangerous Context	Different events will have differing charecteristics (Hannah, 2009) - *Campbell et al (2013) Previously asked question*	What precisely is leadership in dangerous environments?	Can you descibe the characteristics of a dangerous context in which you operate?
	Baran & Scott (2010.,p44) " High reliability organisations…by definition continuously operate in dangerous contexts" " leaders and followers are personally faced with high dynamic and unpredictable situations...to face threats and challenges of dangerous environments (Ramthun & Matkin, 2014, p.244) - *Campbell et al (2013) Previously asked question*	What does danger do to leadership?	
	Baran & Scott (2010.,p44) CLT addresses the nature of leadership within continuously changing contexts" "leadership is necessitated by team problems in which multiple solution paths are viable…" (Zaccaro et al, 2001.,p454) - *Campbell et al (2013) Previously asked question*	What distinguishes effective leadership in dangerous contexts?	What factors made the situation complex?
	Probing questions will include - What happened?, How did that work? Who did what? Why? And When (what order?) to gain a richly detailed description and analysis from the participants.	Can you describe an dangerous incident that you as a team have responded to? Describe the incident in detail (what happened, interactions, thoughts, feelings and response) and discuss the incident in stages - at the start, during the incident and the end on the incident.	What problems did you encounter as a team at this incident?
	"in order to learn lessons not only about how to become better leaders but also about making tough choices about putting individuals in harms way in the first place". (Kayes, Allen & Self, 2012, p.196) - *Previously asked question - Kayes, Allen & Self (2012)*	What lessons can be learned about leadership in a complex and novel and dynamic environment from the case?	

Note: A green shaded cell represents a question which has already been raised in the literature

Appendix D - Leadership Processes

List of leadership processes used in the process card exercise (adapted from Morgeson *et al*, 2010)

Compose team

Define Mission

Establish expectations and goals

Structure and plan

Train and develop team

Sensemaking

Provide feedback

Monitor team

Manage boundaries

Challenge team

Perform team task

Solve problems

Provide resources

Encourage self-management (of team)

Support social climate

Shared leadership

Appendix E - Student Ethical Issues Form

Faculty of Business and Law

Student Research Ethical Issues Form

Student Name:	Merrel Knox
Programme of Study	PhD
Title of Research Project:	What are the leadership processes of leaders in groups facing dangerous contexts?
Start Date of Research Project:	16th May 2014
Supervisor	Johan Coetsee

Risk Status (please mark one box): [x] Red   [ ] Amber   [ ] Green

Please refer to the Ethics Diagnostic Tool for advice on Risk Status (available in Blackboard – NB034BC: B and L Research).

	Comments
Brief description of the proposed research methods including (if relevant) how human participants will be selected and involved.	The research methods for this study will be a focus group with a team. One to one interviews of NHS staff in the Ambulance Trust, Police, Mountain Rescue teams and Fire Service. The participants identified and selected to take part in this study are part of identified groups (Ambulance - Hazardous Area Response Team- HART, Mountain rescue, Fire and rescue and Police response teams) that specifically work in dangerous contexts as part of their normal job role.

This study will also seek to gather incident reports (narrative accounts of incidents by the team members) from HART, mountain rescue, Police and Fire service teams which will be analysed to identify leadership processes. |

How will informed consent of research participants be acquired? (If appropriate attach draft informed consent form)	Informed consent will be obtained through Research participant consent forms which will seek consent for the interviews and to obtain and review narrative accounts of incidents. Participants will be asked to sign the form before any research activity can proceed. Participants will be advised of the purpose of the study and provided with a statement of intent of the study by the researcher. Transcripts of the interviews will be passed to the participants to ensure accuracy of the participant's response. The researcher will ensure that participants anonymity will be protected by being assigned a code name in the research. Participants will be informed that they are able to withdraw at any stage of the research process. A draft informed consent form is attached.
Will the research involve an organization(s)? **(If appropriate attach draft organisational consent form)**	The study is conducted at individual level and will be carried out in teams who are employed in NHS organisations, mountain rescue, Police and the Fire service. To obtain access, organisations will be informed and provided with evidence that the research follows the guidelines and governance process of Northumbria University and provided with confirmation that the research activities to be carried out have been approved by the Ethical panel approval committee. Organisations will be asked to sign an organisational consent form before any research activity can proceed. A draft organisational consent form is attached.

| How will research data be collected, securely stored and anonymity protected (where this is required) | The research data will be collected by a focus group with a team and one to one interviews. These interviews will be semi-structured to allow for probing and conducted in a private and quiet environment. The participants will be advised that the focus group and interviews will be recorded on a Dictaphone and the interviewer will make notes during the interview to help inform probing questions. The recorded interview will be kept on the researcher at all times or stored securely. Individual names will be made anonymous during the transcribing stage. Such names will be replaced with pseudonyms (e.g. Participant A, or a fictitious name).

The Participants will be advised that the research data may be kept up to five years post PhD. Examples of incidents used in the research study will be written, excluding information of the incident that may lead to the identification of a specific person/persons involved.

Incident reports will be identified through document analysis. The reports will be selected based on a set of identified criteria of a dangerous context. A thematic analysis will be conducted to identify and code the data.

Transcripts and incident reports collected, will be stored electronically on a password protected laptop to which only the researcher will have access. The NVivo software that will be used to analyse data, will also be stored securely on the laptop.

Each interview transcript will then be emailed to the respective research participant, whereby they will have the opportunity to add any data, or to remove or amend data on the transcript. The participants will be asked to confirm whether they agree that it is a fair representation of the interview |
|---|---|
| How will data be destroyed after the end of the project? (Where data is not to be destroyed please give reasons) | The recordings on the digital recorder will be deleted once they have been saved on the researcher's laptop and work PC. This will be done within 2 weeks of the initial recording. The saved audio recordings and text transcriptions will be deleted from the laptop and work PC folders. However, it is envisaged that they will be held for a period of up to 5 years, to allow time to maximize the data for publication purposes

. |

Any other ethical issues anticipated?	The research ethical diagnostic tool identifies that working with NHS staff and the nature of those staff that work in dangerous contexts, has the potential to pose ethical issues that are classed as high risk. Therefore, this study seeks to scrutinise the ethical considerations carefully, to ensure that every care is taken to protect participants.
	The researcher acknowledges the sensitive nature of the working context of the teams identified. This sensitivity is to the nature of the experiences that the participants have engaged in in their day to day role and the possible trauma that may previously have been experienced as a result of these incidents. The researcher acknowledges the high priority that must be given to the psychological wellbeing of participants that decide to recall these experiences of incidents. As such, the researcher will brief the participants of the nature and intent of the study. The participation in the focus group and interviews is entirely voluntary and the interviewer will ensure that no participant will be 'pressed' for details or under any obligation to delve further into the example, if recalling an incident causes undue distress. If participants find themselves distressed by their recall of incidents at any point, the participants have access to trauma counselling in each organisation.

Student Signature (indicating that the research will be conducted in conformity with the above and agreeing that any significant change in the research project will be notified and a further "Project Amendment' Form submitted).

Date: …13.10.16…………………………**Student Signature:** Merrel Knox……………………………………….

Supervisor:

I confirm that I have read this form and I believe the proposed research will not breach

University policies.

Appendix F - Participant consent form

Faculty of Business and Law

Informed Consent Form for research participants

Title of Study:	What are the leadership processes of teams facing dangerous contexts?
Person(s) conducting the research:	Merrel Knox
Programme of study:	PhD
Address of the researcher for correspondence:	Rm 439 CCE 1 University of Northumbria NE1 8TY
Telephone:	0191 2274994
E-mail:	Merrel.knox@northumbria.ac.uk
Description of the broad nature of the research:	The study seeks to explore the leadership processes of leaders facing dangerous contexts. The study broadly wants to understand how leadership works by looking to identify the leadership processes that are used when working in contexts where they and their groups face threat or risk in the environment in which they are operating. These contexts are inherently complex and require an adaptive response from leaders working in teams. In order to understand how leadership works in the context of an incident that the emergency services face in their normal day to day role, the study seeks to answer the following sub questions; -How do leaders and groups navigate the complexities of dangerous contexts? -How are leadership processes influenced by unanticipated events? -How do leaders ensure a shared understanding of the dangerous context?

Description of the involvement expected of participants including the broad nature of questions to be answered or events to be observed or activities to be undertaken, and the expected time commitment:	Participants will be asked to participate in a focus group with a team. The questions will ask you to draw from your knowledge, training and personal experience, with the purpose of exploring sub-questions that are posed in the research. Participation in the research is voluntary and you are able to withdraw from the study at any stage in the research process. The focus groups will last approximately 1 hour and these will be recorded for the purpose of capturing the data accurately. The focus groups will be conducted in a private and quiet environment. Incidents described in the research will not be identifiable beyond the team. Individuals will remain anonymous in the research.
Description of how the data you provide will be securely stored and/or destroyed upon completion of the project.	The recordings on the digital recorder will be deleted once they have been saved on the researcher's laptop and work PC. This will be done within 2 weeks of the initial recording. The saved audio recordings and text transcriptions will be deleted from the laptop and work PC folders. However, it is envisaged that they will be held for a period of up to 5 years, to allow time to maximize the data for publication purposes

Information obtained in this study, including this consent form, will be kept strictly confidential (i.e. will not be passed to others) and anonymous (i.e. individuals and organisations will not be identified *unless this is expressly excluded in the details given above*).

Data obtained through this research may be reproduced and published in a variety of forms and for a variety of audiences related to the broad nature of the research detailed above. It will not be used for purposes other than those outlined above without your permission.

Participation is entirely voluntary and participants may withdraw at any time.

By signing this consent form, you are indicating that you fully understand the above information and agree to participate in this study on the basis of the above information.

Participant's printed name/signature: Date:

Student's signature: Date:

Please keep one copy of this form for your own records

Appendix G - Worked Example of Coding

1 Well that shot gun job, fair enough, it didn't come to anything but we were on scene on the back of our vehicle, just at the top of the road looking down - which is a dangerous position to begin with as we were waiting just in line of sight – but at least I was behind the car, with backup, getting my body armour and helmet on. P came, who had his bits and pieces, but then we went forward to have a look and see what was going on - but we had one person totally kitted up just in case, because what we said was, there was a discharge of a shot gun and one lad had been shot – and nothing else really to go by….and then G, who was the second person going in had the wrong sized helmet, not his own PPE, wearing a tall thin guys PPE and he is short and stocky, so there was no coverage at all

5 I had nowt, as I got told to go straight to scene – I didn't even know you (40.39) were attending an rvp – I got told that the scene was safe and to go straight to scene – I walked in the same time as you – in your full PPE, and I had nothing

7 That's bad ain't it? That's communication isn't it?

1 From the top of the stairs, you could quite easily have been waving, and I could have taken a bit – I would have been reasonably alright- but G wouldn't have been and you had nothing at all- shirt and no body armour doesn't really work

2. If it had went wrong, you have to remember that we were still in communication with the mam and dad in the house. The mam and dad were saying the guns out the way, he's been shot, and he isn't speaking – so that's part of the risk assessment when you're building up an awareness of what's going on – so you've got an awareness now that ' this kids shot himself'. Thing is, things can go wrong, it might be that….but the chances of the mam and dad waiting to ambush some tom, dick or harry that's gonna come up the path is not really going to be…

You're building up…. You're getting a bit confident that this isn't……I was confident when the job came in, where we were and sending these two was going to be fine. Was going to be a straight forward….it wasn't going to be the machete attack that was going to happen where we were

MK Is that your experience that you are drawing from because you are saying that the chances of that happening are small?

2 You're processing information so you have a safe system of work – I don't really want to send A by himself without R because we shouldn't work as a singular, especially if they have to put PPE on. Those two know how each other work, the same as anyone in the team – and you know it's going to be critical if the lads still got an output, which I think you worked on and he was taken into hospital – that's part of the process that you're doing…

1 we've gone from siege, bus crash on the way to the axe thing over to the shot gun incident, all in one day

MK What prepares you for that situation?

5 I think training is invaluable. If you train for something you know, yes you don't know that it's going to happen like that, but you know that if this happens, I'm going to do this, if that happens, you're going to do that. If someone holds a knife to your throat, you'll be thinking what do I do, or whatever. You know if we approach a situation that is dangerous….training around other areas will give you enough knowledge to not put yourself in the risk area. It's not that we think we're super human, we just know.

2 we're given information all the time – I'm getting information from everyone in this room – I can make the decision a lot easier because I can rely on what they're saying – they're my team

Merrel Knox	Acknowledging potential danger of
Merrel Knox	Situational Awareness
Merrel Knox	Mitigating factor to danger
Merrel Knox	Slang description for equipment
Merrel Knox	Information search Situational
Merrel Knox	Safety conscious Prior preparation
Merrel Knox	Lack of situational awareness
Merrel Knox	Lack of appropriate equipment
Merrel Knox	Awareness of danger Feeling
Merrel Knox	Conscious awareness of
Merrel Knox	Directive order to attend incident
Merrel Knox	Lack of information being provided
Merrel Knox	Incorrect information Directive order
Merrel Knox	Conflict Questioning of authority due
Merrel Knox	Confidence in equipment Awareness
Merrel Knox	Conscious awareness of
Merrel Knox	Acknowledging potential danger of
Merrel Knox	Communication links with external
Merrel Knox	Training and procedure to generate
Merrel Knox	Situational Awareness
Merrel Knox	Acknowledgement that even with
Merrel Knox	As situational awareness grows,
Merrel Knox	Awareness of cognitive processing of
Merrel Knox	Acknowledgement that safety is
Merrel Knox	Awareness of importance of team
Merrel Knox	Prior experience of working together
Merrel Knox	Awareness of time criticality of
Merrel Knox	Awareness of incident management
Merrel Knox	Awareness of training as being
Merrel Knox	Awareness of training as being
Merrel Knox	Prior understanding of dangerous
Merrel Knox	Situational Awareness through
Merrel Knox	Confidence in self, belief in team
Merrel Knox	Consistent communication and
Merrel Knox	Multi-dynamic of information
Merrel Knox	Trust in team, in colleagues

Appendix H: Full Template of the Analysis of Themes

Category	Theme	Sub-Theme	Code
Context	Directive Leadership	Information	Leadership as control
			Emergency services have a challenge culture
			Impact of procedures on team response
	Team Culture and training	Team identity	View selves as elite, often using military terms
			See selves as separate from normal jobs
			Highly motivated teams
			Team belief in superiority of team
		Team investment into role	Investment of self into role in each incident
			Volunteering amplifies personal investment into role
			Personal life impacts on the role
		Team Structure	Structuring to balance experience
			Structuring to promote cohesion
			Multiple roles for team members
			Multiple roles/skill-sets across team
			Specialisms within the team
			Emergency services attract a certain mind-set
			Team work builds confidence in each other
		Training	Drawing on training to avoid danger
			Trained to behave in specific ways
			Trained for some elements of the job but not all
			Trained to do everything as a team
			Training is for the aftermath, not the incident
			Trained to assess risks
			Processes underpinned by extensive training
			Scenario-based training
			Responses guided by training
			New team members not always as well trained
			Team belief in training
			Learn from past investigations / fatalities
			Incidents are never black and white or as per the training

Category	Theme	Sub-Theme	Code
			Conditioning to overcome disbelief
Fluid Leadership	Adaptive leadership	Adaptive Response	Adaptation of approach to changing situation
			Procedure vs. dynamic adaptation
			Understand that information can be wrong and support team to adapt to changing situation
			Ability to adapt planning as situation changes
		Changing leadership style	Difference in leadership styles over team
			Emergence of natural team leaders
			Leadership as leading self and also following others
		Decision making process	State of mind in decision making
			Assess next moves based on actions of perpetrator / evolving situation
			Situational awareness at team rendezvous point
			Decisiveness as calming influence on team
			Decision making removes ambiguity
			Decision making enables team action
			Lack of decision leads to uncertainty
			Each person must be a decision maker
			Team looks to leader to make decisions
			Drawing on experience to make decisions
		Enabling cohesion	Social bonding in the team
			Supportive team helping one another
			External threat bonds the team, in tune with each other
			Risk of social exclusion
			Not wanting to let team down
		Enabling trust	Break down in trust if Leader makes incorrect decision
			Leader proven capability enhances trust
			Previous experience builds trust
			Micro-management reduces trust
		Fluidity	Leadership is fluid

Category	Theme	Sub-Theme	Code
			Operational command changes fluidly dependent on who is closest on-scene to incident
			Multi-level leadership on scene
		Sense-making	Encourage team to voice opinions
			Team processing of threat
			Ensure team understand intended outcomes
			Awareness of team assumptions
			Leaders make sense of situations
			Build the picture to instil confidence in self/team
			Paint a picture of the scenario in mind
		Social intelligence	Consideration of team member personal circumstances
			Understand personal limits of team members
			Recognise team member mood
			Presence, if not around, not able to judge mood of team
			Draw from personal experience to understand others
			Awareness of crisis in others
		Solving problems	Leaders provide multiple options / solutions
			Leaders remove ambiguity
			Leaders resolve situations
			Leaders remove concerns and reassure team
			Leaders spread skills across team to build resilience
			Leaders ensure the delegation of knowledge across the team
			Leaders are honesty and use this to tackle problems
			Leaders prioritise under pressure
	Continuous risk assessment / evaluation	Compliance with procedure	Concern with level of paperwork if something goes wrong
			Emphasis on doing things by-the-book in dangerous situations

Category	Theme	Sub-Theme	Code
			Focus on procedure and process to guide action
			Critical incident debrief in the case of a fatality
			Formalised processes
			HPC Professionals
			Model post-incident procedure
		Continuous Evaluation	Evaluate worst-case scenarios
			Constant re-evaluation of the situation
			Post-incident evaluation can make some members insular
		Learning	Learn by challenging selves
			Learn from experience
			Ability to learn from mistakes
		Planning pre-arrival	Scenario planning immediately on-scene
			Command pre-plan events where possible based on information
			Forward planning on route to incident
			Pre-planning responses on arrival
			uncertainty of exact nature of incident or present danger pre-arrival
			Lack of information pre-arrival causing issues with readiness
			Pre-arrival scenario risk assessment
		Pre-incident Intelligence gathering for planning	Gather intelligence to enhance safety
			Often going into unknown dangers due to lack of intelligence
			Intelligence Critical to planning
			Planning helps team appreciate what each member will be doing
			Provides an opportunity for the team to jointly plan
			Allows for enhanced risk assessment
		Safety	Protect each other is paramount
			Safety is a team goal
			Potential contradiction of safety first vs job first
			Training mitigates risk
			Team belief in safety as part of team

Category	Theme	Sub-Theme	Code
			Job first, safety second
		Team and individual risk assessment	Individual risk assessing
			Dynamic on-scene risk assessments
			Risk is a constant planning and re-planning process
			Continuously assess risk en-route to incidents
			Leaders assess risk
		Team reflection/debriefing	Debrief used to reduce blame
			Debrief can be viewed as criticism
			Debriefing due to incident mistakes
			Emergency services promote open and honest debriefing
			Feedback mechanisms can improve effectiveness
			Hot debriefing immediately after incident
			Writing post-incident reflections shows different recollections of same event
			Reflect on incidents to learn from them
			Critical incident technique used to enrich post-incident reflection
			Post-incident reflection promotes improve action in future
		Team taking risks	Level of risk leads to classification of incident and response
			Willing to take risks to save lives
			Job is to help others
			Leadership is a precaution for action
	Self-leadership	Autonomy in team	Team members individual contribute to scenario planning
			Self-awareness to build instinct on best course of action
			Reliance on personal experience
			Autonomous action where leader is not present on-scene
		Responsibility for self in incidents	Self-reflection
			Responsibility for self in incidents
			Self-authorisation resulting from leadership failure
			Self-allocation of tasks

Category	Theme	Sub-Theme	Code
	Shared leadership	Credibility / respect	Leaders are looked upon as experienced opinion
			Leadership is enhanced by experience
			New members look to more experienced members
			Respect staff to obtain their respect in turn and improve compliance
			Credibility develops through exposure of the team and leader to incidents
			Team seeing leader in action
			There is respect for context-based experience
			Team players, respect each other no matter the level of experience
		Delegated roles and responsibilities	Use the person best suited to each role
		Differing levels of experience	Strength of team is enhanced by different experiences and levels of knowledge
			New members can revive the sense of purpose of more experienced members
			On the job supported learning of new staff
		Experience informing action	Lack of multi-agency training / experience compounding uncertainty
			Experience informs current thinking and future responses
			Experience provides additional confidence to lead
			Experience highlights possible complications during incident
			Knowledge/experience informs conflict between personal safety and instinct to help others
			Experience allows improved control of reactions
		Leader rotation	Everyone takes a lead role at some point in the incident
			Rotating the lead role for operational experience
		Predictions of actions	Predicting actions of other team members
			Inability to predict hinders decision making
			Predicting outcomes of actions informs action

Category	Theme	Sub-Theme	Code
			The greater the prediction the more the team is informed of potential risks
			Prediction is a means to reduce obstacles to successful outcomes
		Specialisms	Understand different physical and mental strengths
			Leadership based on specialism
			Acknowledging diverse strengths / specialisms
			Leaders foster environments of delegating leadership
			Delegated style promotes improved team environment
How participants construct danger	De-sensitisation	Coping mechanisms (pre-arrival, critical point, immediate aftermath and post incident stages)	Tunnel-vision to task on-scene
			Pre-awareness of the nature of the role
			En-route adrenaline boost based on nature of job
			Intra-team reflection and black humour as a coping mechanism
			Compartmentalising pre-arrival to cope with multiple jobs in succession
		Denial of danger	Team belief that systems in place will remove danger
			Post-incident denial of danger
		Detachment	Drawing a line under stressful incidents
			Emotional detachment from post-incident debrief
			Exposure to horrible incidents early in career helps later
			We deal with people trying to cause harm everyday
	Mental	Expectation of rescue role	Describe selves as superheroes, but acknowledge they aren't superheroes
		Mental Dangers	Suicides
			Exposure to dead bodies
			Emotional danger
		Incident stress (pre-arrival, immediate aftermath of incident and post incident)	Profound recall of stressful incidents
			Reflection of continuous mental distress throughout incident, including immediately after incident and post incident

Category	Theme	Sub-Theme	Code
			Anxiety reaction en-route to job
			Reflection of anxiety reaction immediately after and post incident
			Post-incident feeling of guilt and responsibility
	Tangible	Conflict in understanding	Doing the job means not putting selves in danger
			The team will not insist on a particular personal action
			Prevention of danger is viewed as effective adhesion to procedure
			Danger as a perception
			Contradiction of team not feeling in danger, in control
			Perception that danger is the team having lost control
			Perception that experience reduces danger
			Perception that danger means the job is being done wrong
		Tangible/physical dangers	Knives and guns
			Environmental danger
			Chemical spillages
			Water danger
			Erratic patients
			Medical Trauma
			Incident that affects a colleague
			Tangible danger
			Can see and sense it
			Threat to life
			Safety is not guaranteed
			Potential or its going to happen
		Teams as dangerous	We are dangerous because of our equipment
			We could kill someone
Influence of danger on leadership and social team processes	Challenge to leadership	Accountability of leadership	Some leaders pass off too much accountability
			Leadership is accepting responsibility and accountability for actions
			Leaders are accountable for their team
			Danger increases the stress of leadership
		Communication	Communications en-route, on-scene, continuously changing
			Communications equipment can fail

Category	Theme	Sub-Theme	Code
			Reliance on communications
		Complicating factors	Hostages/victims can behave in unexpected ways
			Incapacitation of team members
			Stress of leadership role
			Attending multiple incidents simultaneously
			Lack of necessary equipment on-scene
			Conflict of reality vs simulation from training
			Adrenaline dependent on severity of incident
			Not prepared for some incidents which occur
			Response to the unexpected
			Some situations that occur are out of the ordinary
		Information	Numerous information sources add risk to decision making
			Lack of information delays action
			Failure of information leads to risk
			Need information to avoid knee-jerk responses
			Cross-functional information sharing
			Expectation that information will become increasingly relevant as the incident progresses
			Reliance on others for information
			Leadership is trusting information provided by the team
			Time pressure / instant decisions
		Over reliance	Over-reliance on uniform / equipment
			Over-reliance on training
		Reliance	Reliance on communications
			Reliance on electronic tools/systems
			Reliance on Personal Protective Equipment
			Reliance on resources/equipment
			Reliance on tactical training processes
			Reliance on personal experience
			Reliance on others for information

Category	Theme	Sub-Theme	Code
			Team reliance on leader
			Leader reliance on team to check their decisions
		Responses to danger	Awareness that briefings will not always dictate action
			Fight vs. Flight
			Internal processing of threat
			Stress response to uncertainty
			Acting without thinking
		Risk aversion	Consequences of unwillingness to take risk
			Risk aversion leads to delayed action
		Stress levels	Stress is a continuous pressure on team
			Stress of context, risk enhances contentious behaviour
		Uncertainty/ambiguity	Lack of control leads to uncertainty
			Uncertain of team roles when in danger
	Expectations of leadership	Leadership as competence	The ability to recognise experience in the team
			Leaders have the confidence of the team
			Leaders are calm under pressure
			Leadership by example rather than instruction
			Leaders know what to do even in stressful situations
			Leader provides motivation
			Manages diverse experiences
			Manages differences of opinion on-scene
			Leader as being in control of self
			Leaders admit when they are wrong or have made a mistake
			Leaders are open to challenge from the team
			Leaders develop the team
			Providing clear direction
			Holistic view of the incident
			Steering team to end goal
			Providing information
			Lead by voice and example
		Leadership as responsibility for wellbeing of team	Responsible for team members health and wellbeing

Category	Theme	Sub-Theme	Code
			Leaders can be seen as being a parent of a family
			Leaders ensure the psychological wellbeing of the team post-incident
			Leaders take pride in looking after their team
			Leadership is looking after their team as well as the victims on-scene
	Multi-level leadership	Chain of command	Changes in authority on scene
			Recognition of rank structure as lead role
			Team must have a designated leader
		Command versus team	Rank structure vs experience
			Leadership is shielding the team
			Reduces risk of challenging decisions on-scene

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