Constructing Safety on Sites: an Exploration of the Social Construction of Safety on Large UK Construction Sites

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A thesis submitted in partial fulfilment of the requirements of the University of Bolton for the degree of Doctor of Philosophy

March 2012
Declaration

The work contained within this thesis, except where indicated by specific reference, is the result of the candidate’s own investigation and the views expressed are those of the candidate.

No portion of the work presented within this thesis has been submitted for any other degree or award at this or any other university or place of learning, nor is being submitted concurrently in candidature for any degree or other award.

Signed:

Date: 26th March 2012
Acknowledgements

Firstly, I would like to thank the University of Bolton and Laing O’Rourke for their collaboration to support the academic funding of this study. Special thanks to Roger Seeds for pointing out my PhD study topic during my undergraduate dissertation viva – although it has wandered a little since then! – and to Paddy O’Rourke for taking a chance on a scruffy section manager from Manchester.

I must also thank the Chartered Institute of Building for awarding me the Tony Gage Scholarship which allowed attendance at both domestic and international conferences, to discuss and disseminate my research within the academic community. This has helped develop the work to a far greater level than could have been achieved without this fantastic opportunity.

I would also like to thank my supervisors, Peter Farrell and Rod Noble, for their continuous support and advice throughout the process. Peter deserves special congratulations for surviving five years of supervision and, ahem, ‘debate’ with me – long may it continue!

I must also thank my family. Simon for being a wonderful husband, musician and philosopher. LD for proofreading the final draft for me despite the horrendous heft. Dr Seabrook for forever being the inspiration. Pru for the letters, love and support. Zac for purring constantly by my side. And yes, Egg, this really is it!!
Abstract

Significant attempts have been made by large contractors in the UK construction industry to improve safety on their sites. Safety management systems have been put in place, minimum training requirements have been established, and worker engagement initiatives implemented in the quest for a positive safety culture. However accidents and incidents still occur.

Grounded in social constructionism, this study sought to explore how people construct safety in and through their interactions at work on the large construction sites of the UK. Data was collected from five UK construction projects, all over £20m in value, and included site safety signage, conversations discussing safety and various safety documents. Discourse analysis of the data revealed considerable variation in the contextual constructions of safety.

Safety was found to be inconsistent, incomplete and incidental, relating to a variety of different realities in a variety of different contexts. Relatively straightforward constructs and discourses developed around safety, such as its polarisation, the construction of safety as PPE itself, and the development of safety as un-safety. However these were further developed by more complicated and interrelated discourses of safety as practice, enforcement and engagement. The variation within and between these master discourses has consequences for safety culture in terms of its construction, homogenisation and perpetuation on sites.

The study makes recommendations for further academic research to examine the variation in the discourses of safety within the management hierarchy, who seek to develop a safe work environment through the safety culture programmes yet are challenged by the conflicts of safety as engagement and safety as enforcement. The study also suggests industry interventions to facilitate the improvement and development of practices to assist safety management on large UK construction sites.
I have worked in the construction industry for over 13 years. I began as a site secretary and worked my way up through the ranks via the planning function to site management. It is an industry full of interesting, entertaining and wonderful people who all make something happen. It is an industry that creates things, that makes places and spaces for people and changes the world we live in. Whilst sometimes fraught with conflict, aggravation and traumas, it is also an industry full of life and laughter and usually someone singing very loudly, a little bit off key. It is an industry that I love.

But it also has a big problem. I have seen the consequences of accidents that have stopped men working for weeks and months. I have had to collect the witness statements and take the photographs of the locations when accidents have occurred. I have had to gather the evidence that they had read their method statements and been inducted for the task they were performing at the time. I have donated to collections to try to keep a family going as no income will be forthcoming for the next few months whilst an injury heals and bills still have to be paid.

My position within this environment enabled me to approach health and safety in a different way to many of my peers. As a woman on site I was different, although I never
felt that I did not fit in; construction accepts you if you can do the job you are there to do, no matter what gender, race or age you are. I am able to swear with the best of them, shout when shouting is needed, and coax and persuade when required. And because of this I was able to argue from the point of view of the wife or daughter, I was able to show concern where my colleagues resorted to anger, I was able to suggest that the consequences might outweigh the benefits, I was able to say that I was stopping work because I cared. And when this approach was articulated it did make a difference, and people did listen.

However, this did not stop the behaviours. I saw every day that men did not follow the rules, despite induction and training they still acted unsafely, they still took risks and they still did not always behave with care and concern for everyone else on the site. I sat in training rooms with them on IIF, a different approach to safety training, and I heard the comments afterwards, not to mention the comments before that they were to lose half a day’s pay for this ‘shite’.

This is what initiated the PhD study. Asking the question why, despite best efforts all round, including the agreement of the men that things still could improve in terms of safety although some of the training left a lot to be desired, did accidents and incidents still occur? Why were we still having collections? Why did you still hear stories and tales of accidents not long passed on other sites, of the deaths of people that men were working alongside only a few months ago? Why in the 21st Century had this not yet been, to coin a site phrase, sorted-the-fuck-out?

Alongside my working life spent living the construction dream, I am also a geek. I like to study and explore and think about things, to learn about new ideas and approaches. I could see that most of the ways my company was trying to measure safety weren’t working; that the safety climate questionnaires were completed with what the management wanted to hear, not a reflection of reality. This was also the case in academia, where research for my final year dissertation investigating women on site revealed that people were being measured as if they were constant, that they could be predicted, that they behaved according to rules and logical thought. Reality tended to argue with this construct. I wanted to know why this didn’t work, or rather didn’t seem to me to work? What alternatives for exploration existed? Could they help? Could they provide a different perspective on people and help us understand how to make it safer on sites?
Consequently, the explorations outlined in the early chapters of this thesis were undertaken. I started at Plato and carried on. I discovered cognitive theories and became very excited, I wrote a paper applying this thinking to risk taking on sites. It won a prize. But as I kept investigating, I found that maybe this approach couldn’t answer all the questions in terms of my experience. It couldn’t predict or explain everything that was common in terms of the uncommon found on sites, and when it tried it tied itself in paradoxical knots. I kept going, and found social constructionism which through its approach didn’t even try to explain. It enabled acceptance and understanding rather than any ‘scientific’ explanations. It unquestionably embraced variation, irrationality, and crazy stupid people doing crazy stupid things, without trying to explain them. It let you explore and understand, without the need for assumptions or generalisations. As far as I could establish it hadn’t ever been used on construction sites; this approach hadn’t been tried before. Maybe it could throw out some new ideas, some new suggestions that could help? I could see that it might not provide the answers that people who write training programmes might want to hear. It didn’t produce firm explanations which could be located in the crosshairs and eliminated from sites. Rather it offered insight, illumination and understanding. More thinking would be required once this was achieved, but I wanted to see where this path led. So off I went.
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<td>CDM</td>
<td>Construction (Design and Management) Regulations</td>
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<td>CIB</td>
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<td>CIOB</td>
<td>Chartered Institute of Building</td>
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<td>CMR</td>
<td>Construction Management Research</td>
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<td>CONIAC</td>
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<td>COSHH</td>
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<td>IIF</td>
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<td>IPAF</td>
<td>International Powered Access Federation</td>
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<td>KPI</td>
<td>Key Performance Indicator</td>
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<td>M&amp;E</td>
<td>Mechanical and Electrical</td>
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<td>MMC</td>
<td>Modern Method of Construction</td>
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<td>Personal Protective Equipment</td>
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1.1 Introduction

This introductory section seeks to establish the starting point for this study and provide an outline of the research undertaken. Firstly, the research problem is explicated, and then placed within the contemporary contexts of government, industry and academic fields. The research fundamentals of the study are highlighted through an outline methodology and statement of the research goals. Consideration is made of the overall contribution to knowledge that this study can ultimately make, and the key terms and concepts used within the main body of the document are defined.

1.2 Research Problem

Working on UK construction sites is frequently perceived to be a dangerous activity (Duncan et al 2002; Jordan et al 2004; Chan and Connolly 2006a). This perception is justifiably grounded in the high level of industry accidents and fatalities; construction is currently the third most dangerous occupation in the UK (HSE 2011a).

Unsurprisingly, this situation is not tolerated by the UK government or by the UK construction industry itself. Focus on improving the safety record of the industry has been continuous, and success can be seen in the statistics, from 1974 where 166 workers lost their lives, to 1986/7 where 125 were killed, to 96 deaths in 1996/7 (HSE 2011b) to the latest figure of 50 worker fatalities in 2010/11 (HSE 2011a). The safety record of the UK industry is undoubtedly improving, although, there is still the eminently justifiable belief that ‘one death is too many’ (Donaghy 2009).

This belief is also writ large within industry and its associated schools of academia, and constant effort is employed to reduce accidents and incidents on sites. A large body of continuing academic research seeks to examine the underlying causes of these accidents (Donaghy 2009; Manu et al 2010), alongside industry developments in terms of increased training and education of the workforce in health and safety (Laing O’Rourke 2011, Balfour Beatty 2011, LendLease 2011). Behavioural and cultural safety training programmes are a regular feature of site life under main contractors in the UK (Rawlinson and Farrell 2010a); however their success has still to be determined. Despite positive reports about their implementation, there is a lack of direct evidence of change (HSE 2008). Concerns have been raised regarding the compatibility of these cultural change programmes with the existing culture on sites (Rawlinson and Farrell 2008), which may limit their effectiveness.
Indeed, it would be an error to assume that due to the implementation of such programmes, fatalities within the industry are now restricted to small sites without the resources to implement them. There are still incidents on large, well-managed construction sites; the death of a worker in 2004 on the Jemstock Project in London’s Docklands area is a prime example (HSE 2009a; McMeeken 2010). This was a large project run by a member of the UK Contractor’s Group, with an established safety management system and cultural change programme in place, who has regularly won gold awards for its safety procedures (RoSPA 2008). During the official investigation, the HSE found that whilst risk assessments and method statements had been undertaken for the work, the checks identified as necessary in the assessments had not been adequately carried out, and the hole through which the worker fell had been covered with poor quality plywood, although by whom was never established (HSE 2009a).

This incident illustrates that even with the employment of cultural change programmes, in addition to the traditional safety management systems, method statements and risk assessments, the human factor is still critical in construction work, regardless of the size and management of the construction site itself. Why were the checks not done? Who was it that decided the plywood was acceptable to cover the hole? Who put it there?

The research problem for this study is therefore based on people and their approach to safety within the construction site environment. It wishes to explore how people respond to the safety management systems and cultural change programmes that have been established and implemented on large UK construction sites. It looks to people themselves to examine how they see safety, in terms of relevance and importance, in their everyday work on the large construction sites of the UK.

1.3  Context of the Study

In order to establish the relevance of this study, the contemporary contexts of academia, the construction industry and government that surround this research problem must first be explored.

1.3.1  Statistical Context of the Research Problem

Initially, some appreciation of the scale of the problem is necessary. The UK construction industry is one of the most dangerous in which to work in terms of health and safety; 27% of all fatal workplace accidents in the UK in the period 2010/11 were in construction,
making it account for almost a third of all deaths at work (HSE 2011a). In addition, in the period 2010/11, 9% of major injuries and 6% of over 3-day absence injuries to UK workers were also to those working within the construction industry (HSE 2011b).

Despite the recent success in reducing industry fatalities, the number of workers killed on UK construction sites increased in the period 10/11 for the first time in four years: 50 workers lost their lives, compared to 42 in the previous period (HSE 2011b).

1.3.2 Government Context

Health and Safety legislation within the UK is established by statute, based upon the Health and Safety at Work Act 1974, which is itself supported by UK Safety Regulations (Howarth and Watson 2009). More recently, the Corporate Manslaughter and Corporate Homicide Act 2007 (Glackin 2008) has brought site health and safety management into much sharper focus in industry boardrooms. The implementation of the Construction (Design and Management) (CDM) Regulations 2007 was also instrumental in putting health and safety on the agenda of clients, designers and contractors, following a number of successful prosecutions and fines (Raeside 2008). These recent changes in legislation brought the need for early planning and co-operation into construction teams, as well as good risk identification and health and safety management (HSE 2007), and consequently a new focus from design teams and clients on an improved safety culture within the industry.

To further support this legislation, guidance and approved codes of practice are provided by the Health and Safety Executive (HSE). Activities of the HSE Construction Sector, working alongside government, have also resulted in a variety of summits, plans and reports, identifying key areas of action designed to combat the high level of industry accidents and incidents. These have included full workforce competence, benchmarking and monitoring, better occupational health management, workforce engagement and cultural change (Myers 2002; HSE 2011e).

In addition to the legislative and supporting roles of the HSE, it also funds and undertakes a significant amount of research. This research is more often based at the construction site level, possibly due in part to the unrestricted access the HSE can demand of contractors, and also full access to accident data. Investigations have, for example, examined *Causal Factors in Construction Accidents* (HSE 2003a), *Site and Personal Factors in Accident Causation in the Construction Industry* (HSE 2003b) and *Behaviour change and worker engagement practices within the construction sector* (HSE 2008).
The most significant report of recent times, published in 2009, was the government inquiry into the level of fatalities in the construction industry *One Death is too Many – Inquiry into the Underlying Causes of Fatal Accidents* led by Rita Donaghy (2009). She found that where construction companies have taken the lead in safety management on site, fatalities were reduced; however the notion that safety issues were solely the problem of the smaller builder and not larger companies was not the case. The report highlighted people as a key area of concern, with complacency and corner-cutting explicated as key issues, and noted that the practice of reliance on a subcontracted supply chain inevitably resulted in less control in the management of safety on sites.

Whilst the HSE is continually striving to address health and safety issues on site, currently operating a 50% reactive and 50% proactive approach, potential budget cuts may lead to a reduction in the ability of the HSE to be proactive and restrict it to more of a post-incident investigative role (Hankinson 2010).

### 1.3.3 Industry Context

The construction industry has devoted considerable efforts to improving its health and safety performance (Chevin 2007; HSE 2009b). Historically, approaches to safety within the construction industry have developed in line with general thinking; from theories of accident proneness in the 1930s, to ergonomics in the 1950s, to control of behaviours in the 1980s and most recently to the development of holistic organisational safety cultures (Hale 2008), delivered through cultural change programmes.

Investment in these sophisticated and innovative programmes for change, over and above adherence to legislation and common standards such as safety management systems, has frequently occurred amongst larger UK contractors (IOSH 2006; Spanswick 2007b; Rawlinson and Farrell 2010a). These programmes are often company specific, however the majority subscribe to a cultural change process, aiming to change the culture of the company as a whole, which then leads to the desired behavioural changes on its sites. Some programmes also contain elements focused on behavioural change, identifying specific unsafe behaviours and attempting to reduce them through control measures (Dingsdag *et al* 2006). Forms of these behaviour based safety programmes have been in place on UK sites since the mid-1980s, and safety cultural change programmes were first implemented within the industry in the late 1990s (HSE 2008).
In addition to these holistic company programmes, large contractors have also been attempting to ensure a fully qualified and competent workforce through the use of the Construction Skills Certification Scheme (CSCS) as a minimum requirement for entry to work, in line with industry supported government proposals for workforce competence (CSCS 2011). This is likely to assist in the management of the large number of subcontractors working on the contractors’ sites, ensuring a minimum standard is maintained for all workers, even those unfamiliar with the holistic company programmes that may be in place (Donaghy 2009). However, the CSCS programme has come under criticism for the standards of its tests and the debate that a carded workforce does not necessarily correlate to one that is also competent and safe (Spanswick 2007a).

The CDM Regulations 2007 and The Corporate Manslaughter and Corporate Homicide Act 2007 have led to change in the focus of safety management (Boyd 2009) for both clients and contractors, and indeed client focus has turned site safety into a key factor when awarding work (Klein 2008). Sustainability and corporate social responsibility have to varying extents encompassed site health and safety and workforce management, depending on the definitions employed, and growth in these areas has consequently raised the profile of site health and safety management further within industry (Boyd 2009).

Notwithstanding the fundamental desire to protect their workforce, large contractors may now be looking to their site safety management processes to become a key addition to their work winning strategy; a way to maintain a competitive edge within the market and to create a unique selling point for companies.

1.3.4 Academic Context

The most significant international body of academics within Construction Management Research (CMR), which also incorporates many industry professionals, is the CIB, or International Council for Research and Innovation in Building and Construction (CIB 2011a). The CIB gathers its activities under Workstreams or Task Groups and of particular interest here is W099 Safety and Health in Construction. Through conferences, proceedings and publications, CIB Workstreams actively encourage research and dissemination of findings throughout their global scope. W099 has recently focused on the ‘evolution of directions in construction safety and health’, the title of the 2008 W099 conference (CIB 2008), and also sought ‘Prevention: Means to the End of Safety and Health Incidents and Illnesses’ at its 2011 conference (CIB 2011b).
In addition to research undertaken by the members of the CIB, research is also ongoing independently within academia that is of relevance to this study. One such area, which garners interest from those in academia, industry and the government alike, is the examination of the underlying causes of construction site accidents (HSE 2003a; HSE 2003b, Cameron et al 2008; Manu et al 2010). Through a variety of approaches, such as the development of an Accident Root Cause Tracing Model (Abdelhamid and Everett 2000; Gibb et al 2001) which employs the theories of accident causation and theories of human error in accident investigation, considerable efforts have been made to understand the causality and circumstances surrounding accidents on UK construction sites (HSE 2009c). However, whilst these studies are able to highlight areas of focus for on-site safety management, and provide objective ‘reasons’ for common behaviours that lead to accidents, there has not been significant examination of the social contexts in which these phenomena occur to discover how and why people employ them within their approach to safety.

Another relevant area of research is that of the safety culture of construction sites. There has been a large amount of research undertaken in Australia, examining the employment of safety culture on sites (Dingsdag et al 2006; Cipolla et al 2006) which ultimately led to the production of a construction safety competency framework (Construction Innovation 2006). Exploratory research is also ongoing within the UK from a variety of approaches, including investigations from the perspectives of those who work on the sites (Hartley and Cheyne 2009; 2010) and through systems dynamics modelling (Mohamed and Chinda 2011). There is also focus on the development of a valid and reliable safety climate questionnaire, one of the key measurement tools used within industry to provide an overall measure of the safety culture of a construction site (Guldenmund 2007). Overall, the examination of culture within the construction site environment has arguably been focused on identifiable and objective characteristics, rather than more intangible aspects.

Clearly, there are also many other academic research studies and projects ongoing within the field of health and safety, covering aspects such as the communication of health and safety information (Ulang et al 2009) or behavioural safety (Choudhry and Fang 2008) among many others. However, whilst CMR has made significant attempts to examine and study construction site safety and the people involved, there has been concern with the fundamental philosophy of the academic approach of CMR, and the compatibility of
traditional, objective scientific approaches to what is essentially a social sciences phenomenon (Dainty 2008; Harty 2008). This debate is examined in detail within Section 2.

1.4 The Study: Refinement of the Research Problem

1.4.1 Development of the Research Problem in Context

From the above context it can be seen that there is a significant body of literature addressing the research problem from a variety of perspectives. It is clear that research, development and management in the area of construction site safety is a critical issue for all industry stakeholders and is justifiably given significant attention. The need to continue to reduce on-site health and safety incidents and accidents is seen as imperative, not just from a humanitarian perspective, but also, more recently and arguably more cynically, from a corporate one.

The government has not been reticent in introducing new legislation as required to ensure health and safety is given top priority in the workplace, as well as providing continued support and governance through the HSE. More recently, the Löfstedt report was commissioned by the government to investigate the possibility of reducing the red tape around safety to facilitate better and improved management in practice (Department for Work and Pensions 2011). Large contractors within industry have also tried to ensure they are employing the most innovative and robust methods to ensure safety standards are maintained on sites. However, if this context is approached from a purely academic perspective, it can be seen that there are potential limitations within the studies previously undertaken, and this may have influenced the practical applications of this research and development when deployed by government and industry.

The objective, scientific approach made by the majority of CMR to social issues such as safety (Love et al 2002), has arguably led to a body of work that is focused on the tangible and measurable. An illustrative example from CMR is the high risk tolerance found on construction sites (Cooper and Cotton 2000; Rawlinson and Farrell 2009). Traditional, objectivist research has provided ‘reasons’ for this phenomenon; contractors and operatives are often prepared to take risks to get the job done, for money, for production, or just to keep their employment secure (Langford et al 2000; HSE 2003a; Cipolla et al 2006; Choudhry and Fang 2008). However, whilst these contextual reasons are indeed likely to be significant factors, they themselves cannot explain how and why individuals
employ them within their practices concerning safety. A level of understanding of people in construction, beyond objective characteristics, has yet to be established (Dainty 2008; Harty 2008). The study, therefore, proposes to address this issue within the contemporary academic context. As the remainder of this Section will show, a methodology is proposed which will enable greater insight and understanding of safety on construction sites.

To also position the study within practical boundaries, in order to meet the research problem as posed, the study is limited to examinations of UK construction sites operated by main contractors achieving inclusion in Building Magazine’s ‘Top 30 Contractors of 2006’ in terms of national work won (Building 2007). The detailed scope of the study in terms of the concepts and definitions used is further clarified in Section 1.6.

1.4.2 Outline Methodology

The outline methodology for this study will be examined prior to the articulation of the research goals, in order to clarify the approach being made and ensure a clear understanding of the terminology used within the research goals themselves.

From examination of the context of this study, it can be seen that although research examining people and safety is high on the agenda within CMR, it is generally approached from one methodological position, that of the objective scientist. However critics from within CMR have argued that this has led to a field of research concerned with explanations of behaviour rather than understandings (Dainty 2008); to a discipline eminently aware of what the industry does, but with little understanding of why it does it, or indeed how to change it (Harty 2008). Concern has been raised that accounts of social reality cannot be achieved using only rationalist methodologies (Dainty et al 1997). Therefore this study has looked to the social sciences to inform and illuminate alternative methods of approach, to establish, and indeed establish what can actually be established, about the construction site workforce and its understanding and attitude towards safety.

A deeper examination of the debates within CMR, and discussion of the developments that led to the choice of epistemological theory for this study can be found in Section 2, however in order to inform the overall research goals of the study it must, for now, be accepted that this study takes the position of social constructionism (Gergen and Gergen 2003; Burr 2003; Gergen 2009).
Social constructionism is closely related to its relativist meta-theory (Potter 1998), and sees the world as socially constructed by the people within it through systems and practices, and for various reasons such as convenience or self-interest (Gergen and Gergen 2004; Crowther and Green 2006). This challenges the concept that knowledge is a direct perception of reality; if the only realities are those which are constructed by individuals or societies in specific contexts (Gergen 1999), they are therefore in constant flux; there can be no such thing as an objective reality or fact (Burr 2003). This has implications for truth, and indeed social constructionism seeks only to establish whether discourses ‘tell the truth’ in terms of a particular social group, rather than any objective reality (Gergen 1999). Firmly based in the work of Wittgenstein (Gergen and Gergen 2004), social constructionism holds that our descriptions and explanations of the world are founded in linguistic exchange, undertaken in specific patterns of human relationships and the world about them. Realities are therefore constructed by language in the form of discourses, which includes talk and text, visual communications (Kress and van Leeuwen 2006) or indeed any situation involving interaction (Potter and Wetherell 1992). Discourse is seen as the universal form of social action and practice, it is something active and functional in itself (Potter and Wetherell 1992; Burr 2003), and stresses the variability in what people say to reflect changes in context or function (Augoustinos et al 2006).

From this research position safety itself can now be seen as a social construction. The construction site workforce will construct safety on a daily basis through linguistic interactions with each other, and examination of the discourses employed to do this will enable a deeper understanding of how and why the site workforce approach safety in certain ways in certain contexts. This approach has the potential to illuminate areas of harmony or conflict within the differing social constructions and discourses of the different groups found on sites; working operatives, site supervision and site management. The method of data analysis employed in this study will be that most commonly used within the field of social constructionism, that of discourse analysis (Augoustinos et al 2006). Examination of the discourses of site safety signage and documentary data, such as induction material, will establish the more formal constructions of safety within the site environment, whilst conversations held with operatives and supervisors will reveal more informal constructions and positioning of safety within the day-to-day reality of the sites. Triangulation of these data sources will enable the development of a holistic understanding of how safety is socially constructed on sites. This increased understanding may then be able to contribute to the production of positive interventions (Gergen and Gergen 2004;
Wiggins and Potter 2007), to assist in the improvement of safety management practices and ultimately contribute to resolution of the research problem within the construction site environment.

Section 3 articulates a more detailed examination and discussion of the methodology of this study.

1.4.3 Research Goals

From the initial research problem, the desire to explore how people see safety, in terms of relevance or importance, in their everyday work on the large construction sites of the UK, contextual development has suggested the potential of a social constructionist approach. Rather than following traditional, positivist CMR methodologies to explore this phenomenon, something already ongoing within the academic field, a deeper understanding of safety within the site environment has been proposed through social constructionism.

Therefore, the research problem has been crystallised into the following aim and objectives for the study, articulated in accordance with the social constructionist epistemology.

Aim

To explore how safety is socially constructed within UK construction site culture.

Objectives

1. To examine the social constructions of safety manifest on UK construction sites.

2. To examine how UK construction site management, supervisors and operatives construct and situate safety within their working lives.

3. To examine the contextualisation of safety on UK construction sites and the socially constructed realities in which it is positioned.

4. To establish recommendations for future safety initiatives, in terms of practices and interventions for change, and ensure the potential of such practical application through industry stakeholder validation.
1.4.4 Contribution to Knowledge

Section 1.4.1 notes that a better understanding of why people do what they do on construction sites has been called for from within the discipline of CMR itself. This understanding is needed to guide initiatives for change (Fox 2007; Fellows 2008), and to assist in creating an integrated proactive and productive, and most critically safe, social workplace (Kumaraswamy et al 2002).

From the foundation of social constructionism, discourse analysis has been employed within the social sciences to provide detailed insight into everyday life within specific contexts and situations. Although the epistemological position of such studies dictates that the findings are not generalisable in the traditional sense, the constructionist approach is well established within the social sciences (Taylor 2001a) and such studies have provided the foundation for recommendations of different practices and interventions to produce change and solve problems within the social sphere (Gergen and Gergen 2004; Wiggins and Potter 2007). Previous examples include the discourse analysis of workplace interactions and practices in order to make recommendations for training and for the design of work environments and equipment (Taylor 2001b), and the use of social constructionist theory within public studies such as the Department of Health examinations of child abuse within society (Stainton-Rogers and Stainton-Rogers 1999).

It is therefore hoped that, building on precedent from the social sciences, this study will be able to make a contribution to knowledge through the application of social constructionism and discourse analysis to safety within the construction site environment. Analysis of how people construct safety within their working lives through their interactions and discourses on sites may provide insight and understanding which can then be utilised to inform interventions for change. This will create the opportunity for more effective safety initiatives to be undertaken, either site specific or industry-wide, to bring about positive change.

It has often been stated that new knowledge produced by academia often does not satisfy the needs of practitioners, and actionable knowledge is needed; knowledge that can actually change professional practice (Sexton and Lu 2009). In this study, the intention is to produce recommendations in a contribution to professional knowledge, which will be validated in part by the researcher’s own professional experience within the field. Further
confirmation of this contribution will also be sought through a validation process with key safety stakeholders within industry in the form of an industry review of the study findings.

In addition to this practical contribution to knowledge, this study potentially has a more academic contribution to make. The use of social constructionism and discourse analysis within the discipline of CMR is very rare (Section 2.2.1 contains a more detailed discussion), within the literature review very few examples could be located (for example Brown and Phua 2011; Ness 2010b), none of which examined safety. Comparatively, within the disciplines of the social sciences, examination of the construction industry as subject material is also rare. Only one study examining 'builders’ discourse’ was located within the published literature, and this was examining the linguistic identities of construction operatives (Baxter and Wallace 2009). Therefore, in terms of contribution to the wider academic field, this study is arguably unique; neither has an examination of safety in construction been undertaken using this methodology within CMR, nor has there been significant examination of this environment within the disciplines of discursive studies in the social sciences.

Overall, this study has the potential to make a contribution to knowledge in both the academic arena, through the application of a unique methodology to a social phenomenon, and the professional sphere, through the creation of practical recommendations for intervention.

1.5 Structure of the Thesis

Following this introduction to the study, the epistemological and ontological foundations for the research are examined in detail, to ensure clarity in terms of what the study itself believes can be known, and what theoretical framework will be employed to achieve this.

The methodology for the study is then addressed, and includes a detailed examination of the research design, methods for data collection and its subsequent analysis. This Section also establishes the quality control for the study, in terms of validity, reliability, reflexivity and generalisability, necessary to ensure rigour within the research framework as a whole. This methodology is then further explicated through the two pilot studies that were undertaken prior to the main data gathering process. These studies are presented in the format of the academic papers in which they were presented for peer review at academic
conference (Appendices H and J), and their impact and influence on the development of the study has been discussed reflexively within the methodology Section.

The study is then placed in context, within a comprehensive examination of the literature of both construction site reality and current perceptions of safety within the construction site environment.

Analysis of the gathered data is then presented in detail, in order to enable readers to follow the analytical processes undertaken, as key examples of each data source are examined and explored in turn. The analytical findings, in terms of key themes, patterns and variations which surround the social construction of safety on construction sites, are then developed through discussions of the master discourses of safety.

From this discussion, recommendations for interventions are developed, and an industry review undertaken in order to seek comment on the findings and recommendations in terms of the validity and relevance of the study to industry. The study was presented to industry through a two-page summary document, and discussion and reflection on the review process is presented within the thesis as a summary feedback narrative.

Ultimately, conclusions have been drawn as to the success of the study in achieving its overall aim and objectives, and limitations in design and execution are presented and discussed. Following the conclusions, recommendations are proposed, both for academia, suggesting future directions for research, and industry, in the presentation of the findings in a relevant and practical manner to facilitate incorporation into safety management systems on sites.

1.6 Terms, Concepts and Definitions

In any investigation of this nature, an understanding of the key terms, concepts and definitions is required at an early stage. Consequently, the following are defined here:

**Culture** for the purposes of this study has been defined as the ideas and ways of thinking of a distinct group of people (Inglis 2005; Seymour and Fellows 2002). This pared down definition has no scope for values, attitudes, beliefs or behaviours, examination of which would conflict with the social constructionist approach. It also ensures focus remains on the people themselves and their social practices as they are constructed within the
contexts found in everyday construction site life (Potter and Wetherell 1992). Culture is discussed further in Section 2.6.

**Safety culture** is defined as the ideas and beliefs that are shared specifically about risk, safety, accidents and ill health (HSE 2005a).

**Safety climate** is a quantitative construct or manifestation of safety culture (Guldenmund 2007) which can be measured using quantitative means such as surveys and questionnaires, to establish the current views held by people on health and safety (Biggs et al 2005). Research has found safety climate and safety performance to be ‘weakly’ related at best (Clarke 2006).

**Health and Safety** for this study is defined as having regard to immediate health and safety breaches, incidents and accidents, rather than long term health issues. Degenerative occupational health problems such as asbestosis, vibration white finger or other musculoskeletal disorders caused by repeated behaviours are not included within the scope of this study.

**UK Construction Industry** is defined as ‘the sector which includes construction materials and products, suppliers and producers, building services manufacturers, providers and installers, contractors, subcontractors, professionals, advisors and construction clients and those organisations that are relevant to the design, build, operation and refurbishment of buildings’ (BIS 2010)

**Construction Site** within this study is defined as the location of an ongoing UK construction project operated by a main contractor included within Building Magazine’s ‘Top 30 Contractors of 2006’ in terms of national work won (Building 2007), and located in the North West of England. Sites under the management of successful larger contractors are likely to have existing high safety standards, safety management systems and safety change programmes in place (Loosemore et al 2003)

**Main Contractors/Principle Contractors** are defined as the companies in charge of the construction site, for the scope as defined for this study this will be large firms who are themselves contracted to the construction client to undertake the work (Morton and Ross 2008).
Subcontractors are defined as a company employed by the main contractor or by another subcontractor, who will ultimately be employed by the main contractor (Morton and Ross 2008), to undertake defined work on a construction site.

The following terms are also used with the study. Although they are not considered to be authoritative definitions, as several are simply common parlance of the construction site, they are clarified here to ensure comprehension of their use:

Operatives are the tradespeople on a site, those who undertake manual and physical work for their wages, and have no supervisory or management involvement in the project, other than managing their own personal workload.

Foremen/Gangers are working operatives who also have a supervisory role within their company for the operatives they work alongside. They will be paid more than their colleagues to manage aspects of the works such as quality and safety, but will also undertake the work themselves.

Supervisors undertake a supervisory role on site but are not also working in the capacity of an operative. Their role is focused only on supervising work in terms of time/cost/quality and also safety.

Management are those who oversee the work and are based within the site offices. They manage the supervisors, and are concerned with the overall completion and success of the project in terms of time/cost/quality and safety.

Workforce includes everyone who works on site, including operatives, foremen, supervisors and management, working either for a main contractor or a subcontractor. This term is used to encompass everyone who undertakes their daily work on construction sites.

1.7 Summary

This introductory Section has provided an overview of the study as a whole. From the initial enquiry expressed as the desire to explore how people see safety, in terms of relevance or importance, in their everyday work on the large construction sites of the UK, development of this problem in context has discovered a potential new direction of research to explore potential contributory issues around safety on sites. Through the articulation of the research problem and its positioning in a contemporary context, the
research proposal has been developed. This has led to the explication of a social constructionist methodology which has itself informed the research goals, which have been articulated through the appropriate terminology. The overall aim for the study was established as the exploration of how safety is socially constructed within UK construction site culture.

Through examination of the contribution to knowledge that this study hopes to make, it has been established that the findings of the study could indeed assist in the creation of effective interventions to support the UK construction industry in its continuing goal to improve health and safety on sites. In order to begin to establish a robust research design to ensure the findings of this study are indeed able to make such a contribution, the next Section will focus on establishing the underlying theory for the study to assist in the production of an academically rigorous approach to the research problem as a whole.
## 2.0 Fundamentals: Knowledge and Theory

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2.1 Introduction

The aim of this study is to explore how safety is socially constructed within UK construction site culture. This was developed through the objectives to include those who work on the sites on a daily basis; management, supervisors and operatives. Within the outline methodology (Section 1.4.2) several areas were highlighted for further discussion, to ground the study within its own field of CMR, and also establish and justify the position ultimately undertaken, that of social constructionism.

Firstly, this Section establishes the traditional approach within CMR and outlines the debates and discussions within the discipline itself in terms of researching people, culture and the arguments made for methodological pluralism within the discipline when undertaking social research. This Section then examines the fundamentals of the alternative approaches and theories available, looking to the social sciences and more recent philosophical developments which ultimately led to the choice of a social constructionist epistemology for this study.

Establishing the underlying theoretical framework for this study at the outset allowed the research design to develop in accordance with any theoretical directives of inquiry and subject matter (Creswell 2003; Flick 2007), which ultimately resulted in the presence of a robust theoretical thread throughout the research study, and ensured rigour in the research process as a whole (Payne and Payne 2004; Dainty 2008).

2.2 The Discipline of Construction Management Research

CMR is itself multi-disciplinary, and it has been described as sitting at the intersection of natural sciences and social sciences (Love et al 2002). Voordijk (2009) goes further and suggested that CMR is one of the design sciences, seeking to develop knowledge for the professionals of the discipline to use to resolve problems in the field. Within this categorisation he espoused the labels of technical laws and functional rules to address the more scientific aspects of CMR, and reserved socio-technical understanding for the study of people.

However, the foundations of CMR can be seen to be based in the natural sciences, evidenced by the accepted theoretical rooting in an objective, realist ontology and a positivist epistemology (Dainty 2008). This underlying framework has unsurprisingly directed the majority of research within CMR to follow the scientific practices of
quantitative, empirical research (Harty 2008; Fellows and Liu 2008). For the technical and scientific aspects of CMR this is not an issue, however there has been concern with this theoretical approach when applied to the social aspects of construction and the research of its people (Dainty 2010). That CMR must explore these areas is not in question; the construction industry is very much a people industry, and its processes are carried out by people in social settings and through social engagements (Barrett and Sutrisna 2009); it is the methods by which such exploration is undertaken that has come under criticism. There has been a predisposition to employ the quantitative methods of the natural sciences to seek to understand or explain social phenomena within CMR (Love et al 2002).

These epistemological constraints of the discipline are seen as serious limitations (Dainty 2008), and there have been calls for a diversity of approaches to be employed within CMR to achieve a more balanced methodological output. Alternative approaches, from an interpretivist epistemology, are desired in order to provide insights and enrich the understanding of those who work in construction (Dainty 2008; Harty 2008; Sutrisna 2009).

This criticism is not a new phenomenon within the discipline of CMR; whilst concern is still voiced in the contemporary arena, the pages of *Construction Management and Economics* were host to the origins of this methodological debate in the mid-1990s, sparked by Seymour et al (1997) and their argument that a scientific foundation was no longer applicable to a discipline where the main focus of study was people. A debate ensued; Runeson claimed an alternative approach would be ‘anti-scientific’ (Runeson 1997: 299) whilst Raftery et al (1997) flew the flag for methodological liberalism. This debate arguably catalysed a paradigm shift within CMR in terms of methodologies, however it is still felt by some that there has been little real methodological change within the discipline (Dainty 2010). Indeed a study in 2009 which examined people, their motivation and job satisfaction within the construction industry, found that the methods employed by CMR researchers in this aspect of social research were, at the time, still predominantly positivist and quantitative, rather than interpretive and qualitative (Navarro 2009).

### 2.2.1 Alternative Approaches in Construction Management Research

In order to position this study within its own discipline, a more detailed examination of the current epistemological position of CMR was made with specific regard to the study of people and the social aspects of construction. The level of adoption and acceptance of alternative approaches to the ‘traditional’ within CMR has been evaluated, in order to
ascertain the relevance and contribution to knowledge that this study, undertaken from a position of social constructionism, could make within the discipline.

Indeed, the calls for alternative approaches and methodologies within CMR from the mid-1990s onwards did not go entirely unanswered. There have been various explorations by CMR academics towards the social sciences, and its methods have been drawn upon by individuals keen to apply alternative approaches when examining people and the social aspects of construction (Ness 2010a). Examples can be seen in such studies as Hill’s (1999) early foray into ethnomethodology, which examined the shared linguistic meanings of construction managers; Rooke and Clark’s (2005) ethnographic work of learning and knowledge of safety on construction sites which employed participant observation; Barrett and Sutrisna’s (2009) stance of critical realism, employed in a grounded theory study of case studies of arts-based construction projects; Ness’s (2010) approach to the common industry statement ‘Respect for People’ through critical discourse analysis; and Brown and Phua’s (2011) examination of the identity discourses of construction managers, which employed a social constructionist and management theory approach. Therefore there is precedent for this study in terms of alternative approaches found within the discipline.

If one is to have believed Fellows (2010) in his statement, provocative by his own admission, that the traditional approach, the positivist and quantitative, has recently been surpassed by a constructivist, qualitative paradigm, employing interpretivist methods, then these studies should have proved to be the contemporary norm. However the findings and opinions of others would indicate that this is not the case (Navarro 2009; Dainty 2010); a study by Dainty (2008) of the contents of Volume 24 (2006) of Construction Management and Economics found only 29% of the submissions involved qualitative methods of research.

Studies which employed a seismic shift in their ontological and epistemological position, although in existence, were something of a rarity within CMR. This was supported by the apparent need to mount a serious defence to as-yet-unspoken criticism. The reference list for Brown and Phua’s (2011) paper, published within Construction Management and Economics, ran to over three journal pages itself. Ness (2010b, p484) boldly stated under the heading of ‘research validity’ that there is ‘...no claim to absolute truth or to objectivity...’, despite having previously established her epistemological position within constructionism and her method as critical discourse analysis within her paper. This suggested that although there has been precedent set for studies employing alternative
approaches within CMR, there must still be significant demonstration and justification of such a methodological approach to ensure acceptance.

A more superficial approach to the use of alternative methodologies was also identified, undertaken through the adoption of qualitative methods and modes of analysis without a corresponding shift in the underlying epistemological position. This was illustrated by Fellows and Lui, in their book *Research Methods for Construction* (Fellows and Liu 2008). The shift towards qualitative and interpretivist approaches was again noted, however the authors then stated that there were ‘...potential shortcomings and biases in this approach (which) must be acknowledged’ (Fellows and Liu 2008, p69). Arguably, shortcomings and bias only remained when the ontological and epistemological position has not moved from the objectivist or positivist. Such concerns of bias are of the realist domain; there is no denial of bias with the relativist, constructionist approach, where it is considered inevitable, accepted and accommodated reflexively (Taylor 2001a). In fairness, Fellows and Liu (ibid) acknowledged that such a relativist position would state there are only truths but no universal truth, and versions of reality but no one reality, but this was not expanded upon within their book, nor suggested as an alternative approach to be encouraged. Possibly this was not something that could be explored within the remit of their book and confines of space, however it appeared that within construction, research methods are still grounded in a traditional, objective, scientific reality.

Further evidence of a superficial application of qualitative methods was also demonstrable in the examination of subjective, social phenomena, such as safety on sites. Within such research there was a continued reliance on the use of questionnaires informed by initial interviews, a process based on the work of Hofstede et al (1990). Whilst an initial interpretive, qualitative foray was made through interviews, this data was often immediately taken back into the quantitative, positivist arena and used to construct questionnaires to provide the ‘main’ study data (see for example Choudry and Fang 2008; Smallwood and Deacon 2001; Ankrah et al 2008; Wamuziri 2008). This practice was found to be common, despite heavy criticism of questionnaires and their use in social research from the social sciences themselves, due to inherent limitations (Inglis 2005, Henn et al 2006; Tzortzopoulous 2008).

It is therefore suggested that the underlying ontology and epistemology of CMR has ossified to some extent, and interpretive and qualitative approaches have been somewhat superficially adopted. Indeed qualitative research methods beyond this
interview/questionnaire construct were rare; in his *Construction Management and Economics* study, Dainty (2008) found only 6 of the 31 qualitative studies within the volume examined used any other method or approach. Whilst some methodological approaches contained inherent constraints, for example the use of observation as a method was often limited by restricted access to the field (Rooke and Clark 2005; Chan and Kaka 2007), when such methods were actually employed at the commencement of a study, they were often again leading towards a final questionnaire to ultimately provide statistical support to the argument (Serpell and Rodriguez 2002). In the worst instance, methodology was somewhat obscure, and no explication of the method or process of analysis was given, rather selective responses to questions from a ‘qualitative survey’ were simply displayed as a list (Fester et al 2010).

Despite the significant debate within the discipline of CMR surrounding ontological and epistemological positions when examining the social side of the discipline, this does not appear to have been carried through into practical application. Those individuals taking divergent paths in their examination of people in construction appeared to have robustly grounded their studies within alternative disciplines from the social sciences (see for example Ness 2010b; Brown and Phua 2011 as previously discussed). Yet the general approach within the discipline appeared to be more tentative and superficial, and often employed a methodological design that would not necessarily be tolerated within the social sciences (Henn et al 2006; Tzortzopoulous 2008).

Overall, it appeared that the majority of CMR still desired to found its knowledge on ordered experiences associated with scientific experimentation (Knight and Turnbull 2008); to seek out statistics and science through questionnaires and other formal, scientific constructs (Biggs et al 2005). However, there were stirrings of long called for change and indeed evidence was found of adoption of alternative approaches that do reach the ontological bedrock of the discipline. It is argued that this study is therefore able to contribute to this methodological growth within the discipline, and is highly relevant in terms of both approach and timing.

### 2.3 Fundamentals of an ‘Alternative’ Approach

Having grounded this study within the discipline of CMR, it was then necessary to explicate and justify the choice of social constructionism as the research framework; therefore examination was made of the underlying philosophical assumptions (Creswell 2007).
It should be noted here that there were a wide variety of approaches, hierarchies and terms employed by academics across the disciplines to refer to and discuss the philosophy behind academic studies. For example, Creswell (2007) adopts the term ‘philosophical assumptions’, Silverman (2005) employs ‘models’ and ‘theories’, whilst Flick (2009) merges use of the term epistemology with that of theory, and defined epistemology as ‘theories of knowledge and perception in science’. However for the sake of simplicity, and mindful acceptance of the familiarity and common usage of the terms ontology and epistemology within CMR (Dainty 2008; Fellows 2010 etc.), these two traditional philosophical foundations are used within this study.

It must also be clarified that the ontological and epistemological foundations for this study were not selected a priori and merely applied to the research problem. Rather the research problem itself led to considerable philosophical exploration beyond CMR, in order to seek a theoretical framework that was able to provide a deeper understanding of people and safety. This framework was also reflexively assessed against the researcher’s own experiences of construction site life, and application and fit with the social phenomena to be investigated was evaluated, as well as tested in a pilot study, as part of this development process.

This journey is presented here as a fait accompli.

2.3.1 Fundamentals Part I: Ontology

The term Ontology is employed as the accepted concept of reality (Creswell 2007). As previously discussed, the traditional CMR approach has most commonly employed objectivist ontology; social phenomena and their meanings exist independently of social actions (Dainty 2008). These phenomena are governed by a set of rules as to how variables inter-relate, and science aims to uncover these rules so an understanding can be gained, through theory, of an objective reality that exists independently of us (Runeson and Skitmore 2008; Sutrisna 2009).

The alternative approach to this is constructionist ontology. This sees all social phenomena and their meanings as products of social actions, reality itself is a social construct and is therefore in a constant state of flux (Dainty 2008; Runeson and Skitmore 2008; Sutrisna 2009).
This ontological debate is more commonly undertaken in the social sciences in terms of realism and relativism (Hepburn 2003). Realism asserts that there is an external world, which exists independently, and although social representations are underpinned by this reality, there is an acceptance that these representations may not necessarily be accurate. However, there is the understanding that through such representations, knowledge can actually be gained about this reality. Alternatively, relativism argues that even if this external world should exist, it is completely inaccessible. All that can be accessed are the representations themselves, and these cannot be judged against ‘reality’ for their validity or accuracy (Burr 2003). Therefore, there can be no single truth because reality is neither single nor regular, through the relativist perspective there are multiple realities and therefore multiple truths (Taylor 2001a).

Returning to the example of the phenomenon of high risk tolerance found on construction sites (Cooper and Cotton 2000; Rawlinson and Farrell 2009), various objective reasons, or variables, have been established as causal factors for this phenomenon. However, there has not yet been identified any stability or consistency within the phenomenon that has, to date, enabled a management framework to be constructed, nor theory to be developed (Choudhry and Fang 2008). The scientific quest to establish cause-and-effect between the variables has yet to prove fruitful. However, if we take the relativist view, that the realities surrounding this social phenomenon are in flux, and site operatives construct their realities to either justify or restrain their practices around safety on a case by case, or even moment by moment, basis, then the perpetuation and elusiveness of this phenomenon can be explained, and even in some way understood. The objectivist ‘reasons’ are not discounted, rather they need to be considered and incorporated into an alternative view of reality as seen from the individual’s perspective.

This study has therefore adopted a relativist position. The research problem for this study sought to examine the phenomenon of safety on construction sites in terms of the social setting and the people who work there; it was not the tangible that was sought. A relativist position allowed for exploration of the many realities of the sites, through the constructions of the people themselves, and enabled the development of an understanding of how safety itself was constructed through the interactions of those on sites.
2.3.2 Fundamentals Part II: Epistemology

Epistemology is defined here as what can be regarded as acceptable knowledge within the discipline (Dainty 2008). Epistemological theories are highly varied, and have grown and developed from and because of each other over many centuries (Knight and Turnbull 2008). Whilst a rough timeline can be attributed to this development (Denzin and Lincoln 2005), it must be noted that there were no clear phases in terms of linear development within academia (Atkinson et al. 2008).

As previously noted, the epistemological foundation for this study resulted from thorough explorations. In order to clarify and justify the position that was ultimately taken by this study, not least to ensure understanding within CMR, discussion and examination of the development of the theories of knowledge has been explicated here, albeit in a highly condensed and skeletal form.

Early empiricist epistemology stated that knowledge could only be gained from actual experience through the five senses (Gergen 1999). Based on an objectivist ontology (Flick 2007), employing the metaphor of the ‘mind as a mirror’ (Rorty 2009) which accurately reflects the world as it is (Gergen 1999), this philosophy eventually developed into the epistemological position of positivism (Flick 2007). Positivism views all knowledge as tied to observational forms of ‘verification’, but rather than founding this on sense experience, positivism founds knowledge on scientific experimentation (Knight and Turnbull 2008). Through the use of appropriate methods, free from researcher bias, knowledge of the world and its workings can be established, including cause and effect, to produce universal truths (Taylor 2001a). Even when applied to the arena of the social sciences, positivism considers that research should seek concrete facts based on empirical observations, using scientific methods of control, standardisation and objectivity to establish its theories (Henn et al. 2006).

As previously established, this is where the large majority of CMR resides; the acceptable knowledge of the discipline is still firmly rooted in objective, scientific, positivist epistemology, even when examining social phenomena (Dainty 2008).

However, developments have occurred within the positivist epistemology in terms of the social sciences. Post-positivism, based on realist ontology, subscribes to an external world yet allows for the possibility that people may be inaccurate in their representations of it. However, this epistemology still applies empirical methods, and seeks a systematic
approach to test the laws that govern the world and produce universal truths (Taylor 2001a; Creswell 2003; Creswell 2007). Critics, not least the relativists, questioned how the world can shape human knowledge, how can experimentation produce abstract ideas, such as ‘democracy’ (Gergen 1999). Consequently, interpretivism (Denzin and Lincoln 2005) developed, and aimed to understand the world from the point of view of the people studied, rather than explaining actions through cause and effect (Henn et al 2006). Interpretivism rejected empiricism and sought alternative approaches.

This led to rationalist epistemologies; whilst the claim is not made that the world can be known directly, rationalism suggests that there are concepts already in human minds which are used to help organise the world in various ways (Knight and Turnbull 2008). Rationalist epistemology is the foundation of the view of contemporary cognitive psychology (Gergen 1999), which sees the world as ‘real’ and tangible, and discoverable through hermeneutic, interpretive methods (Augoustinos et al 2006). Again, critics queried how these concepts were formed; if they are learned, then the epistemology reverts back to an empiricist perspective, if they are innate, as postulated by Kant in his *Critique of Pure Reason* in 1781, then how do new concepts, such as democracy, ever emerge? (Gergen 1999). Ultimately this led to the postmodern, where the epistemology now rejected claims that knowledge of ultimate truths or even the ‘real world’ could ever be established in terms of grand theories. There is no stable reality that can be uncovered through observation and analysis (Burr 2003), only an interpretation or version of the world can be explored, which itself is inevitably partial (Taylor 2001a).

The incorporation of language within the arguments surrounding epistemology and knowledge was a critical development, and is seen to have identified a key weakness in philosophy to date; the taken for granted nature of language itself (Gergen 1999). That people use language to share the contents of their minds was previously uncontested; it was presumed that people use words to describe what they experienced and to share thoughts and observations. This ‘linguistic turn’ formed one of the major strands of postmodern critique of the traditional claims to knowledge. Language changed from being seen as simply referential, to being representational and constructive of reality (Filmer et al 2004). This philosophical development within the first half of the 20th century was led by Wittgenstein, Sacks, Heidegger and others (Alexander 2008; Edwards et al 2009).

Wittgenstein emphasised the importance of language in use in terms of its function (Potter 2007a), and considered language a feature of the social and cultural world in which it is
used, rather than just a way of straightforwardly representing the world ‘out there’ (Wooffitt 2008).

However in questioning the relationships between words and the world, all claims to truth or knowledge as represented or conveyed through language were brought into question. In unravelling all propositions, descriptions and rational arguments, the critiques destroyed themselves; deconstructionism demonstrated the meaningless character of rational argumentation, but had to rest its own case on exactly such argumentation (Gergen 1999). This resulted in the crisis of legitimation and representation (Taylor 2001a; Potter 2007a). The crisis of representation derived from the argument that no researcher could claim to offer objective knowledge, only a subjective account. However as objectivity is impossible, then the terms objective and subjective themselves cease to be of relevance. The crisis of legitimation resulted from the consequential inability to verify or evaluate the knowledge obtained, as no check can be made against objective reality. As reality is inaccessible, to undertake research would only produce another unreliable version of it (Taylor 2001a).

To review at this point, and return to this study and its own position along the epistemological continuum, an argument developed based upon the previously established relativist ontology; a positivist, or even post-positivist epistemological position simply did not fit. Therefore the epistemological foundation for this study naturally lay beyond the accepted CMR position. From the examinations above, a rationalist position was adopted; indeed this epistemology underlies modern psychology and cognitive theory, the most common approach to examining people within the social sciences (Augostinos et al 2006; Fetterman 2010). However, drawing on experience and examples from within CMR, the intangible and ever-changing nature of practices and interactions surrounding safety within the construction site environment again came to the fore (Choudhry and Fang 2008; Rawlinson and Farrell 2009). Safety, by its very nature, is clouded in issues of self-implication (Lee 2000) which have themselves been documented through the manifestation of the Hawthorne effect, where people behave in different ways when they know they are under observation (Kumar 2005). Therefore, to adopt an epistemology that has a straightforward acceptance that what people say is also precisely what they think (Fetterman 2010) would have been a challenge to the ‘validity’ of the reality that would have been revealed (this is discussed further in Section 2.5). Although, as demonstrated through the above discussion, the developments of the postmodern and the revised approach to language in use, whilst highly applicable to a research problem seeking
understanding of an abstract social construct such as safety, and accepting and accommodating of the variability within the social practices surrounding it, did appear to have ultimately argued itself into ‘something of a corner’.

However, there were developments from this crisis that attempted to resolve the nihilistic ends of the postmodern debate, and these developments resulted in the foundation of the social constructionist epistemology (Burr 2003). Indeed, some such as Flick (2007) now contrast positivism with constructionism as the two ends of the epistemological continuum, whilst others consider it to be the primary theoretical foundation of much social research and such methods as ethnography (Walsh 2004). Consequently, an examination of the relevance and application of social constructionism to this study was undertaken, in order to establish whether this product of the postmodern was suited to the examination of the research problem.

2.4 Social Constructionism

In order to explore the potential for this study to adopt a position of social construction, its underlying foundations and concepts were examined, including those of the key analytical tool of the epistemology; discourse analysis.

2.4.1 Philosophy

Social constructionism as an epistemological theory (Silverman 2004; Flick 2007) developed from Wittgenstein’s work in linguistics, particularly his metaphor of the language game (Gergen 2009) which showed how the words people used were embedded within a system of rules and shared conventions that were employed in different cultural situations. Wittgenstein bedded his language games in patterns of activity he called ‘forms of life’. It was through these forms of life, and language-in-use that people actively constructed the worlds in which they lived (Gergen and Gergen 2004).

This social construction of the world was fundamental to the epistemology. From the postmodern rejection of the realist (Taylor 2001a) and subsequent acceptance that knowledge was not derived from human perceptions of the world as it really was; social constructionism argued that it must have been constructed by people through their constant social interactions (Burr 2003), as established by the theory of symbolic interaction (Rock 2008). These interactions and shared practices resulted in shared versions of knowledge within particular communities (Gergen and Gergen 2003; Filmer et
al 2004; Flick 2009), and ‘truth’ was therefore seen as the current accepted way of understanding the world (Burr 2003). These constructions of knowledge were created to form certain types of social relations with others within certain social contexts, or for reasons such as convenience or self-interest (Crowther and Green 2006; Shotter 2007), and were therefore in constant flux (Gergen 1999). Acceptance of this variability of reality was one of the foundations of the early development of social constructionism; Gergen (1973) stating in his seminal paper that the only abiding feature of social life was that it was continually changing.

Within contemporary social constructionism, language is seen as a fundamental resource, and is the tool by which these shifting realities of the social are constructed in the form of discourses, which can include talk and text (Van Dijk 1997), visual communications (Kress and van Leeuwen 2006) or indeed any situation involving interaction (Potter 1998). Discourse is seen as the universal form of social action and practice and it is considered as something active and functional in itself (Potter and Wetherell 1992; Burr 2003; Flick 2009). This concept of discourse within the practice of social construction also allows for the extensive variability in what people say, as this reflects the changes in context or function within the social arena (Gergen and Gergen 2003; Augoustinos et al 2006).

In line with the postmodern, these discourses are not a route to individual consciousness (Alexander 2008); following the linguistic turn (Filmer et al 2004) discourses are themselves seen as constructions and language is not directly representative of thought or the world ‘out there’ (Burr 2003; Wooffitt 2008).

However, if this concept is set against the understanding that all knowledge is partial, situated and relative (Taylor 2001a), then social constructionism does not appear to have entirely escaped the crisis of legitimation and representation. Instead it has responded through a shift in the overall aims of social inquiry. Rather than question the nature of people or society, social constructionism seeks a consideration of how certain phenomena or forms of knowledge are achieved by people in interaction (Burr 2003). Rather than seek the truth, which would require the unachievable legitimation, social constructionism seeks to establish whether the discourses ‘tell the truth’ in terms of the conventions of a particular social group, rather than any objective reality (Gergen 1999). Rather than state objective knowledge, social constructionism takes the postmodernist view that the terms of objective and subjective cease to be of relevance within the construction of knowledge.
that has been proposed. Indeed, this study will itself inevitably be contributing to the social construction of safety on construction sites (Burr 2003).

There have been, naturally, critiques of social constructionism as an epistemology. Nightingale and Cromby (1999) argued that the linguistic focus of social constructionism led to the omission of other factors such as embodiment, the inherent constraints of the real world and power relations. They argued that these elements were not reducible to discourse, however this was responded to with developments that incorporated these elements within the constructionist remit, including studies specifically examining power and other ‘real world’ constructs (Gergen and Gergen 2004).

Social constructionism has also been accused of nihilism, that it flatly makes the claim that there is no reality (Gergen 2009). Again, this is countered by the acceptance that there is a reality, however what reality is, is itself created by people (Gergen and Gergen 2004). This debate was most famously illustrated through the arguments of ‘Death and Furniture’ (Edwards et al 1995); the realists strike the table to say its real, but in doing so they immediately enter the discourse of constructionism through this invocation. The table itself is not a rebuttal of relativism until the moment and for the moment it is hit, when it enters the discourse. Yet this argument is also dichotomous. The relativists also lose their ontological footing when they begin to debate, and reveal they have a position to argue from, itself a non-relativist position.

However, despite these critiques, it has been established through previous studies and the employment and deployment of social constructionism within the social sciences, that it is an epistemological position which can provide detailed insights into everyday life. Through examination of the practices and interactions of people (Burr 2003), the insights developed have been shown to have practical application (Taylor 2001b; Gergen and Gergen 2004; Wiggins and Potter 2007).

In terms of this study, it was argued that the construction site did indeed constitute one of Wittgenstein’s forms of life, where rules and shared conventions dictate the language games in play, and therefore the social constructions of safety. Safety could itself be seen as a social construction (Gergen and Gergen 2004; Sutrisna and Barrett 2007). The social constructionist acceptance of the variability of people in what they say and do within differing contexts such as those surrounding safety (Rawlinson and Farrell 2009) was highly relevant and applicable to the research problem. There was also the potential for the
social construction of safety to be changed, as Gergen and Gergen (2004) achieved in the implementation of the ‘positive ageing’ programme, which through workshops and newsletters sought to turn the negative concept of ageing into a positive process.

2.4.2 Discourse as the Exploratory Tool

People construct their social realities through the use of discourses, which are central to all human activity (Potter and Hepburn 2008). Discourse is neither language nor linguistics, rather it emphasises the language-in-use aspect of social constructionism and seeks how it is used within everyday activities and settings (Augoustinos et al 2006; Potter 2007b).

Through the examination of discourses, the ways people write and talk to shape their patterns of life can be established (Gergen and Gergen 2004), and by siting this examination within the contexts in which they are constructed, the activity and role of the discourse can also be examined, and how the discourse contributes to the structure of the context itself (Potter 2007a). The discourses form the sole exploratory tool and topic of research; there is no attempt to ‘move beyond’ them to the topic or subject of the discourse (Potter and Hepburn 2008).

The main methodological tool of examination of these discourses within social constructionism is discourse analysis (DA) (Tonkiss 2004). DA has been described as the study of talk and texts, and constitutes a set of methods and theories for investigating language in use and in social contexts (Wetherell et al 2001).

The underlying theories and practical applications of DA will be examined within the context of this study. In order to assist readers in their understanding, whilst the theories are explored within the subsequent Section, the methods of application themselves have been examined later within Section 3 (Methodology).

2.4.3 Theories of Discourse Analysis

Discourse Analysis is itself very hard to define, as it is still a growing methodology within many different disciplines in the social sciences (Peräkylä 2005; Flick 2009). Some see DA as all research concerned with language in social context, whilst others take it to mean a specific approach to the social interactions of talk and text (Potter and Wetherell 1995). DA is seen to have developed from conversation analysis, but shifted the focus of the
analysis towards the social aspects of the talk, rather than more structured and formal linguistic organisation (Flick 2009).

Attempts to define and clarify DA have led to the establishment of several ‘approaches’ or categorisations. Two levels are established by Gergen (2009); one which examines the content of the discourses to illuminate and illustrate peoples’ actual constructions of the world, and the alternative which examines the actual processes and functions of the discourse as it constructs the world itself. These two levels of construction are not mutually exclusive, and indeed are adopted side-by-side in many DA approaches (Hepburn 2003). In addition, a distinction is also frequently made between micro and macro approaches to discourse. The micro approach examines the structures of language in interaction, whilst the macro examines the larger linguistic and social structures within social life related to institutionalised practices. However, again these are not mutually exclusive and both approaches can work in synthesis (Burr 2003).

However, an element of DA that is rigourously maintained throughout the entire myriad of these approaches is the key theoretical supposition that DA does not seek to examine motives, intentions or other cognitive processes that reside within people (Peräkylä 2005; Edwards et al 2009). The approach is epistemic and is concerned with the constructive nature of the discourse, rather than anything that exists beyond it (Edwards 1997). Whilst some, such as Alvesson and Sköldberg (2000) considered this to be a very narrow approach to social research, they did accept the use of DA as a robust initial level of interpretation of the social, which can then be examined holistically within the social context to seek understanding of wider behaviours, social patterns and structures.

As previously noted, there is neither unified approach nor straightforward definition of DA (Augoustinos et al 2006; Potter et al 2007). Wetherell et al (2001) proposed five core traditions; conversation analysis, sociolinguistics, discursive psychology, critical discourse analysis and Foucauldian analysis whilst simultaneously admitting there were also more, less well established approaches. Indeed it has been accepted that discursive work can often blend with and move between these traditions, along what is known as the discursive continuum. Augoustinos et al (2006) offered the example of Wetherell (1998), whose work drew on insights from conversation analysis but also examined discourse and rhetoric from the perspective of societal discursive resources. Gergen and Gergen (2003) confirmed this reality of DA, describing it as a very flexible approach, with no rigid set of assumptions that
must be adhered to. An approach that has come recently to the fore within the field of social constructionism is that of discursive psychology.

2.4.4 Discursive Psychology

Discursive psychology has developed as a particular form of DA, pioneering qualitative discourse research in psychology (Wiggins and Potter 2007). Theoretically, discursive psychology follows the principles set down within social constructionism; discourse is constructed and constructive, it is used to produce versions of the world and is action-oriented and undertaken in specific contexts within certain linguistic frameworks (Wiggins and Potter 2007).

As with the other forms of DA, discursive psychology rejects the idea that language is simply a conduit for transporting thoughts between individual minds, rather it focuses on what is displayed in talk and action. The approach does not look beyond the interaction to seek ‘what lies beyond’ (Potter and Wetherell 1992), rather the focus is on the detail of the interactions themselves and how they relate to the activities being performed in that context (Potter 1998).

Potter et al (2007), in their development of the discursive psychological approach, suggested three major themes to distinguish this new social psychological orientation of language. Firstly, discursive psychology has a focus on the function of discourse, that it is not simply a referential system, but one that emphasises action and an outcome-orientation. Secondly, that discourse is constructed from pre-existing linguistic resources, there is choice in this construction and that choice will depend on the interests and orientation of the speaker; through this process talk and text construct the world. Finally, there will be variation with the discourses as they are created during different sorts of activities. Through the variability of the discourses, the functional orientation can be revealed; certain types of functional orientation will lead to certain types of systematic variations which can be identified and analysed. However Potter et al (2007) also highlighted that within this approach consideration must be given to context. They objected to approaches that treat discourse in the abstract, such as DA undertaken by Parker (1990) who sought common sense categorisations for discourses, whereas Potter et al (ibid) argued for a more inductive process.

A further definable trait of discursive psychology is the identification and examination of the use of interpretive repertoires within the language, which although linked to discourses
serve a slightly different function (Edley 2001). Interpretive repertoires are defined as commonly used terms or phrases that surround a particular phenomenon in context (Augoustinos et al 2006; Potter et al 2007; Potter and Mulkay 2007). People are seen to drawn upon different interpretive repertories to perform different actions in their discourse (Wiggins and Potter 2007). For example, the community repertoire will include the words used to describe cohesive relationships such as close-knit, integration, how a community acts or feels. However, rather than this constructing the actual object of ‘a community’, the use of interpretive repertoires is to examine how they are employed in different practices to construct contrasting ‘communities’ within different contexts. Different components of the repertoire can be employed according to their applicability to the immediate context, and are seen as less monolithic than actual discourses, offering the speaker a wide range of discursive options within their talk (Potter et al 2007).

There will be a set of interpretive repertories around safety on construction sites, and therefore differences in the way it is constructed and constituted in different contexts (Wiggins and Potter 2007). Interpretive repertoires are also linked to culture, inherently implying that people are encultured into their ways of understanding the world, and placing emphasis on language-in-use as well as the role of people in the deployment of language in context (Potter and Wetherell 1995).

The method of analysis ultimately chosen for this study was that of discursive psychology as outlined above and developed and employed by Potter (2007a; 2007c), Potter et al (2007) and Wiggins and Potter (2007). This approach was itself built upon social constructionist theory and therefore allowed the exploration of the social construction of safety within the construction site environment. This enabled exploration of the variations and variability in the talk that surrounds safety on construction sites (Choudhry and Fang 2008; Rawlinson and Farrell 2009), and improved understanding of how safety was itself constructed through the interactions of those on sites.

2.5 Researching People: Theories

This Section has been included here as a reflexive pause. This discussion has been undertaken to ensure that the underlying philosophical framework established for this study was a coherent voice within the current context of researching people. It allowed further examination of the key theories in use within social research; behaviourism, cognitive theory and social constructionism, and an evaluation of these three approaches
through a research relevant construction site scenario. This enabled assessment of the appropriateness and indeed a justification of the chosen approach for the study.

2.5.1 Behaviourism

Behaviourism can be seen as the ‘positivist way’ to research people, as it logically maintains that behaviours can be described scientifically without any recourse to internal physiological events or hypothetical constructs, such as ‘the mind’. Through experimental behavioural analysis of rats and pigeons, Skinner (1978) developed his theories regarding the impact and role of the environment in the determination of behaviour. He argued that behaviour came under the control of stimuli, and that cognitive processes were inventions that were no closer to explaining human behaviour than the external contingencies themselves.

Skinner (1978) himself strongly rebutted cognitive psychology, even going to the lengths of vocalising his argument within a Section titled ‘why I am not a cognitive psychologist’ in his publication *Reflections on Behaviourism and Society*. Skinner argued that knowledge is merely an internal construct of contingencies, and through the theory of operant conditioning, intention and purpose were merely fictitious explanations of the recurrence of previously rewarded behaviour. Yet, despite Skinner’s arguments, cognitivism has become the dominant approach for examining people within the social environment (Fetterman 2010).

2.5.2 Cognitive Theories

Cognitivism itself has developed into a variety of sub-disciplines, such as social cognition, cognitive psychology and social psychology among others (Horton-Salway 2001; Hepburn 2003; Fetterman 2010).

All of these approaches adhere to the acceptance of internal mental representation; that there is internal cognitive machinery that drives human understanding and experience. Therefore cognition is conceptualised as prior to language, and language is viewed as a communication medium through which cognition finds expression and peoples’ accounts are taken as true reflections of their mental representations of the social world (Horton-Salway 2001). Whilst accepting the constructivist nature of human thought, all cognitive theories still adhere to a realist epistemology; that there is a real world and knowable
domain of facts that can be discovered through science or interpretive methods (Augoustinos et al 2006).

There are a variety of theories and constructs that have been developed within the cognitive disciplines in order to examine, assess and explain human behaviour. There are a large number of theories which examine a variety of elements (Farrell 2011), for example motivation (Ridley and Channing 2008; Hale 2008), cognitive dissonance (Baron et al 2006) or the determinants to planned behaviour (Ajzen 2005). However these theories often compete, overlap and conflict with each other, and often come with caveats stating the required context for the theory to hold (Farrell 2011).

An example of this can be seen in expected utility theory, which holds that rational decision makers will weigh up the utilities of outcomes through probability, and seek to maximise expected utility from their actions (Baron 2008; Hardman 2009). However research has disproved this basic assumption of risk aversion with certain contexts, and consequently further explanations have been developed, such as the Allais Paradox, whereby people do not always choose decision options that maximise expected utility (Hardman 2009). Indeed, research has often shown that human behaviour is neither consistent (Ajzen, 2005) nor rational (Perrow 1999). Variability has been explored through approaches such as the systems model of human behaviour, which acknowledges conflict between motivations and goals, including conflicts between the long and short term (Ridley and Channing 2008). However this approach still looks to cognitive explanations for underlying theories of decision making.

To further assist in the examination of people, social cognition has sought to seek out and develop a wide variety of tools and constructs that can be applied to individuals in order to explain behaviour. The way people organise and process their thoughts has been broken down into construals and schemas, employed to gain accurate understandings and apply knowledge to new situations (Aronson et al 2007). Heuristics are ascribed to people as the mental shortcuts they use to reduce the complexity of everyday judgements (Strauch 2004). They are employed to create the construct of ‘bounded rationality’ in people (Hardman 2009), to explain why people are not absolutely rational in their behaviour. The employment of these heuristic shortcuts is seen to bypass rationality, for example the availability heuristic means people will judge a situation in terms of the most readily available case. For example a recent publicised aeroplane crash will increase fear of flying due to focus on that particular piece of evidence, rather than the thousands of successful
flights undertaken every day (Perrow 1999). There are also other ascribed tendencies within people that exercise influence on behaviour, such as the optimism bias, the predisposition to expect that things will turn out well, the overconfidence barrier, which places greater confidence in personal judgement than is justified (Hale 2008), and the planning fallacy, the tendency to make optimistic predictions about how long a task will take (Baron et al 2006).

There are also several key constructs within the cognitive theories that are often employed within social and cultural research; those of values, attitudes and beliefs (Baron et al 2006). These elements are often seen as the constitutive criteria of many social phenomena, although it is attitudes, the inherent disposition to respond favourably or unfavourably to an object/person/event (Aronson et al 2007), that are most frequently invoked due to their perceived accessibility through measurement tools such as questionnaires or observed behaviours (Ajzen 2005).

Cognitive approaches have been criticised by some for their focus on individuals (Hepburn 2003), rather than on the social context in which behaviours occur (Augoustinos et al 2006). Theories have been developed by some to include the acceptance that the many social groups to which people belong will themselves contain social norms, implicit or explicit rules a group has for the acceptable behaviours, values, beliefs of its members, and can therefore result in behaviours based on normative conformity with the social group (Aronson et al 2007; Hale 2008; Hardman 2009).

Theories have also developed which incorporate the social within the cognitive approach, such as social identity theory which holds that people define themselves in terms of social identity as well as personal identity. People take on the characteristics of their social groups and when one identity becomes more important in a context, it then becomes most prominent (Hepburn 2003). However, this theory still makes the distinction between the individual and the social identity, which has been a key criticism of its approach (Brown 1996). A further development came with the establishment of social representation theory which reinstated the concept of culture (Augoustinos et al 2006). This theory views the individual experience as being mediated and determined by individuals belonging to a collectivity of others who share similar views. The social representations are ideas/thoughts/knowledge which members of a collective share. Individuals are seen as both a product of society as well as active participants who can effect change in society.
Despite these developments, the initial focus on the individual who is then subsequently placed within the social environment has remained a major criticism of the cognitive theories (Augoustinos et al 2006). A further, more fundamental criticism is the reliance on language as a true and transparent representation of cognitive thought (Billig 2007). Indeed, the methods commonly used within cognitive research, such as attitude scales, have themselves been criticised for their unquestioning acceptance of the existence of attitudes within individuals, and assumption that attitudes form a consistent and specific evaluation of a phenomenon (Verkuyten 2007).

2.5.3 The Social Constructionist/Discursive Psychological Approach

Social constructionism establishes an alternative to the cognitivist approach. Rather than accept discourse as the expression of thoughts or intentions, discursive psychology treats mind, experience, emotion, intention in terms of how they are constructed within discourse and oriented to the social interactions of people (Wiggins and Potter 2007).

Discursive psychology does not accept identity as something that can be established within individuals, nor explained through constructs or theories, rather the assumption is made that identity is rather incoherent, fleeting and fragmented (Edley 2001). The emphasis is on individuals within the social environment, and the discourses they undertake to perform different actions and functions within different contexts (Potter et al 2007) inevitably results in frequent shifts in self-presentation and identity (Augoustinos et al 2006). However, the notion of the ‘true self’ within western society is highly entrenched and therefore the approach is often critiqued for this aspect alone (Edley 2001; Augoustinos et al 2006).

Variation within people is accepted within the social constructionist approach without recourse to explanatory devices; the very nature of the approach assumes such variation as people perform different functions within different social contexts (Alvesson and Sköldberg 2000; Augoustinos et al 2006; Billig 2007). Indeed, people can be found to offer different evaluations of phenomena on different occasions, even within different parts of the same conversations, something Potter (1998) calls ‘an embarrassment...’ to theories based on a consistent underlying self. Rather than identify any underlying attitudes, discursive psychology examines the discursive practices through which categories are constructed and legitimised, with no expectancy of consistency. Variation is expected as people draw on
different interpretive repertoires to perform explanations and justifications in different contexts to make their discourses accountable (Wetherell and Potter 1992).

The most prominent criticism of the social constructionist/discursive psychologist approach to people has been focused on its relativist ontology. It has been argued that this results in an examination of people that cannot established identity, or attitudes, or predict behaviours, as these constructs no longer apply; indeed there is no truth to be established. However, whilst identity or prediction of behaviour as rigid constructs are not included within the social constructionist approach, attitudes, although no longer seen as enduring inner entities, are to some extent revealed through discursive psychology as evaluations, performed within talk and text and are variable dependent on function and context (Potter 2007b). In addition, the concept of truth is not excluded from socially constructed accounts of social action, the difference is in the perspective; truths are seen as local, negotiated understandings that are produced in social life rather than objective principles that direct the way social life develops (Augoustinos et al 2006).

2.5.4 Reflexive Application to Construction Site Life

This Section has been included in order to summarise the theories of researching people through a final reflexive ‘example’ from an everyday construction site situation.

A fictional male roofer sits in the induction room and listens carefully, he nods in the right places, agrees with the site rules and the fundamentals of the Incident and Injury Free (IIF) safety programme in place on site, and signs up to his method statement and risk assessments, which clearly state he will use the lanyard and harness at all times when working on the roof. A mere two hours later he is seen working on the pitch of the wet metal roof with his lanyard attached to his harness and not to the safe anchor point a few feet away. This is an unsafe behaviour which could result in a serious, potentially fatal accident, should he lose balance, slip and fall.

To return to the research problem for this study; why would he do this? Why, even with safety management systems and safety programmes established and implemented on sites are accidents and fatalities still occurring?

From a behavioural perspective, the roofer is at the mercy of external contingencies (Skinner 1978), the need for productivity and progress towards the clients’ deadlines are clear goals which must be achieved (HSE 2003a; Rawlinson and Farrell 2008; HSE 2009b) as
well as more personal goals set for workers paid on ‘price’, where the daily output equals the daily pay (Spanswick 2007b). Behavioural safety programmes in operation within the construction industry such as the Goals and Feedback approach (IOSH 2006), based on Organisational Behaviour Modification, rely on the theory that people will repeat behaviours that have a favourable consequence, and tend not to repeat behaviours that bring unfavourable consequences (David and Newstrom 1989; Rachlin 1991). Research has shown that if an unsafe act has positive consequences such as getting the job done more quickly and rarely causes an accident then this act is likely to continue (Saari 1994), and indeed limitations have been found in the inability to modify disagreeable behaviours, such as having to wear inconvenient and uncomfortable PPE (Cameron and Duff 2007).

Therefore, whilst the behaviourist approach would seek out any external contingencies and potential ‘explanations’ for the roofer’s behaviour and be satisfied, these aspects of construction site life are not already without significant record, including reference to their potential impact on safety (see for example Langford et al 2000; HSE 2003a; Cipolla et al 2006; Choudhry and Fang 2008; Rawlinson and Farrell 2008; Donaghy 2009 as previously discussed). To investigate this problem from a behavioural perspective would again provide objective ‘reasons’ for the roofer’s behaviour, without any further developments in terms of understanding.

From a cognitive perspective, the roofer’s behaviours can be explained through a variety of constructs to try to clarify the machinery driving his mind, and therefore driving him to behave and act unsafely. It can be suggested that the roofer has employed heuristics (Perrow 1999; Strauch 2004; Hardman 2009) in his approach to work, as these mental shortcuts are exactly the kind of rough judgements that will be applied in such a familiar and everyday setting (Hardman 2009). For example, the representativeness heuristic will have classified his situation according to how similar it is to a typical case, and then adjusted his attention levels accordingly (Aronson et al 2007). However, within complex environments which require complete accuracy for safe performance, the use of heuristics can prove problematic; whilst the social world allows for rough judgements when the cost of inaccuracy is not too great, where safety is concerned the repercussions can be far more significant (Perrow 1999).

In addition to heuristics, other cognitive tendencies may also have influenced his behaviour; for example the roofer could have fallen foul of optimistic bias, and be sure that this time he will be alright, or become directed by the overconfidence barrier, and has
placed greater confidence in his personal judgement of safety than is justified (Baron et al. 2006; Hardman 2009). Also, the roofer is likely to have been influenced by other, more general circumstances that morning; with his reactions potentially coloured by past experiences (he’s never had an accident…touch wood), his state of mind at the time (row with ‘the wife’ before he left for work), his well-being and health (sore leg from Sunday league football, or sore head from the post-match celebrations) and even what type of day he is having (raining again!) could have influenced his behaviour (Whitfield 1994; Griffith and Howarth 2001). With his short term goal, to make his money quickly so he can get home in time to start tea for his wife to say sorry, in likely conflict with his long term goal (Ridley and Channing 2008), it is possible that the roofer was rushing to carry out his tasks and failing to check his equipment correctly, therefore jeopardising his long term goal of preservation of his health and safety (Hale 2008).

The roofer’s attitude to risk would also be significant as within the construction industry risk holds a unique position; a certain level of risk tolerance is required to even begin to undertake some of the work, but taking unnecessary risk can result in accidents and even death (Rawlinson and Farrell 2009). This paradox inevitably leads to issues with a low risk perception (Hale 2008) and a high risk tolerance amongst construction operatives (Cooper and Cotton 2000) and this is further enhanced by other cognitive factors surrounding risk.

Research has shown that people often consider risk taking to be a positive behaviour, enabling them to test their control and confirm their independent choice in the decision to take the risk which in turn supports risk taking behaviours (Tulloch and Lupton 2003; Adams 2006). In taking risks, people see voluntary risk taking as less serious than risks that are new or imposed upon them (Hardman 2009; Tulloch and Lupton 2003), and the ‘danger’ rating placed on such voluntary risks is often lower than for involuntary risks (Starr 1969). There is also the bald fact that people like to take risks; individuals’ risk thermostats are not always set to zero (Adams 2006). This is reinforced by the theory of risk compensation or homeostasis (Wilde 1994) which suggests that when risk is lowered, for example by a change in the system, people will change their behaviour so the risk level rises again. Critics of this theory do accept that this change comes about, but argue that only when there are other trade-offs to be gained such as increase in speed or productivity (Hale 2008), which are also present in the construction site setting. Therefore, the roofer may indeed have known about his lanyard, he may have voluntarily taken the risk not to clip on; indeed he may have taken the risk just to make himself feel a little bit more ‘alive’
that morning. Alternatively, he could have assessed the risk and decided that the lanyard would have significantly slowed him down in his work and made a judgement through risk compensation.

It can clearly be seen that a cognitive approach allows for highly detailed explanations of the roofer’s behaviour, drawing on a vast array of mental constructs, influences and causal factors. However, in terms of simplification or understanding of behaviour, this approach does not appear to be conducive. Risk taking behaviour can be explained through a variety of heuristics (Perrow 1999; Aronson et al 2007), supported by the implementation of Prospect Theory, but this must then be justified by the Allais Paradox when the highlighted behaviour does not comply (Harman 2009).

These cognitive constructs are highly reliant on context and interaction with each other, and come with a large array of paradoxes and caveats in their application (Farrell 2011). They are arguably limited to providing explanations for behaviours based on observations or the reliance on language as directly reflective of these constructs. However, this may prove problematic; given the subject matter of safety, self-implication (Lee 2000) could become critical, in addition to issues inherent with asking people to reflect on things they would not normally articulate (Inglis 2005). In terms of development of understandings for the roofer’s behaviour, cognitive theories are arguably limited by the inherent constraints in place on actually establishing whether the cognitive explanations made are indeed valid within the mind of the roofer.

Safety interventions based on cognitive theories have already been employed on construction sites, indeed the IIF programme appeals to the rational self in attempting to ‘make safety personal’ and influence behaviour by reminding the roofer that he is also a husband and father. However, as research has shown, there is no direct evidence of success of this approach, or changes in behaviour as a result of these methods (HSE 2008).

The final approach to researching people is through social constructionism/discursive psychology. If the roofer is examined from this approach, the variability in his behaviour can be easily understood. He was merely constructing the socially accepted (cultural norm) version of safe behaviour as required at that time and in that context. A different construction of safety is needed within the induction room, where he is a husband/son/father and safety is his responsibility, than out on the construction site itself,
where he is a roofer, and so safety may not be held in such high regard alongside the other contextual factors of productivity and progress (HSE 2003a; 2003b).

However, the roofer is not consciously acting from a manipulative position. Rather his social identities will shift with the immediate discourse, creating a variety of subject positions which vary depending on what is brought into being by the discourse; safety or productivity. Arguably, the roofer has no stable cognitive self, rather a number of shifting, multiple identities (Augoustinos et al 2006); is the person concerned actually a roofer or a father? The answer can easily be both (Burr 2003; Gergen and Gergen 2004). This provides a clear explanation and indeed understanding of why attention and support was given towards safety by the self of the induction room, yet disregarded by the self on site, amongst the banter and language, to construct safety in that particular context.

From this theoretical contextual review, it was therefore concluded that the social constructionist approach was the most appropriate for this study and its research problem. Exploration of the key theories within a research relevant scenario enabled the analysis and ultimately justification of social constructionism as a highly appropriate approach for this research context. Rather than only seeking to identify external contingencies that influence context, or segmented explanations that only apply in certain circumstances and not others, a constructionist approach would seek to examine what is being constructed through the discourses by these shifting identities, thereby providing a deeper understanding of safety within the construction site context. Through this understanding there is the potential for change and positive intervention to assist in improving safety on sites, and a deeper awareness of why there are still health and safety accidents on large, well run construction sites, with safety management systems in place.

2.6 Researching People: Culture?

When examination is made of any social environment, a key concept often employed is that of culture. However, what constitutes culture does not come with straightforward definition, indeed there have been hundreds of different definitions of culture employed in psychology, anthropology and other disciplines (Toomela 2003). For example, culture can be defined as ‘... the beliefs of a society, represented through words and actions, ideas of what is held as important and expectations of acceptable behaviour’ (Fulcher and Scott 2007: 14); or ‘... socially shared information that is coded in symbols’ (Toomela 2003: 37); or what people believe has worked well and is worth transmitting to the next generation in
terms of a shared way of thinking about the self and the world (Chiu and Hong 2006); or ‘... the knowledge that is shared above a minimum threshold within a population’ (Caulkins 2004: 317); or Hofstede’s (2005: 4) famous ‘... collective programming of the mind ...’; or even the self-proclaimed ‘plain speaking’ definition: ‘it’s the way we do things around here’ (Wilkinson and Lee Scofield 2000: 2; HSE 2011e).

Within CMR, culture was given recognition in terms of its importance to the industry by the establishment of the CIB W112 in 1997 to research Culture in Construction, established to respond to the more frequent use of the term within CMR, and also agree on a definition (Tijhuis 2001), although possibly unsurprisingly this has not yet occurred. Fellows, one of the editors of W112’s later publication, Perspectives on Culture in Construction (Seymour and Fellows 2002), accepted that significant debates around a definition were ongoing, not only within CMR, and therefore argued for a definition that through its use ‘...facilitates clear demarcation...’ (Fellows 2008: 4). Indeed, Toomela (2003) had previously suggested such an approach, and stated that it was not necessary for the arguments around a definition to necessarily be definitive, rather it was how the definition itself was employed within the research that was important.

Within Section 1.6, culture was defined as the ideas and ways of thinking of a distinct group of people (Inglis 2005; Seymour and Fellows 2002). It was stated that this pared down definition has no scope for attitudes, values, beliefs or behaviours, examination of which would conflict with the social constructionist approach. It was also intended to ensure focus remains on the people themselves and their social practices as they are constructed within the contexts found in everyday construction site life (Potter and Wetherell 1992).

This definition supports the aim of the study; whilst it did not seek to examine the culture of construction sites, as restrictions of space and time necessitated a far narrower perspective, some recourse to culture was necessary due to the social context.

This study examines just one social construct, that of safety, however, through social constructionist research examination of the discourses around safety is also an examination of social action, and the social patterns and constructional frameworks for representation found within these actions could themselves be seen to constitute culture, or an aspect of it (Wetherell et al 2001; Burman 2003). The interpretive repertoires within the discourses were also shaped by social and cultural processes, and constrained by shared cultural resources from the language community (Augoustinos et al 2006). Culture
was therefore seen as the network of discourses that socially construct the world (Kellehear 1993; Gergen and Gergen 2003; Gee 2011a), and this study, whilst not laying claim to a holistic examination of construction site culture, inevitably enabled some illumination of how safety itself was constructed within this cultural context.

2.7 Summary

In taking an alternative approach this study was not negating the validity of the traditional approach within CMR; rather it hoped to contribute to the establishment of a range of approaches and epistemologies within the discipline (Cairns 2008). The approach ultimately chosen has been examined alongside the other traditional methods of researching people within the social sciences, which demonstrated the suitability of the adopted philosophical assumptions to the research problem of this study.

Grounded in relativist ontology (Hepburn 2003), this study has rejected the notion of a ‘real world’ waiting to be examined, rather the world is actively constructed by people through their discourses as they go about their everyday lives (Taylor 2001a; Gergen and Gergen 2003; Burr 2003; Augoustinos et al 2006; Potter 2007b). This study does not seek ‘the truth’; rather it sought to examine the many truths that surround construction site safety (Gergen 2009). It set out to explore what was being constructed out on the construction site, other than the project itself.
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3.9 Summary
3.1 Introduction

Methodology has been defined as the general approach to the examination of a phenomenon; examples include quantitative or qualitative, deductive or inductive (Silverman 2005). Building on the theoretical foundations of the previous Section, the overall methodological approach to this study will now be explored, discussed and ultimately justified.

3.2 A Qualitative Approach

Given the ontological and epistemological foundations established for this study within social constructionism, and the discussions undertaken in the previous Section, it was concluded that a qualitative approach was required by necessity (Creswell 2003; Flick 2007).

A qualitative approach enabled knowledge claims to be made based on meanings that were socially constructed (Creswell 2003), and explored how people constructed the world around them (Flick 2007). Such explorations were undertaken in local environments; knowledge and practice studied as local knowledge and practice (Geertz 2000), through inductive and interpretive approaches examining locally, temporally and situationally specific social phenomena (Denzin and Lincoln 2005; Flick 2009).

In addition to achieving compatibility with the underlying philosophy of this study, a qualitative approach also strongly supported the research aim; to explore how safety was socially constructed within UK construction culture. This aim required an approach that was itself grounded in the social world of the construction site, and a qualitative approach was appropriate for such a natural setting and supported the examination of people in their own environments and on their own terms (Kirk and Miller 1986; Denzin and Lincoln 2005).

Reflexivity is also critical in a qualitative approach, and the researcher’s own biases and involvement in the study were explicated throughout (Denzin and Lincoln 2005). This was in sharp contrast to the objective and uninvolved scientist required by positivist approaches, as qualitative approaches required interpretive and inductive methods to be employed, which were inevitably subject to influence from the researcher (Griffin 2007; Flick 2009).
Whilst the discussions of Section 2 effectively ruled out a quantitative approach for this study (see for example Taylor 2001a; Rorty 2009; Gergen 2009 etc), there were alternatives which could arguably have been termed a mixed-methodological approach (Dainty 2008), for example the use of Quantitizing (Sandelowski et al 2009). Quantitizing is the numerical translation and conversion of qualitative data to quantitative through such methods as content analysis, or assignment of values as in a Likert Scale (Naoum 2006). However the philosophical foundation of this study supports the qualitative critiques of these proposals; that the objective attributes of such approaches, either the assignment of scales or judgements of what is to be counted, are unavoidably linked to the subjective views of the researcher who assigns them (Sandelowski et al 2009). Whilst this could be acknowledged through reflexivity and an acceptance of any potential bias, it was unlikely to enhance the study through an objective addition to the research design, and therefore, in order to ensure a coherent strategy for inquiry within this study, such methods were not employed.

This study positions itself within the field of qualitative research inquiry. This was in harmony with the ontological and epistemological philosophical assumptions previously set down, yet such a position did not dictate further prescribed methods or approaches (Denzin and Lincoln 2005; Flick 2009). These have been examined in detail within the remainder of this Section.

### 3.3 Research Design

Understanding of what the research design for a study actually consists of was found to be a matter of opinion. For example, Creswell (2003) established three questions central to research design: what knowledge claims are being made by the researcher? What strategies of inquiry will inform the procedures? What methods of data collection and analysis will be used? Yet, in his later publication, Creswell (2007) employed the term to refer to the entire process of research, from conceptualising the problem, to writing the research question and on to data collection, analysis interpretation and report writing. Henn et al (2006) agreed with Creswell’s earlier proposition, and stated four main elements that required clarification; strategy, conceptual framework, who or what will be studied, and the methods for collection and analysis of data.

Alternatively, Yin (2003) saw research design as the logical sequence that connected the empirical data to the study’s initial research questions and ultimately to its conclusions.
Whereas Flick (2007) saw research design in terms of whether the approach made to the problem and data was cross-sectional or snapshot, longitudinal, comparative or case study.

An attempt was made to place the research design for this study within the majority of the parameters noted above. For Creswell (2003; 2007) and Henn et al (2006), the research design was actually established within the first two Sections of this thesis; the articulation of the research problem, the development of the research problem in context, the explication of the research goals, the claims to knowledge, strategy of inquiry and the conceptual and theoretical framework have all previously been explored and to some extent concluded. Methods of data collection and analysis were also examined and are presented later in this Section, and by this sequence of establishment, Yin’s (2003) definition was also fulfilled.

To turn to Flick (2007) and the design parameters noted above, the terminology employed within the research aim was itself of assistance in clarifying the research design. In aiming to explore how safety was socially constructed within UK construction culture, the research sought out different manifestations of safety on sites within a contemporary timeframe. This fulfilled the criteria of the ‘snapshot’ study design; the research was seeking a picture of a phenomenon of a specific time and place (Flick 2009).

Flick also provides a succinct definition of research design:

‘Research design is a plan for collecting and analysing evidence that will make it possible for the investigator to answer whatever questions he or she has posed’

Ragin (1994) as quoted in Flick (2007: 36)

The above quotation focused the attention of the research design to the research goals of the study, and for ease of reference these have been repeated here:

Aim

To explore how safety is socially constructed within UK construction site culture.

Objectives

1. To examine the social constructions of safety manifest on UK construction sites.
2. To examine how UK construction site management, supervisors and operatives construct and situate safety within their working lives.

3. To examine the contextualisation of safety on UK construction sites and the socially constructed realities in which it is positioned.

4. To establish recommendations for future safety initiatives, in terms of practices and interventions for change, and ensure the potential of such practical application through industry stakeholder validation.

Reflection on this definition alongside the research goals argued that the case has already been set down in the previous Section for the philosophical assumptions made within this study, and the ability of those knowledge claims to answer the research goals. A qualitative approach has placed the research firmly in the social context and also supported the constructionist approach, enabling the data gathered to be highly relevant to the research goals. The use of a snapshot design: seeking out data surrounding a specific phenomenon, within a variety of comparable contexts and a specific timeframe, allowed the researcher to analyse the data gathered through this process to achieve the research goals as articulated.

From this robust foundation, attention subsequently turned to the more detailed aspects of the research design; including the sample, methods for data gathering and methods for data analysis. The research design, to return to Creswell’s (2007) holistic definition, is considered critical for the conclusions to be considered credible (Henn et al. 2006) and therefore the process as a whole has been examined in detail in order to enable the quality of the study to ultimately be established.

3.4 Sample

In support of the research design, the sampling strategy used for the study was vital to the quality and robustness of the findings (Flick 2009). Within scientific research, the sampling strategy is seen as fundamentally critical to the generalisability of the results (Flick 2009); however as previously established for this study, generalisability in the traditional sense is neither supported nor sought (Lincoln and Guba 1985). Yet, this did not lead to the dismissal of structure or process within the sampling for qualitative research, although
alternatives to the traditional quantitative sample criteria of size and randomness (Creswell 2003) were established.

For example, random purposeful sampling (Flick 2007) adopts in part a scientific approach, seeking to assess a random sample within a prescribed population. Alternatively, theoretical sampling, developed alongside the grounded theory approach (Glaser and Strauss 1967), uses the developing research findings to direct the data collection process; inclusion of new cases within the sample is controlled by the emerging theory.

A frequently employed approach is that of purposive or judgemental sampling (Silverman 2001; Creswell 2003; Flick 2009), where the cases chosen for inclusion in the sample are purposefully selected to represent the strata of interest (Payne and Payne 2004). Denzin (2009) recommended studying the same phenomena at different times and places with different people. Flick (2009) agreed, and advised that it was the representativeness of the data within the sample to the research phenomena that was important; it was the content of the sample that was critical rather than abstract statistical criteria. For example, for interviews to be of use within qualitative research, it must be ensured that the sample includes those who have the relevant experience and knowledge to contribute to the study (Flick 2007). Indeed, issues have arisen when prescriptive randomised samples are used within qualitative research rather than a focus on content. This can result in the elimination of cases or instances that are highly relevant to the study at an early stage and a high reliability can result in a sacrifice of validity and an undermining of the entire research study (Fetterman 2010).

Where the research problem entails the exploration or description of a phenomenon, as it did within this particular study, purposive sampling is often employed at the commencement of the study, and the sample developed within this purposive framework as the research continued to seek a saturation point. The saturation point is the moment when researchers conclude that they are not finding out anything new from the data gathering process about the phenomenon concerned, new data are simply reinforcing those previously gathered (Kumar 2005).

This approach is often applied to the sample and data collection process for discursive psychology. As the method of analysis is examining the discourses used, rather than the people generating it, it has been argued that a large number of linguistic patterns and interpretive repertoires are likely to be employed by relatively few people (Potter and
Wetherell 1992). Increasing the sample size has often been found to increase the researcher’s workload, without adding to the findings (Potter and Wetherell 1995) and this has consequently resulted in the use of significantly smaller samples within discourse analysis and discursive psychology (Taylor 2001a) than traditional approaches.

This small sample size is also due to the intensive nature of the analytical process (Wetherell et al 2001), and the underlying philosophical assumptions which dictate focus on a fine-grain approach to situated and local phenomena, rather than looking to wider contexts (Horton-Salway 2001). However, despite the lack of a natural boundary line for the approach of discursive psychology (Potter and Wetherell 1995), the sample should still be as broad and inclusive as possible (Taylor 2001a), and an archive of material established to form the data for the study (Flick 2007).

Therefore, the initial purposive sample for this study sought out typical cases where practices surrounding the phenomena under examination occurred (Henn et al 2006; Flick 2007). For this study the cases were construction sites, and the threshold sample criterion for inclusion was their operation by a main contractor in the UK who was included in Building Magazine’s ‘Top 30 Contractors of 2006’ in terms of national work won (Building 2007). This criterion was imposed to ensure that a certain standard in terms of health and safety was likely to be found on the sites, and a certain level of commitment to health and safety would be in place (Donaghy 2009). All sites were located within the North West of England for logistical reasons due to the location of the researcher. These two parameters formed the purposive criteria for initial inclusion as a case within the study, and a holistic sampling strategy was employed and consisted of the continuation of data gathering in the field within the sample criteria, alongside ongoing analysis utilising the constant comparison method (Silverman 2001; Flick 2009), until a saturation point was reached within the data. However access to the field, the characteristics of the data to be collected and the methods for collection were also considered alongside this sampling framework, and have been addressed in the following sections.

The sites from which data was collected can be found in Table 3.1 below.
<table>
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<tr>
<th>Code Ref</th>
<th>Contractor Ref</th>
<th>Date of Visit</th>
<th>Value of Project</th>
<th>Location</th>
<th>Type of Project</th>
<th>Stage of Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>MC1</td>
<td>18/09/2009</td>
<td>£350M</td>
<td>Greater Manchester</td>
<td>Commercial/Leisure/Residential</td>
<td>Cladding</td>
</tr>
<tr>
<td>B</td>
<td>MC2</td>
<td>12/10/2010</td>
<td>£21m</td>
<td>Greater Manchester</td>
<td>Education</td>
<td>Commencement of internal fit-out</td>
</tr>
<tr>
<td></td>
<td></td>
<td>13/10/2010</td>
<td></td>
<td></td>
<td></td>
<td>Demolition of old buildings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19/01/2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>MC3</td>
<td>26/05/2011</td>
<td>£80m</td>
<td>Greater Manchester</td>
<td>Hospital/Healthcare</td>
<td>Fit out works</td>
</tr>
<tr>
<td>D</td>
<td>MC4</td>
<td>19/07/2011</td>
<td>£35m</td>
<td>Liverpool</td>
<td>Public Building Refurbishment</td>
<td>New build/Structural Alterations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>03/08/2011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>MC5</td>
<td>02/08/2011</td>
<td>£21m</td>
<td>Greater Manchester</td>
<td>Education</td>
<td>Commencement of internal fit-out</td>
</tr>
<tr>
<td>F</td>
<td>MC6</td>
<td>16/09/2011</td>
<td>£33m</td>
<td>Oldham</td>
<td>Education</td>
<td>Frame and Groundworks</td>
</tr>
</tbody>
</table>
3.5 Method of Data Collection

Traditionally, the methods employed within data collection are clearly explicated to allow future replicability of the study (Taylor 2001a). However, given the philosophical assumptions of this study and the understanding that all reality is in social flux (Burr 2003), this level of replicability is not of concern, as all findings will inevitably be temporally, locally and situationally specific (Denzin and Lincoln 2005) and no claim is made to replicability.

This did not mean that rigour in the choice and employment of the methods for this study was dismissed; the methods themselves followed specific procedures to embed reliability and ensure the results were not tainted by bad research practice (Brewer 2000). Whilst it has been said that there is no ‘method’ for discursive psychology in the traditional sense, the need to be able to convince others that findings are genuine (Wetherell and Potter 1992) is critical to the success of the research study and demonstrable academic rigour in the treatment of the methods employed will arguably go some way towards this.

Therefore, within the scope of data collection the following elements were examined in detail; access to the field, the data to be sought and their ability to answer the research goals, the justification of the methods for collection and the practical employment, and also examination of the ethics involved with these methods and the effect they had on this study.

3.5.1 Field Access

The most common initial concern within qualitative research is the ability to gain access to the field to be studied (Flick 2009). In many social situations, including private endeavours such as live construction sites, access is controlled by gatekeepers (Taylor and Bogdan 1998; Silverman 2001; Creswell 2003) who for this study are the construction companies and their representatives on the sites.

Access for a researcher can prove problematic; however this was not the case for this study. For the first four years of the study, the researcher was employed and fully supported by a large UK construction company. This allowed unhindered access to several live site environments that fit the study criteria (operated by a main contractor in the North
West of England) and the researcher was also able to access several other sites that were not under the management of her own company, through her professional network and the support and sponsorship of the Chartered Institute of Building (CIOB).

Appointments were made through this network, via professional contacts who worked on suitable sites in management teams. Through these contacts, an introduction was made to the project managers and study information provided prior to making an appointment for the visits, to ensure there was informed consent to the researcher’s presence on the sites. In keeping with the University of Bolton’s standard ethical procedure, an information sheet was issued prior to the visits, a copy of which has been placed in Appendix A. Once approval had been granted, a date was scheduled for the visits and it was the researcher’s contact who took time out to escort the researcher around the site and locate suitable colleagues to talk to. There were no refusals for a requested visit, possibly due to the personal approach, as well as the CIOB support for the study. A more formal and objective approach by the researcher to a main contractor may not have been as successful in gaining access to the sites themselves due to the formalities and time needed for the escorted visits and to establish interviews.

Access to the field was made between June 2007 and September 2011 and a detailed schedule of the data collection times and locations can be seen in Table 3.1.

3.5.2 Data

In order to be able to answer the research goals set for this study, the data requirements of the philosophical approach on which they were based must be met (Alasuutari 1996; Taylor 2001a). Data for social constructionist research can be observational or through written, verbal or visual discourses within practice (Potter and Wetherell 1992; Burr 2003; Peräkylä 2005; Wiggins and Potter 2007). This discourse in practice can include conversations, arguments, talk in work settings, or any occasion where people are doing things involving some form of interaction (Potter and Hepburn 2008). For example, in their seminal study examining racism in New Zealand, Wetherell and Potter (1992) collected an archive of documents including newspaper reports and law case files and also undertook 81 open ended interviews.

For this study, interactions around safety within the construction site setting were sought. However the selection needed to guarantee that the relevant phenomenon was addressed
within the data (Flick 2009), therefore interactions and discourses specific to construction site safety were identified for inclusion within the data set.

Triangulation of data sources is seen as enhancing the quality of a qualitative research study (Lincoln and Guba 1985; Silverman 2001; Yin 2003; Henn et al 2006). Adoption of a triangulated approach also ensured that a variety of social constructions of safety on construction sites from a number of different sources were gathered, and increased the validity of the study (Angrosino 2007; Alexander 2008). Such an approach is common within qualitative research and enables the strengths of some methods of data collection to be used to counterbalance the weaknesses of others (Axinn and Pearce, 2006). For example, the use of images has often been used alongside interviews (Flick 2007), or documents used to supplement conversations within discursive approaches (Rapley 2007). An archive was established from the different data sources, gathered within similar settings as defined by the sample criteria, upon which interpretations and analysis were then applied through discursive psychology (Wiggins and Potter 2007).

Therefore, an examination of the potential sources of data surrounding the social construction of safety within UK construction sites was undertaken, in order to assess suitability for inclusion in this study (Creswell 2003). Qualitative data is frequently sorted into two categories; researcher-generated and pre-existing or naturally occurring (Rapley 2007), and this examination followed these same criteria in order to allow assessment within and between these categorisations.

### 3.5.2.1 Naturally Occurring Data

Naturally occurring data is often seen as the ‘holy grail’ of qualitative research due to the complete lack of any researcher bias or influence (Webb et al 1966; Potter and Wetherell 1992), and is argued by some to have analytical precedence over all other data sources (Potter and Mulkay 2007). Within discursive psychology, naturalistic records are seen as the standard data for analysis (Potter and Hepburn 2005), and the researcher should aim to collect data that has not been created by the researcher for the purposes of research.

Although there has been some challenge to this mantra; Griffin (2007), for example, argued that no data is truly natural as it was inevitably affected by the context in which it was generated, and that there were also issues with obtaining such data ethically. Potter and Hepburn (2007) responded to this critique, and stated that their preference for naturally occurring records was in part an opposition to the heavy reliance on interviews within the
field, especially the acceptance of interviews as objective processes rather than an active engagement between interviewer and interviewee. Indeed, Silverman (2001) agreed, and whilst appreciating the power and credibility of naturally occurring data, he did not see this as superseding the interview as a method of research, rather he supported the suggestion that it was the status given to data collected within interviews that was important.

**Text: Documents**

Existing documentary data is considered to be one of the best sources of naturally occurring data (Potter and Wetherell 1992; Banks 2007), and also a key unobtrusive research method (Payne and Payne 2004). Documents themselves have been created by a specific author for a certain audience and for a specific purpose (Flick 2007), and therefore documents regarding safety on construction sites will contain the discourses used to socially construct a specific version of safety within that particular context (Creswell 2003; Payne and Payne 2004; Macdonald 2008; Flick 2009).

There are four established criteria for the acceptance of documentary sources as data set down by Scott (1990); authenticity, that the document is genuine and of unquestionable origin; credibility, that the document has not been distorted and is not itself flawed; representativeness, the document is typical of its kind and if not, the extent of its untypicality is know; and meaning, the document is clear and comprehensible.

Documentary evidence also enables the researcher to ensure familiarity with the words and language of the field (Creswell 2003), although this was not particularly necessary for this study, due to existing researcher knowledge (Flick 2009). However, in accordance with the research design, such data was analysed in terms of its employment as a communicative and constructive device, rather than as straightforward containers of content (Flick 2009). For this study, the existing researcher knowledge facilitated this process, as the high level of content understanding enabled the researcher to focus on the discursive role of the data with little distraction from the colourful construction vocabulary; rubber ducks and yellow jelly being highly illustrative examples *(Researcher’s note: a rubber duck is a dumper with inflated tyres rather than caterpillar tracks, yellow jelly is the site vernacular for Kwickstage system scaffolding which is yellow in colour and wobbles when you stand on it).*

There has been significant support for the use of documentary data within qualitative research. The very physical existence of documents has allowed other researchers to cross-
check findings (Payne and Payne 2004; Denscombe 2007), and also reduced the potential for errors in interpretation through preparations such as transcription (Gibbs 2007).

Documents are inert data sources and do not react to being studied as people do (Payne and Payne 2004), and are therefore inherently free from researcher influence. They are usually readily available and can be quickly gathered, enabling early analysis (Silverman 2001), which assisted in the development of the sampling strategy as proposed for this study. Whilst Flick (2009) cautioned against the use of documentary sources as the sole data provision within a study, they can provide an invaluable asset within data triangulation, as proposed for this study (Macdonald 2008).

**Text: Signage**

Another form of data, which is also unobtrusive and naturally occurring, is signage. On construction sites, signage relating to safety is commonplace; this can be seen from simply walking past the gates to any large construction site and observing the various luminous adornments proclaiming the presence of ‘danger’, of ‘deep excavations’, asking all parents to ‘warn children of the dangers and consequences of trespassing on this site’ as well as reminding the workforce to ‘wear your safety equipment’ both verbally and in pictorial form (Archer 2011a).

Such signs form a significant discursive contribution to the social construction of safety on construction sites. Through prohibitions, warnings, directions, advisories, alerts and watches, signage not only invokes a common underlying discursive framework incorporating an implied reader, implied object and an implied author exercising authority (Hermer and Hunt 1996), but also is highly revealing of the constructed attributes of these characters and their motivations (Kellehear 1993). For example, the sign ‘scaffolding incomplete do not use’ is common enough to be mass produced (Archer 2011b), yet there is no comparable sign requesting that operatives do not jump from the scaffolding. Pedestrians are asked to ‘please use other footpath’ (Archer 2011c) but such pleasantries are not included for the workers, who are told in no uncertain terms ‘no hat, no boots, no job’ (Archer 2011d).

Signage on sites also includes a large number of ‘project specific’ safety signs that are created and laminated in the offices by the site management, rather than commercially produced, and are used as site management tools. Such signs can be directional to ensure safe walking routes are maintained, for access control to restrict entry to hazardous
locations, or to tackle particular issues. However the latter can ultimately send mixed messages, as Hermer and Hunt (1996) described in their study of signage, the ‘No U-Turn’ sign gives a clear indication that this is a highly useful place to do a U-Turn, but at the same time asks people not to do it. The discourses of such project specific safety signage are likely to be very revealing about the way safety is constructed on sites at the level of the operatives and supervisors/managers who created the signs.

Talk: Everyday Conversation

In terms of naturally occurring data, everyday talk is a highly rich data source (Potter 2007a), which reveals the rhetoric organisation of evaluations, such as justifying, explaining and defending; which are key in gaining an understanding of the social functions of the discourses (Augoustinos et al 2006).

However, such data also presents issues both ethically (Gillham 2008) and practically. In order to obtain such data from a non-public space such as construction sites, informed consent should be obtained from all the participants, however once consent is given the talk is arguably no longer naturally occurring as there would be a conscious awareness of the researchers or presence of the recording device (Griffin 2007).

That the data sought concerns interactions and discourses specific to construction site safety would also be highly influential, as such a sensitive topic may raise concerns of self-implication (Lee 2000) and the Hawthorn effect (Kumar 2005) amongst the participants, and most likely constrain any naturally occurring conversation around the critical subject area.

In terms of practicality, construction sites are themselves potentially very noisy places (Duncan et al 2002) and the equipment required to record such conversation would have to be of very high quality. The mobility of the participants would also cause issue, and the need for them to wear an individual recording device would again be likely to influence the ‘natural’ nature of their talk (Griffin 2007).

3.5.2.2 Researcher Generated Data

The opposite of naturally occurring data is researcher generated data. This can be defined as data that would not have been produced, had the interviewer not have instigated it in some way (Potter and Hepburn 2007). The issue with the use of such data within qualitative research has traditionally been concern with researcher bias or influence on the
data production and gathering process, which in turn potentially skews the data produced (Payne and Payne 2004).

However there are some, such as Griffin (2007), who felt that researcher participation was actually beneficial to the data production process, where the researcher took an active and reflexive role, and engaged with the social world in order to study it. Although in order to do this, a certain level of understanding of the field and phenomenon under investigation is required and an internal perspective needed to allow such active and reflexive participation (Taylor 2001a; Griffin 2007; Fetterman 2010). However, for this study, the researcher was indeed embedded in the field, thirteen years of experience working on construction sites has resulted in inherent understanding and familiarity with the common conceptual frameworks and vocabulary employed on construction sites.

**Talk: Interviews/Contrived Conversations**

As previously noted, interviews are one of the most common methods of data production within the social sciences (Potter and Hepburn 2005; Potter and Hepburn 2007; Fetterman 2010), however they are also one of the most criticised for a wide array of reasons.

It is claimed that the use of interviews creates an artificial situation (Henn et al 2006; Tzortzopoulous 2008) in which people are asked to put into words things that they rarely reflect upon in everyday life (Inglis 2005). This can lead to the informants either intentionally, through avoidance of self-implication (Lee 2000), or even unwittingly, creating a false impression of themselves and their beliefs (Payne and Payne 2004). Indeed, misinterpretation and misrepresentation are common (Potter and Mulkay 2007), and many people do seek to present an idealised image of themselves, as they think they should to conform to a certain social image (Fetterman 2010). The interview protocol employed by interviewers can also influence the data produced, issues such as bias in questioning techniques and probing (Oppenheim 1992) can again skew the data produced and lead to inconsistencies across the data from different interviews.

These criticisms are most relevant when interviews are to be employed within an objective, realist study; where the data produced is seen to reflect the real world and produce real facts about either social situations or the interviewees themselves (Byrne 2004; Potter 2007b; Potter and Mulkay 2007). For a realist study, the above issues would be critical to the validity of the data produced, and indeed there is body of literature dedicated to
addressing these issues from a technical standpoint to reduce their effects (Foddy 1993; Oppenheim 1992).

However, when interviews and interview data are approached from a social constructionist, relativist position, these issues become less significant. This approach means interviewers and interviewees are actively engaged in constructing meaning in the course of interviews, and this interaction, rather than standing in the way of accurate depictions of fact actually become the topic of interviews (Silverman 2001). Indeed, within discursive research, interviews are themselves seen as an interactional, active engagements (Potter and Hepburn 2005; 2007); a conversation, albeit somewhat contrived, rather than a clinical research process. Once the notion that they reveal ‘the truth’ is abandoned, then there is no need for complex technical approaches to remove issues such as bias, and the interview can be used to explore the participants variable interpretive practices they employ to construct their versions of the social world (Potter and Mulkay 2007). Therefore, key to the employment of interviews as active interactions is a high level of emic understanding on the part of the researcher of the field and social world the interviewee is constructing (Fetterman 2010).

Without interviews the difficulties in obtaining naturally occurring talk around safety on construction sites would be considerable. Relevant discourses would be scattered throughout the working day, and therefore to gather such data the constant recording and analysis of participants would be required. As previously noted, this may not even result in naturally occurring talk due to the inevitable conscious awareness of the presence of the recording device (Griffin 2007). Interviews allow for discourses to be constructed around areas that would otherwise remain inaccessible (Peräkylä 2005), and if they are seen as social interactions in their own right, with the emic interviewer actively participating as much as the interviewee through debate, argument and counter-explanations, then a conversation rather than an interview can occur, revealing some of the arguments and debates the interviewee may have actually produced in natural talk outside of the interview situation (Wetherell and Potter 1992).

Talk: Questionnaires

As previously established, questionnaires are common within the qualitative approaches made within CMR (Smallwood and Deacon 2001; Choudry and Fang 2008 etc). However, whilst considered useful for providing a superficial picture of a phenomenon (Fellows
Questionnaires are generally used with a large sample of participants in order to seek uncomplicated, factual or opinion data (Hinds 2000), usually associated with the production of social statistics (Bloch 2004). Such data does not meet the criteria requirements for this study, where detailed discourses are sought to enable fine grain research (Potter 2007c) of the phenomenon of safety within the construction site context.

**Practices: Observations**

Observational data is frequently gathered within qualitative studies, especially within ethnographic research (Payne and Payne 2004; Atkinson et al. 2008), although it is often used in conjunction with other data such as interviews or documentary sources (Angrosino 2007; Fetterman 2010). In some instances, observation is used as a method of triangulation within multi-method research to establish whether what people say is indeed backed up with what they do (Gillham 2008). However, this approach does not sit well with the underlying foundation of this study; social constructionism accepts and expects variation within people (Augoustinos et al. 2006), and therefore to validate what has been said, which is itself a construction, with action at a different time and within a different context, contradicts the fundamental research design.

Alternatively, employing observation of others and the use of fieldnotes (Silverman 2005; Tzortzopoulous 2008) would simply be the production of another social construction by the researcher of the phenomenon in context. Indeed, it is often a concern of traditional observational fieldwork that it is the detail that is captured, rather than the perceptions of the researcher, and to record conversations or verbal exchanges verbatim (Angrosino 2007). Whilst detailed recordings would provide an ideal data source for this study, to record full conversations in note form would not be practical and could easily result in the production of invalid and insufficiently detailed data for discourse analysis.

In addition, and of specific concern for this study, the use of observation to examine a sensitive phenomenon such as safety also raises other issues, such as the Hawthorn Effect (Kumar 2005), which can manifest if people are aware they are being researched and change their natural behaviours. Overall this could result in the use of observation as a
method for this study producing valid observations of invalid behaviour, potentially being inaccurately recorded and ultimately producing what is essentially a socially constructed discourse in its own right. Such an approach is arguably not compatible with this research study, and to create an observation protocol to challenge these potential issues would be potentially quixotic.

3.5.2.3 Triangulation

As noted in Section 3.3 (Research Design), the data collection strategy was critical to the overall success of the study (Yin 2003; Creswell 2003; 2007). From the above discussion it can be seen that there were a variety of both naturally occurring and researcher generated data collection methods that could have been employed within this study. To enhance the quality and increase the validity of the findings, triangulation of methods was proposed in order to maximise the potential occurrences and interactions around the phenomenon of safety on construction sites that could be gathered and used within the study. A balance between the forms of qualitative data was sought.

It was proposed that documentary data formed a significant part of this study, and selected data was gathered in terms of commonality across a variety of cases, as well as more unique examples (Taylor 2001a). Naturally occurring documentary data relevant to safety on sites, such as construction site inductions (usually in the form of MS PowerPoint presentations) and other safety training material were sought for collection. This naturalistic data collection also included documentary data in the form of site safety signage; as discussed such signage forms a significant discursive contribution to the social construction of safety on construction sites between supervision, management and operatives. However, naturally occurring talk was not included within the data collection strategy for the study, due to ethical and practical limitations.

Interviews with the site workforce were also proposed to supplement these documentary sources (Flick 2007). These interviews were undertaken in line with the social constructionist epistemology of this study, and the understanding that what was produced in the interview was not ‘the truth’. Rather it was the construction of safety in a conversation with the researcher who was also cognisant with the field and therefore able to discuss, argue, contradict and actively seek out constructions and variety within the interpretive repertoires used by the participants to construction safety in their working environment. Questionnaires and observation were also considered as methods that will
produce specific forms of researcher generated data, however as discussed above, these were rejected due to their incompatibility with the fundamental research design.

The data collection methods followed the sampling framework; rather than looking to gather data in straightforward terms of quantity, quality and content were instead evaluated on an ongoing basis until saturation of findings around the phenomenon was reached.

3.5.3 Employment of Methods and Protocols

The following data were sought for this study, all with relation to construction site safety:

- Documents
- In-situ signage
- Talk

Therefore, a variety of methods and protocols were needed to gather these different forms of data. Initially, and for all data items, a protocol was established to ensure accurate and relevant metadata was recorded for each data item to enable future location identification, reference and cross checking (Gibbs 2007). Context is also critical to discourse analysis, as the setting of the discourse can also be highly relevant to the action and function it is performing (Burr 2003; Potter et al 2007; Flick 2009; Gee 2011a). A copy of this protocol check-sheet has been placed within Appendix B.

3.5.3.1 Documents

A key issue with the collection of documents from the field can be gaining access to the field initially. However, as previously established, access for this study was not problematic, indeed it was facilitated by the researcher’s previous employment, professional network and support of the CIOB. Within the field, access to such documents as site inductions, tool box talks and site produced leaflets was not found to be restricted. Documentary data was gathered from site offices either in physical hard-copy form, or in electronic form using either a memory stick or digital photograph.

During the data collection process, reference was made to Scott’s (1990) criteria for the acceptance of documentary sources for each data source as it was gathered to ensure it was suitable for inclusion within the study. Within the scope of these criteria, all potential
sources of data were gathered indiscriminately from the sites, and were reviewed and assessed for their suitability at a later stage away from the field.

At the end of each site visit, all electronic data was downloaded onto the researcher’s laptop and a back-up made. Hard copy data was scanned and also inputted into NVIVO 8 for inclusion in the back up. Original hard copy data was filed.

3.5.3.2 In-Situ Signage

In order to record the in-situ signage surrounding safety on live construction sites, digital photography was used. Again, access to the sites was not an issue, and all of the sites visited were able to provide a member of staff to accompany the researcher on a full tour of the site.

The use of cameras is commonplace on sites for recording events and progress of construction works, therefore this method of data collection was in keeping with the normal practices found within the field (Denscombe 2007). The site tours commenced at the site gates and included all external and internal areas of the sites, within the constraints of ongoing construction works, in a methodical fashion to record all site signage relating to safety located within the site boundary. Each sign encountered was photographed and a fieldnote made on the protocol sheet of the rough location (e.g. entrance, level 1) of the sign within the sites, as well as other relevant metadata. The photographs were framed to ensure that beyond locating the sign within the immediate site environment (underlying surface, height from floor) no other data was captured by the photographs to ensure anonymity of the site and those working on it.

In gathering data regarding site safety signage through photography, the data then became a documentary source in its own right. This enabled the researcher to collect and subsequently review the data away from the field, allowing a more thorough and timely analysis than could have been undertaken in a field environment (Fetterman 2010), and also ensured the availability of the data for cross-checking by other researchers (Payne and Payne 2004; Denscombe 2007).

At the end of each site visit and tour, all electronic images were downloaded from the camera onto the researcher’s laptop within NVIVO 8 and a back-up made. The fieldnotes were scanned and also inputted into NVIVO 8 for inclusion in the back up file. Original hard copy fieldnotes were filed.
3.5.3.3 Talk

As previously established, the verbal data sought for this study was not found within the standard research constructs of interviews; there was no quest for truth through the objective processes of the traditional interview (Potter 2007b; Potter and Mulkay 2007). Therefore no examination was undertaken of the traditional concerns around errors of interviewing technique, such as researcher bias, leading questions or other obstacles to objectivity (Silverman 2001; Potter and Hepburn 2005; Kvale 2007). Rather the method to be employed was the contrivance of a conversation (Potter and Hepburn 2005) about safety on construction sites, between two people familiar and experienced with this construct within this environment.

Initially, fully informed consent was sought from each individual prior to the conversation commencing (Rapley 2007; Fetterman 2010), including consent to the conversation being recorded. The study information was provided to the individuals via the Participant Information Sheet as shown in Appendix C. Due to the need to record the conversation, and to allow privacy and confidentiality of the discussion, the traditional interview requirements of a comfortable, private and quiet space was still required (Byrne 2004; Gillham 2005) and a suitable space, usually a small meeting room, within the construction site offices was secured with permission of the project managers. No question paper or other writing materials were in sight in the interview room, due to the potentially sensitive nature of the topic. Instead, a more informal and conversational approach was made, which was previously found by other researchers to make interviewees feel more relaxed and comfortable with the process (Gillham 2005).

The conversations were themselves totally unstructured, with the exception of an initial orientation (Flick 2009) to safety on sites. This approach placed the responsibility for the structure and direction of the conversations with the interviewee (Gillham 2005), with interactions from the researcher to probe, query, confront and contradict as necessary to reveal and check the language constructs and interpretive repertoires around safety (Potter and Wetherell 1992). These interactions were also intended to allow for variation and consistency in the interviewees’ talk, and to allow diversity rather than reduce it, carried out under the guise of informal conversation (Kvale 2007).

The researcher in this process was a key tool of inquiry, and Kvale (2007) has listed several necessary characteristics including a good knowledge of the topic, a clear accent and a
sensitivity to what is being said, in order to maintain and develop the conversation. This knowledge also includes understanding and the ability to use the vernacular of the construction site in order to understand what is being said as well as frame questions or comments in terms familiar to the interviewee (Taylor 2001a). Indeed for this study the researcher was able to bring what is termed heightened ethnographic insight (Wetherell and Potter 1992) alongside a comprehensive understanding of the language and common discourses in use within this particular field.

The identity of the researcher was also relevant to this method of data collection; factors such as gender, hierarchy and power must be considered reflexively as they may have influenced on the direction of the conversation (Taylor 2001a). For those conversations undertaken where the researcher was employed within the site environment, there was a straightforward acceptance of her position within the site culture. She had a right to be there and gender was unlikely to have had significant impact as this is not of concern to the focus or direction of the conversation. In terms of power orientation, in her role as a construction manager the researcher took up a position that was arguably marginal within the workforce hierarchy; neither ‘them’ nor ‘us’ to either group. As a construction manager, the researcher was not fully ‘management’ as she was not office based, did not wear a suit and was constantly chasing progress alongside the operatives, indeed she was site based and dressed in rather dirty jeans. Although her supervisory responsibilities, including towards health and safety on the site meant she did not neatly fit the ‘operative’ category either. This marginal position (Walsh 2004; Henn et al 2006) allowed the research to relate to both groups, albeit in different ways, and thereby participate in conversations about safety from the perspective of the interviewee, regardless of their particular role on the site.

For those conversations undertaken where the researcher was presented as just that, the researcher’s existing experience of the site environment, demonstrated through the correct ‘costume’, confidence and vocabulary (Rawlinson and Farrell 2010b) assisted in the disassociation of the researcher from the management company and enabled a conversation between peers to be undertaken. Indeed, before some conversations relationships were established between the researcher and the participants through shared projects on which both had worked, or through mutual colleagues or friends within the industry. This further served to establish the researcher as part of the construction
workforce, and therefore allowed the participant to speak freely through the common talk of the construction site.

A high-quality digital recorder was used to ensure a clear and reliable recording of the interaction being studied (Wiggins and Potter 2007), and this was tested before each interview in order to ensure it was working correctly. However, it has been found that digital recorders can inhibit some people from speaking freely during interviews (Fetterman 2010). Therefore, through the use of the participant information sheet which allowed for fully informed consent to be sought, confidentiality and anonymity was assured and the understanding that this data would not be revealed in full in any instance nor released to the participant’s employers was clarified (Flick 2007). The durations of the conversations were dictated by the natural flow of talk and so varied from participant to participant. The total durations for each recording can be found within the data collection record in Appendix D.

The initial sample for the conversations was targeted to represent the key groups on sites (Taylor 2001a; Byrne 2004); managers, supervisors and operatives. Three conversations were originally undertaken on one of the sites on which the researcher was working as a construction manager. These conversations were supplemented in line with the sampling strategy as the data collection and analysis progressed. Subsequent conversations were arranged during the site visits and tours to the other construction projects as noted within the schedule of data collection site visits found in Table 3.1, with the agreement of Project Managers and again, the fully informed consent of the participants.

At the end of each conversation or batch of conversations within a daily period, all electronic audio files were downloaded from the recorder onto the researcher’s laptop within NVIVO 8 and a back-up made.

3.5.3.4 Summary of Data Collection

Following the sampling strategy and employing the case criteria as previously established and methods as noted above, a tabulated record of the data collected for this study can be located within Appendix D.
3.5.4 Ethics

In order to ensure that this study was undertaken from a strong ethical position, the British Psychological Society Ethical Principles for conducting Research with Human Participants (BPS 2010) were adhered to; no false information was imparted to those involved with the study, no deception was made; the participants involved were not being treated in any different way or being exposed to any situation outside of their normal scope of work. Basic ethical principles were also maintained during the research process beyond those of human interaction, including ensured accuracy of the data and interpretation, and no omission or fraud in the collection process (Flick 2007).

The agreement of management for every site visited within the sample was sought (Creswell 2003) prior to the visit and fully informed consent was obtained for all those participating or supplying data for the study, including information as to what would happen to the data they did provide (Gibbs 2007). A copy of the study information sheet issued to the site management can be found in Appendix A, and the participant information sheet issued to every person who was interviewed can be found in Appendix C. The anonymity of all participants was maintained throughout the study (Taylor 2001a), and when data, such as extracts from transcripts or images of documentary sources was used in its original form within the thesis, every effort was been made to maintain anonymity of the source (Gibbs 2007). For this reason hard copy full transcripts or documentary sources are not included within the appendices to ensure confidentiality (Taylor 2001a).

Confidentiality in terms of electronic data storage was managed by password-protecting all documents which contained potentially sensitive information. All backup data files were also password protected. These files will be destroyed upon completion of this study. No record of the identities of the participants was held electronically, only one hard copy was produced and retained, which will be confidentially destroyed at the University of Bolton upon completion of this study.

In addition, the University of Bolton’s own Research Ethics Checklist was fully complied with, and a copy of the completed RE1 form for this study can be found in Appendix E.

3.6 Method of Data Analysis

Following examination of the methods for collection of the data, the methods employed in the analysis of this data within the study were then explored, to establish compatibility
with the data itself as well as the underlying philosophical basis of the study (Alasuutari 1996). Within this Section the practical precursors to the analysis have been stated, followed by detailed explication of the analytical process, and concluded by a summary of the ultimate analytical product.

3.6.1 Data Preparation: Transcription of the Verbal

All conversational or talk data was transcribed (Creswell 2003) using the Jefferson system (2004). This method has become the ‘industry standard’ within discursive research (Potter 1998; Rapley 2007), as it is able to capture not only what was said but also how it was said. Jefferson transcription makes use of standard conventions to represent such features of talk as emphasis, overlap, pauses or intonation (Wiggins and Potter 2007).

Jefferson transcription was found to be a very time consuming method. It is generally accepted that it can take about eight hours to transcribe fifteen minutes of talk to the necessary level of detail (Rapley 2007). However, for discursive psychology, such a high level of detail is critical to allow full analysis of the discourses (Potter and Mulkay 2007; Potter and Hepburn 2007). This level of dedication also ensures a reduction in the errors that can occur in transcription, as the data is checked and revisited many times to ensure all nuances within the discourse have been captured (Gibbs 2007).

3.6.2 Data Management: NVIVO 8

Gibbs (2007) argues that for effective qualitative analysis, efficient, consistent and systematic data management is needed, and he feels that the use of computer software is the best way to achieve a structured approach to analysis.

The use of computer assisted qualitative data analysis software (CAQDAS) is now common within qualitative research projects, due to the ability to easily store, retrieve, code and manage huge volumes of data (Lewins and Silver 2007). However, the use of CAQDAS is not in itself a method of analysis; rather it is a tool to assist in this process (Gibbs 2007).

For this study, NVIVO 8 Software was used (QSR 2011) to create an electronic project to manage the data collected for this study. Any hard-copy data was scanned in and added to the database in electronic format and NVIVO 8 was used throughout the study as a tool to store, facilitate retrieval and enable coding of the data.
For details of the software processes used to perform these functions, see Lewins and Silver (2007)

3.6.3 Process of Analysis

As established within Section 2.4, discursive psychology is firmly based on social constructionist theory and is concerned with the analysis of discourses, regarding them as constructive and active in producing versions of the world within specific contexts and within certain linguistic frameworks (Potter 2007a; Wiggins and Potter 2007). Discursive psychology considers the function of the discourse, as well as variation and variability, in part through the identification and examination of interpretive repertoires (Potter et al. 2007).

Interpretation is the key analytical activity within discursive psychology (Wetherell et al. 2001), however there is the need to ensure that the discourse is approached as an interaction in its own right, rather than a route to things ‘beyond’ the text such as attitudes or cognitive processes (Potter and Wetherell 1992). This approach has been criticised by some for its narrowness, for example Atkinson and Delamont (2005) argued that the discourse should not be ‘intellectually divorced’ from the social, and should therefore be analysed within the context of its social activities. However, the approach made within this study actively sought to ensure that the context was indeed examined alongside the discourses and the discourses were examined as active and functional within the social settings of the construction sites.

In addition, it should be remembered that as previously noted within Section 3.4, the process of coding and analysis occurred alongside the data collection, to ensure the efficiency of the sampling strategy established for this study (Taylor and Bogdan 1998; Henn et al. 2006; Flick 2007). A constant comparison method was employed within the analytical process to enable informed assessment of the sample saturation point (Silverman 2001; Rapley 2007; Flick 2009).

3.6.3.1 Coding

Preparation for the data analysis was made through coding (Taylor 2001a; Creswell 2003). Coding was employed as the precursor to analysis rather than analysis itself, and was the preparatory process for organisation of the data into manageable sections (Potter and Wetherell 1992; Wiggins and Potter 2007; Gibbs 2007). The coding process was performed
separately on each data source, signs, documents and talk, due to the varied nature of the constructions contained within them. The coding process undertaken for each data source is explicated in detail within the Analysis in Section 5.

There is no predetermined protocol when performing coding within discursive psychology (Peräkylä 2005; Gibbs 2007) and the coding was therefore driven by the data to be as inclusive as possible to allow major themes, ideas and interpretations to be identified. However, these categories can collapse and expand within the constant comparison method and indeed analytical issues were developed or removed as the process continued (Taylor and Bogdan 1998; Wiggins and Potter 2007).

The practice of coding was undertaken within NVIVO 8 which allowed for flexibility within the coding frame as noted above, and the electronic application of codes to the data which enabled easy retrieval and management of the coded data (Lewins and Silver 2007).

3.6.3.2 Analysis of the Verbal

Systematic investigation is essential to ensure rigour within the analytical process (Taylor 2001a). However, discursive psychology does not have a fixed set of analytic strategies that can be followed in sequence; rather it provides the researcher with a theoretical framework and through which the textual data can be explored (Tonkiss 2004). As previously noted, discursive psychology is an interpretive process (Wetherell et al 2001) and the data must be critically interrogated from the various perspectives provided within the analytical framework to identify and explore what functions are being performed (Potter et al 2007) around the construction of safety on construction sites. The researcher’s skill in identification of patterns and variations was critical to the analytical process (Potter and Wetherell 1992), although this subjective dependence was compensated through the explication of findings and results. Section 3.7 provides further discussion regarding the rigour and quality of the process undertaken.

Examination was made both within and between the data sources during the analysis and this analysis was intrinsically linked to the coding process through shared development as the analysis progressed through constant comparison (Silverman 2001). This approach ensured that multiple, repeated passes were made of the coded data (Potter and Wetherell 1992; Taylor 2001a; Edley 2001) resulting in a high level of researcher familiarity and confidence in the processing of the data.
The discursive analytical framework highlighted key themes which were then considered within a holistic interrogation of the data, and systematically examined through a variety of lenses. A large variety of patterns were sought (Taylor 2001a); patterns of variability in terms of consistency and inconsistency (Potter and Wetherell 1992), patterns of emerging themes or representations (Tonkiss 2004), and patterns related to function, variation and construction (Potter et al 2007). The flexible coding method employed allowed for patterns to develop or disappear as the process continued (Taylor and Bogdan 1998; Wiggins and Potter 2007) which ultimately resulted in the need to focus on some patterns at the expense of others (Taylor 2001a).

Function (Wooffitt 2008) was also examined in terms of the consequence of the texts and what they actively sought to achieve within context, and further linguistic evidence was sought within the data (Potter and Wetherell 1992). Variation, seen as inherent within the discourses of talk and text, was examined as a resource in itself, to highlight regularities and dissonance within a discourse, or between competing discourses (Potter and Mulkay 2007), and to explore conflict reconciliation where apparent (Tonkiss 2004). The construction of the discourses was explored (Wooffitt 2008) to examine how they constructed the social contexts in which they occurred, and how they related to interaction and action (Wiggins and Potter 2007). Reflection on omission was employed within the analysis, to consider what was not included within the talk or text (Rapley 2007; Tonkiss 2004). With regard to the documentary data, examination of the context and settings of the documents was also included within the framework (Rapley 2007).

Key linguistic and discursive constructs were also identified through holistic examination of the data. For example, the patterns of the interpretive repertoires constructed around safety were identified and explored (Taylor 2001a; Mulkay and Gilbert 2007; Potter and Mulkay 2007) to examine safety within its most familiar constructs. The data were also examined for the presence of discourses that contributed to social identity, in terms of the discursive construction of both the author/speaker and the construction site workforce (Antaki et al 2007a; Edwards 2007).

This analytical framework was repeatedly applied to the data, and the coding and analytical processes repeated through constant comparison to reveal the master discourses of safety on UK construction sites. Care was taken to avoid common potential pitfalls within discursive analysis, such as the employment of circularity in argument, or under analysis through thematic summary or mere recognition of discursive features (Antaki et al 2007b).
3.6.3.3 Analysis of the Visual

In addition to textual and verbal data, the data sources also contained some visual data, either as a component of the documentary data or the site signage. There is strong support for the use of visual data within the examination of social phenomena (Banks 2007; Pink 2007) and they have been examined and analysed discursively as verbal data (Denscombe 2007; Gee 2011b) in terms of the function, construction and variations found within them (Potter 2007 et al).

The visual data were also examined through a discourse analysis approach, as suggested by Rose (2007) within her Visual Methodologies, to explore how images were employed to construct specific views of the social world. She refers to Tonkiss (2004) and follows her directions in setting the focus of analysis on the structure of the visual discursive statements and the social context in which they are produced and situated. This analysis was undertaken alongside that of the verbal data, developing a holistic discursive approach to each data source in turn.

As with the verbal data, these analytical processes were repeatedly undertaken throughout the visual dataset and coding developed accordingly as the processes were repeated through constant comparison method (Flick 2009), and again the same care was taken to ensure rigour within the analysis (Antaki et al 2007b).

3.6.4 Product of Analysis

It can be seen from the above discussion that the overarching approach to analysis was discursive and holistically examined both verbal and visual elements of the data sources. Employment of the constant comparison method ensured rigourous management of the data to ensure variation, consistency, function, construction and common discursive constructs were identified (Potter et al 2007).

The product of this analysis was the exploration and explication of the master discourses which contributed to the social constructions of safety on construction sites. These findings are presented in such a way to allow readers to assess the interpretations made during the analytical process itself (Wetherell and Potter 1992). Alongside the transcriptional / visual / documentary data, analytical interpretations highlighted the patterns and structures within the data and demonstrated the process undertaken. However, due to constraints of space, condensation of the data and analysis was necessary
and therefore only the most complete discursive patterns, of both consistency and inconsistency have been selected for inclusion in this thesis (Taylor 2001a). Throughout the process, reflexive examination of what has been included and what has been discarded during the analytical process (Rose 2007) was also included. This approach avoided the criticisms of anecdotalism (Silverman 2001) through clear explication of the processes, the findings and the demonstrated rigour and persuasiveness of argument (Tonkiss 2004). The product of analysis ultimately seeks to persuade readers of the ‘truth’ of this interpretation of the ‘truths’ of the construction site (Tonkiss 2004).

3.7 Quality

Within scientific research, quality is linked to the standardisation and control of the research process, and is most commonly articulated through the validity and reliability of the research (Flick 2007). However, the applicability and appropriateness of these constructs to qualitative research is an ongoing topic of debate within the field (Creswell 2003; Seale 2004; Flick 2009), and a variety of alternatives to these traditional measures of academic rigour have been suggested.

Some, such as Sutrisna (2009) have referred to credibility and rigour as the analytical constructs against which qualitative research should be measured, and suggest the focus should be on the appropriateness of the methods employed and the quality of the data collected. Seale (2004) suggested that auditing and explication of the research design, data collection and process of analysis would also enhance the rigour of the study, whilst Creswell (2007) suggested various strategies to allow for validation of the research, including triangulation, peer review and reflexivity. Indeed, triangulation is arguably the most commonly proposed approach to enhance the validity (credibility) and reliability (rigour) of a study (Yin 2003; Seale 2004; Henn et al 2006; Fellows 2008; Gillham 2008; Proverbs and Gameson 2008), alongside the clear demonstration that an exhaustive effort was made to collect all the relevant data (Yin, 2003).

Within social constructionism, dismissal of these traditional constructs of quality is based on the fundamental theory that such research does not believe there can be objective facts or truths, and does not lay claim to the creation of same (Gergen and Gergen 2003). Therefore, reliability and validity are seen as inappropriate for judging the quality of social constructionist research (Burr 2003). However, such research does not dismiss the need
for quality or academic rigour within the research design and execution; rather quality is seen to refer to the soundness of the research as a whole (Seale 2004; Flick 2007).

Indeed, as Augoustinos et al (2006 p62) argue:

‘... qualitative research methods are often derided as lacking scientific objectivity and precision. The irony, of course, is that such criticisms fail to critically reflect upon the questionable assumptions that are built into the very fabric of quantitative research methods, and their claims to scientific objectivity.’

However, since the traditional constructs are familiar and prevalent within academic research, especially within CMR, they have been retained to structure this examination of the quality standards for this study. In addition, examination was made of the need for reflexivity, a necessity already referred to throughout the previous Sections, as well as the potential generalisation of the findings, something inherently linked to the quality of the study as a whole.

3.7.1 Validity

Within qualitative studies, validity does not have the same connotations as it does in quantitative research (Creswell 2003). Within quantitative research, the validity of a research study refers to its truth – are the results of the study true? (Silverman 2001; Seale 2004; Henn et al 2006). Validity is often examined from two perspectives; internal, the extent to which the conclusions are themselves supported by the study, and external, the extent to which these findings can be generalised (Seale 2004). Internal validity will be examined within this Section, for external validity see Section 3.7.4 (Generalisation of the Findings).

One of the most prevalent challenges to internal validity and the determination of ‘the truth’ within qualitative research is that of anecdotalism; that the researcher’s interpretations and results are only illustrated as true through anecdotal quotes or examples from within the data (Silverman 2001). Also termed ‘selective plausibilisation’ (Flick 2009), the issue arises around which anecdotes are chosen for inclusion and which are left out, and the argument is made that only those which support the truth that the study has established are inevitably included.
Given the philosophical framework for this study, the issues surrounding validity were inevitably affected by this fundamental concept of truth. As previously established, social constructionism does not aim to seek an objective truth, rather there are different truths for different cultural contexts (Gergen and Gergen 2004). Therefore, although validity with reference to an objective and realist truth, the truth of traditional academic concerns, was not valid within this study, there was still validity to be sought in the presentation of this particular truth; the truths surrounding safety within the construction site culture.

Therefore, an alternative concept was sought to enable academic assessment and reassurance in the quality of this research (Flick 2009), to persuade that it has presented the truths of safety within the construction site culture. Lincoln and Guba (1985) in their seminal work *Naturalistic Inquiry*, proposed trustworthiness, creditability and dependability as suitable replacements for validity. Others agreed that credibility was the most suitable replacement for validity, and this could be instilled at the commencement of a study and built up as it progressed (Angrosino 2007; Sutrisna 2009; Flick 2009). This term shall be employed here.

For this study, the work to establish credibility began within the initial development of the research design; through the discussions of the underlying philosophical assumptions, explication of methodology and methods of data collection and analysis, credibility was rooted in the adequacy of the design (Flick 2007). Flick (2009) argued that credibility should be assessed with reference to the object under study, and therefore explication of the research design has itself confirmed the appropriateness of the design to the phenomenon under examination; that the proposal will lead to the production of the truths surrounding safety on sites.

Many of the challenges to validity within qualitative research have been directed at methods which are subjective in their data gathering process, for example fieldwork and observations, where the researcher’s subjective opinion impacts on the data collection process and therefore the data itself (Silverman 2001). As Flick (2009: 387) articulates:

*The question of validity can be summarised as a question of whether the researchers see what they think they see.*

The data for this study were in the majority naturally occurring, and in all instances were collected; what was seen was gathered or photographed, and what was said was recorded. The only scope for subjectivity was within the choice of what was gathered or...
photographed or who was spoken to and, as established within Section 3.5, this was undertaken holistically within the constraints of the field itself. Therefore, the data collection methods were themselves highly credible.

In terms of data analysis, it has also been argued that to some extent, credibility is in-built to the discursive psychological process, as working with naturalistic data means the research stays as close as possible to the phenomena under investigation (Henn et al 2006; Wiggins and Potter 2007). The employment of the constant comparison method (Silverman 2001; Flick 2009) within the analytical process also ensured credibility in the findings ultimately drawn from the data.

Discursive psychology seeks to present the analysis and findings in a way that allows readers to make their own judgements (Creswell 2003) about the researcher’s analysis of truths found in the interactions and the texts that are presented alongside them (Potter 1998). Presentation of the analysis in an extensive form allows clear explication of the research findings (Creswell 2007), and reassurance of the credibility inherent in the rigorous discursive analytical process (Potter and Wetherell 1992). Ultimately the findings should themselves be coherent, and persuade readers of the credibility of the study through a holistic and robust argument, rather than emotiveness or selective illustration (Taylor 2001b).

Other methods employed to enhance the credibility of this study have been drawn from the suggestions proposed by Lincoln and Guba (1985) themselves; those of triangulation and member checking (see also Creswell 2007; Flick 2009 for a summary of all potential methods).

As previously established in Section 3.5.2, triangulation was employed within the data gathering process. This approach is widely used within qualitative research (Creswell 2003) and for this study methodological triangulation was undertaken within the data sources gathered (documentary, signage and talk), as well as within cases, with the data being gathered from a number of different construction sites in order to seek out instances of the same phenomenon in different settings and at different times (Seale 2004). Although some dismiss triangulation as a validation technique as to some extent it assumes an underlying truth to be examined from a variety of different perspectives (Gibbs 2007), within this study the use of triangulation was able to explore commonality and variance between the truths surrounding the different construction of safety.
Another technique employed to ensure the validity or credibility of qualitative research was through the formal process of member checking (Taylor and Bogdan 1998; Seale 2004). This process involved presenting the research to those on whom it has been undertaken, or who are directly involved with the phenomenon under study, and sought their opinions as to the authenticity of the study and its findings (Creswell 2003). Within member checking, the truth value is translated into the degree to which the conclusions are credible in this situation, and the credibility of the study can also be examined from an utilisation perspective; the extent to which practitioners feel the findings can be put to use beyond the academic environment (Angrosino 2007).

As noted within Section 1.4.4, discussion with industry safety practitioners was proposed towards the completion of the study, in order to seek feedback, including evaluations of credibility and utility of this study and its findings through the member checking process (Taylor 2001b).

The adoption of the above processes; clear explication of the theory, methods for data collection, including methodological triangulation, method of analysis, coherent and credible findings and ultimately member checking, were concluded to enable the validity of the study to be clearly assessed on an academic basis. Although the traditional approach to validity could not be adopted for this study, its credibility must still be established and demonstrated throughout, to ensure the academic success of the study as a whole.

3.7.2 Reliability

Within traditional qualitative research, reliability is the ability of the research procedures to produce consistent results; the replicability of the research (Seale 2004). However, this approach is again challenged within qualitative research, and the repeatability of a study in the general terms of science is rejected in favour of other approaches (Flick 2009).

For example, Kirk and Miller (1986) argued that reliability in terms of straightforward repeatability was itself trivial and misleading. They also noted that diachronic reliability, where measurements remain stable over time, was also not applicable to qualitative research which rarely examines unchanging, static objects. Indeed, Lincoln and Guba (1985) in their examination of reliability suggested the alternative of dependability, achieved by scrutinising the audit trail of the researcher’s documentation of data, methods and decisions throughout the study, as well as the end product. This scrutiny and clear
explication of the research processes has also been classified as examination of the academic rigour of the study (Payne and Payne 2004; Sutrisna 2009).

However, this rejection of reliability has led to criticism of qualitative studies for lacking structure and system (Henn et al. 2006), therefore the adoption of detailed, rigorous and dependable processes was necessary to refute such claims (Flick 2009). Standardisation and documentation of the methods for data collection, including any associated processes, procedures or protocols employed, was explicated within the research design and demonstrated as the study progressed (Silverman 2001; Payne and Payne 2004; Angrosino, 2007; Tzortzopoulous, 2008; Flick 2009). Rigour was also demonstrated through procedural reliability, such as the use of standardised transcription for talk data (Jefferson 2004) and the use of constant comparison within analysis which avoided definitional drift within the coding process (Gibbs 2007). At a broader level, rigour was also demonstrated by the consistent application of the methods to cases drawn from within the predetermined sample and within the process of analysis itself (Flick 2007). As Alasuutari (1996: 41) warns, without a defined methodology:

... research easily turns into an activity where you try to prove your prejudices right.

Discourse analysis itself is seen by some to be more rigorous than qualitative methods which involve more subjective research such as observation and ethnographic narratives (Silverman 2001; Angrosino 2007), due to its explicated analysis which allows for independent checking of the process that has been undertaken (Potter and Wetherell 1992). This allows for clear demonstration of where the data stops and the analysis begins (Flick 2009). Indeed, although replication of the study is not possible in the traditional sense, the use of standardised and documented procedures for data collection, as articulated within Section 3.5.3, and subsequent rigorous discourse analysis has highlighted patterns that can be labelled as significant and persistent (Taylor 2001a), and it has been argued that such patterns can indeed be identified and traced by others, given similar contexts and acceptance of the theories and prior assumptions that informed the initial research (Wetherell et al. 2010).

3.7.3 Reflexivity

The term reflexivity has been defined within an academic context as the thoughtful, self-aware analysis of the dynamics between the researcher and the research project (Finlay and Gough 2003). Whilst not a new phenomenon within social research, reflexivity has
recently become a requirement rather than an option (Gibbs 2007), and the omniscient, distanced and objective writer is no longer an acceptable position to adopt (Creswell 2007).

Whilst scientific and quantitative approaches still seek to remove bias and subjectivity, the social sciences in their adoption of reflexivity accept this as impossible (Taylor and Bogdan 1998; Gibbs 2007); any account of a social phenomenon will inevitably reflect researchers’ partial understandings or special interests in the situation (Taylor 2001a) as well as cultural, social, gender, class and political position (Creswell 2007).

Therefore, the researcher needed to locate herself within the research process. I needed to be able to speak with my voice and locate myself within the research process (Griffin 2007). I needed to reflect on the decisions and choices I made throughout the study, and accept my intrinsic involvement and any subsequent implications this had on the research process as a whole (Taylor and Bogdan 1998; Taylor 2001a; Ali et al 2004; Gibbs 2007; Flick 2009). Indeed, the need for reflexivity has been called for from within CMR itself, where qualitative research is still being undertaken from an alleged objective and bias-free perspective (Dainty 2008).

In order to achieve reflexivity within this study, Gibbs (2007) suggestions for reflexive good practice were adopted. This commenced with an examination of the purpose behind the research (Burr 2003), the reasons behind why this research problem was selected and the position of the researcher in this field (Finlay and Gough 2003:3), her interest in the situation and cultural positioning. (Taylor 2001a; Burr 2003; Creswell 2007). The product of this reflective process has been positioned as a prologue to this thesis. Gibbs (2007) also suggested the need to clearly state the claims to knowledge made and the theoretical framework for the study, which has already been examined in detail in this thesis within the first two Sections. It was hoped that aside from the positioning of the researcher within the project as noted above, there has already been a demonstrable level of reflexivity and openness within this study in explicating the decisions made and justifications for the direction of development of the research design.

Most significantly, however, reflexivity must be adopted in the field and during the analytical examination of the data (Brewer 2000). In addition to the processes of analysis previously noted within Section 3.6.3, this approach must examine the data openly to enable alternative interpretations and readings (Rose 2007; Gibbs 2007) and allow for critical assessment of the strengths and limitations of the data itself including the choices
made of selection and omission (Brewer 2000; Harper 2003). Exploration and discussion of why the analysis has been undertaken as it has (Taylor 2001a; Henn et al 2006), including the selection of the analytical themes to be explored (Harper 2003) was made, and the findings themselves critiqued reflexively (Taylor and Bogdan 1998).

Within discourse analysis and discursive psychology, the presentation and inclusion of the researcher within the analytical account has been argued to be inevitable (Burman 2003; Harper 2003), and has therefore been expressed as necessary. It must be remembered that the researcher was located within the discourse and so had to balance her approach to the data to ensure a both/and rather than an either/or position, as the researcher was also positioning and performing action within the discourse that was produced through the analytical process (Harper 2003). These reflexive elements have been addressed and vocalised as necessary within the thesis.

3.7.4 Generalisation of the Findings

As previously noted, the ability to generalise the findings of research projects is also referred to as the external validity of the study; the degree to which the conclusions are relevant beyond the study itself (Angrosino 2007). Traditionally within scientific research, the ultimate goal is to produce such universal generalisations (Lincoln and Guba 1985), and research is designed to draw on vast, representative samples to ensure such claims can be achieved.

However, qualitative studies are more often designed to seek insights and understandings of people in particular contexts and are frequently not suited to the construction of generalisations about a broader population (Taylor and Bogdan 1998). Indeed, the non-random and smaller scale sampling methods often employed within qualitative research can by default mean this scientific extrapolation of results to the general populace is impossible (Gibbs 2007). If the concept of generalisation is examined from the perspective of the underlying philosophical assumptions for this study, then further issues arise. Social constructionism itself does not accept such universal truths or generalisations, arguing that each social interaction is temporally and contextually unique (Burr 2003); whilst truth can be seen as the accepted shared understandings of the world (Gergen and Gergen 2003), such understandings are themselves in constant flux (Gergen 1999) and therefore cannot be contained within such scientific constructs as generalisations. Through social constructionist research, insight and knowledge of specific constructed phenomena within
specific situations is sought (Burr 2003), and no claim is made to 'universal truths';
generalisation is seemingly impossible.

However, to return to Lincoln and Guba (1985: 110), their view of generalisation was
clearly articulated

*The Only Generalisation is: There is no Generalisation*

It should be noted that this was somewhat sensationalist, and in fact Lincoln and Guba
(ibid) did make suggestions for the application of generalisation to qualitative research.
Rather than external validity, they proposed the use of transferability and fittingness. They
argued that qualitatively generated hypotheses or theories could indeed be transferred
from one case to another if both cases were part of the same population, and the research
sample was also representative of this same population. The level of transference was also
dependent on the degree of fittingness between cases, and they recommended that a
detailed account of the cases within the research sample was provided to inform readers so
they can themselves assess the similarity of other settings and transfer ideas accordingly
(Lincoln and Guba 1985). This information for the sample and cases used within this study
can be found in the tabulated records of data collection within Table 3.1.

This approach is not dissimilar from that taken by quantitative research, and the
transferability and fittingness of the findings are heavily dependent on the sampling
strategy used within the study (Silverman 2001; Flick 2009). For this study the case criteria
for the study have been laid down in Section 3.4. These criteria were established to ensure
all cases captured were within the specific strata of construction companies with the
capability to manage construction sites of a certain size within the North West of the UK. It
was intended that the findings and recommendations for interventions were to be adopted
on sites within this case strata, as the research sought to enhance understanding and
suggest interventions to already established safety management systems and safety
programmes. Therefore this potential limitation within the sample would in fact enhance
the transferability of the findings, having sought a potentially high level of fittingness
between the cases within the sample and those to which others may seek to apply the
research findings in the future (Flick 2007).

The homogenous nature of large UK construction sites has itself been demonstrated to
some extent within CMR. Such sites are all arguably driven by the pressures of time and
money (Fellows et al 2002, HSE 2003a) within a unique management structure that governs
autonomous teams (HSE 2009c; Coffey and Fowler 2010), in ever changing workplaces (Haro and Kleiner 2008), with the use of traditional payment structures (Spanswick 2007b), in harsh working conditions (Duncan et al. 2002; Chan and Connolly 2006a), through the employment of manual labour (HSE 2009b), amongst frequent conflict (Loosemore et al. 2003) in an male dominated industry (HSE 2003a; Jordan et al. 2004). Transferability is further enhanced by the industry’s transient workforce, which will also contribute to consistency within the site context (Greed 2000; Entec 2000; HSE 2008). Therefore generalisation, within the parameters and process suggested by Lincoln and Guba (1985), was eminently achievable by this study (Ward-Schofield 1993; Taylor 2001a).

3.8 Pilot Studies

3.8.1 Introduction

In order to ensure the process set down here could be followed in a field scenario, and that the fieldwork generated the predicted data, which could be analysed as detailed in order to provide fruitful and relevant findings, two pilot studies were undertaken at differing points in the development of the study methodology.

The first pilot study was carried out from an ethnographical perspective and sought to explore the practicalities of data gathering for such a study in the field. The second pilot study applied discourse analysis to the data gathered during the first pilot study to assess the applicability and fruitfulness of this approach. Both of these pilot studies have been written up as academic papers prior to the compilation of this thesis, peer reviewed, presented at conferences and subsequently published in the proceedings.

These two papers can be found in full within Appendix F and Appendix G respectively, to enable them to be assessed within the context in which they were produced. Both pilot studies further informed the development of the research design for the PhD, and these changes are discussed reflexively here.

3.8.2 Pilot Study Stage 1: Construction Site Culture; Seeking the Optimum Methods for an Ethnography

The first pilot study was carried out with the intention of informing a future ethnographic study. This paper was presented to the CIB World Congress in 2009 (Rawlinson and Farrell 2009).
Following completion of this pilot study, the research design developed and moved away from an ethnographical approach. The shift to a social constructionist foundation meant that some of the methods tested within this pilot study were no longer applicable; the use of observation and recording of encounters through fieldnotes was no longer viable, as this process merely produces an alternative construction of reality. However, some elements of the pilot were able to inform and validate the methods proposed within this study.

The pilot study was able to confirm the benefits of images for data recording on sites, and the acceptance, even indifference, towards this practice within the site environment by the workforce. The ready availability of documentary data sources for collection from sites was also confirmed. This established the validity of the methods for collection of the signage and documentary data sources, as well as the validity of the data sources themselves.

A further encouraging finding from the pilot study was the attitude to the researcher herself within the site environment. An unquestioning acceptance of the researcher within the field was demonstrated through several interactions with members of the site workforce, some of which even resulted in the potential for the bending of safety rules themselves, through various conspiratorial activities. This acceptance and inclusion within the site environment confirmed the researcher’s ability to ‘fit’ within this reality, and operate freely within it. This reaction from the workforce also suggested that even within the semi-formal conversations, the researcher, through both appearance and talk, would be able to position herself on an equal footing to the participants, whatever their station on the sites. This supported the use of informal conversations to gather talk data.

Weaknesses within the methods explored within this pilot study were themselves ultimately negated through the epistemological shift in the study’s fundamental foundations. Consequently, this pilot study only provided a positive confirmation of both the prevalence of the proposed data sources within the field, and also the practical methods for their gathering through short site visits.

3.8.3 Pilot Study Stage 2: A constructionist examination of construction site culture: review of a pilot study

The second pilot study was undertaken to examine the application of discourse analysis to the data collected from sites. This paper was presented to the Association of Researchers in Construction Management (ARCOM) Conference in 2011 (Sherratt et al 2011).
Although very limited in the data examined due to the constraints of space and the necessities of analytical explication as demanded by discourse analysis, this pilot study was able to demonstrate that even with such a small data source, insight could be gained around safety in the construction site environment. The application of discourse analysis to both talk and signage data was able to provide illumination of safety within the site context, and indeed potential areas of disharmony and dissonance within the various realities constructed through the discourses of this data.

This pilot study, presented for peer review and acceptance at conference, was highly reassuring for the direction and methodology of the PhD study itself. That the method, data collection and analysis was successfully applied as proposed enhanced the validity of the study, and that the emergent findings were also relevant in the industrial context added further reassurance as to the potential success of the study in revealing new insights around safety and construction sites.

However, although this pilot concluded that the safety cultural training programme material should be included within the data of the main study this was found to be unachievable in practice. Not only would this have further extended the scope of this study, but this data was highly commercially and corporately sensitive and so not as readily available as more basic site safety management data. This proposed data source was therefore omitted from the final PhD study.

3.8.4 Summary of the Pilot Studies

Both pilot studies were able to inform the development of the PhD study, albeit at different stages. They also assisted in the fundamental development of the epistemology and methodology of the study itself, enabling two clear points of reflection within the ongoing research process.

Change from the initial course first came through the shift in epistemology which negated much of the first pilot study, however this still retained validity in its establishment of the potential data sources, the methods for their collection and the researcher’s acceptance in the field. The second Pilot study was able to develop these findings in practice further, and successfully applied analytical method to the data sources, as gathered through the proposed methods of the first Pilot study.
3.8.5 Additional Academic and Peer Review

In addition to the two pilot studies, other elements of the study, such as the development of its epistemology, methodology and methods, were also crystallised into academic papers and articles. This enabled dissemination of the research as it progressed and sought academic and peer review to both support and critique the direction of the research at various study milestones.

The full archive of nine publications, both academic papers and articles, associated with the development of this thesis is as follows:


Rawlinson, F and Farrell, P (2010) ‘Safety is our number one priority! (Image is up there too…’)* Construction Research and Innovation*, Vol 1, Issue 1, 10-11.


3.9 Summary

This Section has established and justified the methodology and methods employed for this study, and thereby completed the articulation of the complete research design (Flick 2009). Building on the relativist ontology and social constructionist epistemology laid down within
Section 2, the methodology has developed to ensure coherence with this underlying philosophy. A qualitative approach has been established and the use of a snapshot design employed to enable data to be sought around the phenomenon under investigation, as articulated in the research goals. The sample from which these data are to be sourced has been clarified, itself designed to ultimately ensure a high potential for transferability in the findings once the study is complete. The data to be gathered have themselves been assessed for compatibility with the research design, and the practical methods for its collection have been set down. The analytical processes to be undertaken have also been established, and shown to be compatible with the data collected as well as the underlying research philosophy. Reassurances of the quality of the study as a whole have also been made, through the examinations of credibility, rigour and an acceptance and understanding of the reflexivity required. Each aspect of the research design has been examined in detail in order to demonstrate the holistic compatibility of each element, in addition to the clear illustration of the theoretical thread that runs throughout.

These first three sections have satisfied the needs of robust research design (Creswell 2003; 2007) and Henn et al (2006), and established the academic credibility of the study as a whole (Angrosino 2007; Sutrisna 2009; Flick 2009).
# Context

## 4.1 Introduction

## 4.2 Epistemological Considerations

## 4.3 UK Construction Sites

### 4.3.1 A Day in the Life of a Construction Site Supervisor

## 4.4 Safety on UK Construction Sites

### 4.4.1 Extent of the Problem

### 4.4.2 Safety Management

#### 4.4.2.1 Legislation

#### 4.4.2.2 Government Initiatives

#### 4.4.2.3 Safety Management Systems

#### 4.4.2.4 Competence and Training

#### 4.4.2.5 Safety Culture

## 4.5 Summary
4.1 Introduction

The place of the traditional literature review within a discursive study has often been the subject of debate (see for example Taylor 2001a; Hepburn 2003). Some consider the literature review to be necessary to illuminate the contextual situations in which the relevant interactions occur (Rapley 2007), thereby providing a position from which to commence analysis. Others feel the analysis should commence with the discursive data itself and not be coloured by preconceptions derived from contextual literature; that the analysis should be limited to the participants’ own construction of categories and contexts (Schegloff 1997; Taylor 2001a).

Within discourse analysis, literature can be used to frame the study (Creswell 2003) and provide information of the physical setting where the discourse takes place, including examination of the social, historical and shared cultural knowledge of the field (Burman 2003; Gee 2011b). It has also been argued that presentation of context in terms of literature should be judged by readers as to its consequences for the analysis and findings of the study (Potter and Hepburn 2008), or indeed in terms of a rationale for the relevance of the research study as a whole (Burman 2003).

For this study, the context has been presented here in order to situate the data and subsequent analysis within the field; a position not without precedent within discursive studies (Wetherell and Potter 1992; Burman 2003; Hepburn 2003; Potter and Hepburn 2008; Flick 2009). Whilst the researcher was herself familiar with the context for this study, readers may not be, and an understanding of the environment and its inherent pressures and influences would be necessary in order to understand the function and even existence of some of the data sources examined, for example the site inductions and signage. Given that all discourse is active and situated (Burr 2003), there is also a need for an awareness of this situation, in terms of context, in order to explicate the position from which the analysis itself was conducted (Burman 2003).

Therefore this Section will place the study in context, through examination of the existing body of literature surrounding construction sites and specifically construction site safety. This included an examination of the legislative, training and cultural issues currently surrounding safety on large construction sites in the UK. The information gathering process involved active exploration (Rumsey 2008) within these parameters and was undertaken from a variety of perspectives, drawing on both national and international academic,
industrial and governmental sources, and employed viewpoints from alternative disciplines and industries as appropriate.

4.2 Epistemological Considerations

The majority of this contextual literature has been produced through the traditional approaches found within CMR, and therefore appropriate consideration should be made as to the claims for knowledge and truth that are made therein. Literature was also sought from other fields, including the social sciences, and consequently there is something of an epistemological mêlée found within this contextual information. Yet no epistemological critique was made of the literature within this Section. It was felt that such an intrusion would obfuscate readers’ understanding and awareness of what the research, each approach robust within its own epistemological parameters, illuminated as to the context of construction sites. Indeed, epistemological considerations should not detract from the ability of this Section to place the discourses of the data for this study within their social, historical and cultural context.

4.3 UK Construction Sites

Investigation into the realities of UK construction sites has arguably been a piecemeal process. Research has often been directed towards specific aspects and characteristics, including for example accident causation (Manu et al 2010), skills (Dainty et al 2004), risk taking (Rawlinson and Farrell 2009) gender (Greed 2000; Bird 2003, Gurjao 2006) or ethnic minority issues (Worrall et al 2010).

Whilst these focused efforts have, to some extent, provided an understanding of certain facets of the realities of UK construction sites, there has been relatively little research carried out investigating the construction site context from a holistic point of view (Rooke and Seymour 2002; Loosemore et al 2003; Biggs et al 2005; Davey and London 2005; Dainty 2008). No studies could be located that specifically examined UK construction sites in this way, and whilst the archives did hold a handful of treasures: Applebaum’s (1981) time as a site manager and engineer as told in Royal Blue, Cherry’s (1974) story of a teacher turned ironworker in On High Steel and the academic LeMasters’s (1975) accounts of the years he spent drinking with construction men, his Blue Collar Aristocrats; all of these were glimpses of the construction sites that the authors personally experienced in 60s, 70s and 80s America.
Therefore, any examination of UK construction site life is inevitably piecemeal; however this can be explored in such a way to develop a holistic view of the UK construction site context. The Office for National Statistics (2011: 1) defines the construction industry as

‘...incorporating all general construction and allied construction activities for building and civil engineering works; this includes new work, repair, additions, alterations as well as temporary structures. This definition includes the complete construction of buildings, civil engineering works and allied activities carried out as part of the construction process.’

The industry usually accounts for around 10% of the UK’s GDP (Strategic Forum 2010), however since the economic downturn this figure has been suggested to have dropped to around 6% (Kollewe 2011). It is also highly people intensive (Dainty et al 2007) and employs around 2 million workers (Strategic Forum 2010), around 9% of total employment in the UK (Howarth and Watson 2009).

Demand for construction work is directly derived from the needs of other industries or the public sector (Morton and Ross 2008). However, given the nature of the product and the need for capital expenditure or investment for its production, this demand is closely linked to the overall health of the UK economy (Langford et al 1995) and the industry will go through boom and bust periods as the economy itself fluctuates between growth and recession (Dainty et al 2007).

Construction work is traditionally won through competitive tendering processes with the award of work to the lowest bidder (Lingard and Rowlinson 2005; Sang et al 2007). This makes a companies’ workload highly uncertain (Loosemore et al 2003), and means companies are under pressure to keep their bids low to increase their chance of winning (Lingard and Rowlinson 2005), which leads to focus on costs rather than quality (Sang et al 2007), or even safety (HSE 2001). In addition to cost, time is also critical not least to ensure construction companies do not overrun the agreed contract duration and incur additional costs themselves (Loosemore et al 2003). Clients will also consider project duration when awarding their work, and so companies also frequently bid for work with promises of delivery within very short timescales (Dainty et al 2007; Sang et al 2007). These constraints of time and money translate into a constant pressure to meet daily or weekly targets on the sites (Fellows et al 2002; HSE 2003a; Spanswick 2007b; Rawlinson and Farrell 2008), a
pressure, be it real or perceived, which forms an ingrained aspect of construction site
culture (HSE 2009b).

The construction industry workload is therefore highly uncertain (Greed 1997; Morton and
Ross 2008) in terms of both demand and the work winning process. Therefore construction
companies require a high degree of flexibility to be able to cope with these fluctuations.

Consequently, subcontracting of work is prolific within the industry and has become the
dominant organisational structure for large construction projects (Langford et al 1995;
Lingard and Rowlinson 2005; Dainty et al 2007). Main contractors win the work through
the tendering process, and then assign packages of work dependent on trade or skill to
many different subcontractors in their supply chain, again through a competitive tendering
process. These subcontractors can also subcontract work, resulting in potentially
elongated supply chains and highly fragmented delivery systems (Loosemore et al 2003)
with the pressures of time and cost being passed down to the level below (Greed 1997).

However, this beneficial flexibility has also been highly criticised as it creates conflicting
interests on site by subdividing the project (Ankrah et al 2007), as well as increased health
and safety concerns due to poor housekeeping and a lack of safety training, which can
increase accidents on sites (Lingard and Rowlinson 2005). Main contractors are unlikely to
have any direct authority over the subcontractors’ operatives (Fryer et al 2004), which
often results in hierarchical systems of management; from the main contractors’
management to their supervisors to the subcontractors’ supervisors to the subcontractors’
operatives with levels of responsibility and accountability all clearly defined (Watts 2007).

This flexibility also translates to the workforce, with a significant amount of construction
operatives being self-employed (Dainty et al 2007; HSE 2009b). However, such casual
labour practices also have negative consequences for the industry and the pressures of
time and money also become concerns of self-employed operatives who have to work to
earn as their contractual arrangements disoblige employers from statutory responsibilities
such as holiday and sick pay (Morton and Ross 2008). This arrangement also releases
employing companies from any responsibilities for training such operatives, including in
health and safety (Morton and Ross 2008). For the self-employed, and even those working
directly for contractors, the common practice of paying on ‘price’ or ‘measure’ adds further
pressure. This is frequently used as an incentive payment scheme to increase productivity,
facilitated by the ease with which outputs can be measured and rewarded (Harris et al
However, this practice inevitably encourages operatives to work as fast as possible to make the most money in a day or shift. As speed often means cutting corners and taking risks, safety is often sacrificed (Spanswick 2007a).

The bespoke nature of construction projects (Loosemore et al 2003; Lingard and Rowlinson 2005) has inevitably created a project based industry, where temporary project teams are formed on the construction sites, and the workforce comes together for the duration, only to disband at project completion to start work elsewhere (Sang et al 2007). Many large construction companies are structured so its projects, or sites, are self-contained, autonomous entities, able to manage their own costs and profits (Langford et al 1995) as project managers or directors sees fit, allowing individual sites to develop their own site culture. This in turn has inevitably led to the creation of a transient workforce (Greed 2000; Loosemore et al 2003; Bird 2003; EOC 2006; HSE 2008; HSE 2009b), with high levels of casual recruitment and short term work contracts (Haro and Kleiner 2008) as they move from project to project. It has been argued that the itinerant nature of the workforce has implications on the work itself, that the very nature of the employment promotes a casual attitude to the work, and a workforce that does not accept conventions on punctuality, attendance and safety that apply to more regular work (Seymour and Fellows 2002).

In terms of skills, the construction industry has historically had a very low competence threshold for site based operatives, in part encouraged by the short term and itinerant nature of the work which makes long term training problematic (HSE 2009b). The industry instead looks to knowledge and experience as benchmarks for competence over formal qualifications (Rooke and Seymour 2002). Indeed qualifications are often considered irrelevant to peoples’ actual skills and ability for manual work (Ness 2009). Employment within the construction workforce is usually based on word of mouth referrals and informal recruitment networks (Knutt 2009), with associated operatives often travelling from project to project together, supporting each other in finding future work. However, this recruitment process excludes as many people as it includes, and has ultimately resulted in the perpetuation of the white male domination of the workforce (Ness 2009).

Less than 1% of the construction industry operative and site based workforce are women (McKay and Forster 2005; EOC 2006), and less than 4% within the workforce as a whole are from a black or ethnic minority background (Worrall et al 2010). Whilst the industry has been a traditional employer of foreign and migrant workers on sites (HSE 2009b), they have been estimated to form just 6% of the site based workforce (Building 2009). The vast
majority of the site based workforce is white and male (Dainty et al 2007; Duncan et al 2002). The lack of women within the workforce has led to what is frequently described as a macho culture on sites (Whitfield 1994; Loosemore 2002; Duncan et al 2002; McKay and Forster 2005; Jordan et al 2004; Ankrah et al 2009). On UK construction sites, the last bastion of the traditional male working class (Dainty et al 2007) is characterised by the use of sexual language and humour, macho behaviour (Padavic and Reskin 2002), displays of pornographic material (Watts 2007) and almost constant swearing (Jordan et al 2004).

There are two theories as to why the culture on site has developed in this way. One argues that the ‘spirited conversation kept the wheels of productivity turning’ (Gregory 2006) and shared social behaviours allow for strong bonds to be formed quickly as workers are shifted round the site, creating a sense of support and belonging within the workforce (Bird 2003). The second theory argues that the boisterous masculine culture of the male workplace can also be seen as a display of the workers culture of resistance against capitalism which threatens to emasculate them (Cockburn 1983; Gregory 2006). The need to be tough and physically superior to their managers is one way the workers can compensate for the masculine ‘mutation’ of subordination to other men (Cockburn 1991).

This workforce composition has also been suggested to have contributed to the existence and perpetuation of other prominent characteristics of life on UK construction sites. Working hours on UK construction sites are often described as excessively long (Duncan et al 2002; Loosemore et al 2003); UK construction operatives work some of the longest hours in Europe (Clarke et al 2004). The male workforce, excused family responsibilities (Padavic and Reskin 2002) bears the brunt of the pressures created by the work winning process, with ‘face-time’ a measure of commitment and productivity (Agapiou 2002; Padavic and Reskin 2002; Watts 2007) in what has been described as a ‘martyr culture’ (Knutt 2009). The argument that such hours are necessary due to the ‘nature’ of the work is easily challenged; research in Holland, where shorter hours are the norm, found their productivity to be far higher than the UK (Clarke et al 2004). The UK is, in fact, the only member of the EU to retain the right for an employee agreed exemption from the 1993 European Working Time Directive that set a weekly limit for 48 hours paid work to protect employees (Chatzitheochari and Arber 2009). This would suggest that even at a UK government level, long hours are seen as desirable commitment from the workforce, despite the negative consequences.
There is a continued reliance on manual labour found within the industry, stereotyped by the big, muscle bound, construction worker. Arguably necessary many years ago, the perpetuation of manual labour within a macho culture, where any indication of not being tough enough for the job is seen as a sign of weakness (Contract Journal 2007), has led to the construction industry having some of the highest levels of illness amongst its workers. The industry has the highest rate of musculoskeletal disorders (MSDs) within the UK, the majority of which are back injuries from poor manual handling (HSE 2011g).

This workforce is also asked to carry out its tasks within some unique working conditions, which are highly influenced by the weather (Watts 2007). Depending on the stage of the work, it is the weather which determines if the operatives will be wet and cold all day, wading through mud to get to the workface, or sweltering in the heat and dust, with the risk of sunburn. This has led to the common perception that construction sites are dirty places (Applebaum 1981; Court and Moralee 1995; Duncan et al 2002; Chan and Connolly 2006a), with generally poor working conditions (Greed 1997; Loosemore et al 2003; Watts 2007). Indeed, Egan (1998) himself described the site environment as challenging in terms of the conditions found there. Due to the intensive use of heavy equipment and portable power tools, site operatives are frequently exposed to high levels of noise (Watts 2007), which are often above allowable legal limits (Lingard and Rowlinson 2005). The atmosphere on sites can be unpleasant, with a wide range of construction processes, such as chasing, scabbling, drilling, crushing, cutting or breaking, raising silica dust and other particulates (HSE 2006a) the air can be dusty, as well as hazardous (Fryer et al 2004). The workplace itself can also be of concern, as evidenced by the HSE’s ‘Good Order initiative’ (2006b) established to pass on the message that ‘...it is not acceptable for corridors and stairwells to be obstructed with materials, footpaths to be uneven, cables to be strewn across walkways or for steps into site cabins to be poorly constructed.’ There are a variety of aspects inherent in the work that can contribute to poor working conditions, although significant improvements have been made over recent years where practical or indeed possible (HSE 2003a).

A further characteristic of site life which is prominent within the literature is the antagonistic nature of the relationships to be found there. Indeed, conflict has been described as ‘institutionalised’ within the industry (Loosemore et al 2003); many reports have berated the adversarial and antagonistic aspects of industry culture which have led to an aggressive, conflict-ridden environment (HSE 2001; Ankrah and Proverbs 2004; Watts...
The project based nature of the work has been blamed, as organisations come together with differing and occasionally competing objectives and demands (Kumaraswamy et al 2002; Loosemore et al 2003; Fryer et al 2004). The payment processes of the industry has also been cited as a cause, with the competitive tendering process leading to a ‘claims culture’ once the work has been won on a low bid (Rooke et al 2004). At site level, the use of differing trades within the supply chain also results in competing objectives (Whitfield 1994); each trade wants to complete its work efficiently, but a reliance on the success of the previous trade, competition with others to complete their work first in an area, and disagreements in the proposed planning of the work can all result in conflict.

However, whilst the above discussed characteristics of the construction are predominately negative, arguably reflective of the need for academic research to find a ‘problem’ to investigate, note must be made of the high levels of job satisfaction found also on construction sites (Jordan et al 2004; Coffey and Fowler 2010; Polesie 2010). Job satisfaction can be drawn from many sources; pride and satisfaction in the participation and creation of something tangible (Watts 2007; Rawlinson and Farrell 2010c), the empowerment and autonomy of the workforce (Applebaum 1981; Polesie 2010), teamwork (Jordan et al 2004), the use of craft skills (Eisenberg 1998; CWIT 2006) and overcoming the problems that arise (Court and Moralee 1995; Chan and Kaka 2007). The work environment of construction sites, although arguably hard, is also a place of enjoyment, banter and laughter.

4.3.1 A Day in the Life of a Construction Site Supervisor

In order to summarise construction site life, from the perspective of those who work there, consider the following scenario:

7am.

Morning Huddle.

You have got to hit the milestone for the end of the week as your contracts manager is coming next Monday and will want to see results or know why but the morning meeting isn’t going well as two of the subcontractors needed for the week’s work already know each other from another project where one gang lost out in the money and so they both spend the meeting being rude to each other and refusing to agree on a plan for the week’s
work but you can’t resolve it in the end as you get called out on site because a wagon has arrived with the materials you desperately needed yesterday which didn’t turn up but this is now blocking the access road and a scissor lift is trying to get past but it breaks down halfway round and amongst all the abuse nothing is moving so you have to get down there to shout for the driver of the yellow van which is blocking the other side of the road but he’s on the roof and is on his way but the wagon driver isn’t too happy as he has five more drops today and makes you very aware of it and eventually the van is shifted to allow the wagon on but once you can get the forks to remove the first pallet you find the materials are the wrong colour for the job as the architect changed the design last week and for some reason this hasn’t been passed on to the manufacturer whom when you ring him flatly states that any change will cost him money and he can’t absorb that as he’s still waiting payment from your company for last month’s valuation but as soon as you escape from the phone two of your concrete lads are in your office and furious that their bonus is wrong from that pour last week that went on till eleven as the supervisor had promised them job and knock for a full second shift so this isn’t right but the wages only run once a week so they’ll have to make do till then and anyway you need to get back out on site to refix the access signs as today’s concrete work will mean having to reroute the main entrance walkway but you can’t get past the side door as two operatives are complaining about the joiners cutting MDF in the corridor and you know they have been allocated a room but they aren’t carrying the timber down there as it takes too long and they’re on price for this work so you have to issue some disciplinary notices to make sure they follow the rules which they do for now and then grab some masks for the lads working in the room next door as they are still worried about the dust but then you have to go and help your gen op carry the barriers across to reroute the pathway or he won’t have time to refix them before the end of his shift as he’s been on since half six to open up which makes your back start to twinge again but now a gang has turned up to connect up the rainwaters but the roofer hasn’t finished yet so they give you an earful as they’ve driven down from Scotland and just found some lodge but they’ll be back sometime next week or maybe the week after depending what’s on but you’re called back inside the building as no one can figure out how to access the high level sensor the M&E engineers want installing at the top of the atrium and when did this appear on the drawing as you only struck the scaffold last week and it wasn’t there then but a phone call argues that it was on the drawing but only the electrical drawing not the BMS drawing which is what the sensor lads use so they’ll need to source a scissor lift but the foreman doesn’t think this should be up to them and
you should have made sure everything was finished before the scaffold strike as they were able to use that for the other work so you stand in a four storey atrium and wonder if there is a spider that can get through the double doors and get that high and if there is have the lads got a ticket but no because the lad with a ticket is on holiday and not back for two weeks and by then the epoxy flooring should be down and it might get damaged with a spider and another phone call finds out that the sensor can go lower but the architect wanted it higher so as to not interfere with the design and so another phone call finds that the architect is in a meeting but will ring you back but this sensor needs to go in to finish the loop on the circuit or they can’t test it and you can hear the saw going in the corridor again and the concrete lads foreman hovering in the doorway to try to get that wage thing sorted*

*continues incessantly until 7pm when you eventually leave having said goodnight to your kids over the phone.

Again.

Some have argued that this is a unique work environment and construction site management face unique challenges (Morton and Ross 2008), others claim not, that it can be adapted and modified to something only a little more complicated that the production lines of manufacturing (Egan 1998). However, it has also been argued that whatever the reasons for the work environment found on UK construction sites, it puts significant pressures on the workforce and can even be potentially damaging to well-being (Sang et al 2007), and this before any reference is made to the more tangible and directly hazardous health and safety issues also found there.

As Wild (1994) said,

“...that projects are completed is a profound tribute to those who do the work, both because and in spite of the situations within which they labour.”

4.4 Safety on UK Construction Sites

Alongside the above aspects of the construction site environment, and influenced to some extent by every one of these characteristics, sits safety. It is within this complex and hectic site environment that safety must be managed and controlled.
This section was developed to put safety on construction sites in context, through examination of the legislative and management systems currently in operation, the competence and training of the workforce and more recent developments in terms of the pursuit of a positive safety culture. Sites within the sample for this study were of a certain size and were operated by contractors of a certain size, and therefore arguably are positioned at the forefront of safety best practice in terms of management systems, a focus on zero accidents and the philosophy of incident and injury free (HSE 2009c).

4.4.1 Extent of the Problem

The construction industry’s safety record has been described as ‘dismal’ (Haupt 2004). It is one of the most dangerous industries in which to work in the UK, which has resulted in the common perception that construction sites are dangerous places (Applebaum 1981; Court and Moralee 1995; Duncan et al 2002; Chan and Connolly 2006a). Unfortunately, this perception was not challenged by the most recent accident statistics. The number of workers killed on UK construction sites increased in the period 10/11 for the first time in four years. 50 workers lost their lives (HSE 2011a), compared to 41 in the previous period (HSE 2011b). Within UK industry, construction accounted for 27% of all fatal workplace accidents in 2010/11, making it responsible for almost a third of all deaths at work (HSE 2011a).

Due to the statistical data gathering process, detailed information was only available at the time of writing for the period 2009/10, when the construction workforce sustained 6% of all reported injuries to employees at work within the UK, which in addition to fatalities included 9% major injuries and 6% of all reported over 3-day injuries (HSE 2011b). Most common within these non-fatal injuries were reports of slips, trips (23% of injuries) and poor manual handling (28%). The industry also accounted for 29% of injury sustained due to structural collapse, 26% of all reported injuries at work involving a fall from height, 16% involving electricity and 16% of injuries from explosions (HSE 2011b).

Information was also available in terms of statistical characteristics relevant to the sites under examination in this study. Due to the data handling process, again this information was only available for the period 2008/09, however the proportion of fatalities occurring on large sites and by large contractors could still be assessed. Due to common subcontracting processes, this information is arguably of limited value (Lingard and
Rowlinson 2005), however it does illustrate that fatal accidents are not limited solely to smaller contractors working on smaller sites (Donaghy 2009).

![Figure 4.1: Fatal accidents 2000/01-2008/09p by size of employer/contractor involved](image1)

(Source: Construction Intelligence Report HSE 2010)

![Figure 4.2: Fatal accidents 2000/01-2008/09p by size of site involved](image2)

(Source: Construction Intelligence Report HSE 2010)

The use of accident statistics such as these as safety indicators for the industry has become commonplace, and statistically based Key Performance Indicators (KPIs) have been set around safety on a regular basis (Strategic Forum 2010). However, criticism of the use of such KPIs has suggested that reliance on statistics may be inappropriate in an industry where the true reporting of accidents has historically proved sporadic (Knutt 2000). Indeed, there have been concerns raised more recently around the accuracy of major and 3-day accident reporting (HSE 2009b; Donaghy 2009), although others have suggested that it is actually greater honesty in reporting that is pushing up the statistics, as incidents are
now reported that may not have been 10 years ago (Spanswick 2007b). However, the comment has also been made that there is no one method of safety measurement that is totally resistant to abuse (Cooper and Cotton 2000).

Currently, this reactive approach to measuring safety through accident statistics is the most prevalent, and is indeed the government’s own method for determining industry improvements (Strategic Forum 2010). There are many methods employed in the analysis of these data, and learning from past indicators is the key process for understanding why accidents occur on sites and how future performance can be improved (Ahmad and Gibb 2004; Chua and Goh 2004).

These statistics are now placed in context through an exploration of the literature examining accident causation within the industry, an active area of research in both academic and government arenas. This approach is highly illustrative in linking safety incidents to the underlying processes within the construction site context, as well as enabling clarification of the driving forces that have led safety management on construction sites to its current position and direction.

4.4.2 Safety Management

The management of safety on UK construction sites has also seen development in terms of its approach. Initially, management focused on the identification of physical work hazards and the removal of the risk (Biggs et al 2005), such as the provision of safe equipment or machine guards and controls (Lingard and Rowlinson 2005). The approach was largely prescriptive and focused on unsafe conditions through mechanistic regulations and enforced compliance (Langford et al 2000; Haupt 2004). This was successful in reducing industry accidents, however it has been argued that as the number of accidents decreased, the proportion caused by human error increased, because these are the most difficult to prevent (Groenweg 1994).

The construction industry fell into line with this thinking, and there has been a shift to behavioural safety, with a focus on reducing unsafe and risk taking behaviours within the last fifteen years (Langford et al 2000; Lingard and Rowlinson 2005). The concept of safety culture has become commonplace (Wamuziri 2011; Mohamed and Chinda 2011) and a more proactive and preventative approach developed legislatively, which set the standards to be achieved and allowed the site management to develop the processes to meet the requirements (Haupt 2004).
However, evidence has also shown that workplace organisational factors are indeed critical, such as effective practices surrounding safety on site (Lingard and Rowlinson 2005), and the argument has been made for a holistic approach to safety management which includes the work environment, practices, equipment and people (IOSH 2004). Indeed others, such as Hinze (1997), argued against the shift in focus to behavioural or cultural safety by questioning the large statistical weighting given to unsafe behaviours as the root cause of most accidents, stating that the work environment is also an influencing factor and it is always a combination of physical conditions and worker actions that is the true cause of safety accidents on sites.

Despite such debates, the Donaghy Report (2009) concluded that most of the accidents studied were preventable; that it was possible that through a combination of legislation, government intervention, safety management and training, the majority of safety accidents on large construction sites could have been eliminated.

### 4.4.2.1 Legislation

Safety requirements for UK construction sites are controlled by a hierarchy of elements; European Law; UK statutory law, including the Health and Safety at Work Act 1974, and UK Safety Regulations (Howarth and Watson 2009). This Section does not explore safety legislation in extensive detail, as compliance was in the main assured for the sample under scrutiny in this study (HSE 2009d), however key legislation has been explicated in order to ensure an awareness of the legislative framework that surrounds UK construction sites.

Arguably the foundation of UK legislation is the Health and Safety at Work Act 1974. This was developed from the first examination of safety within UK workplaces articulated in the Robens Report (1972). This Report was highly progressive in its approach, and suggested that negative regulation and prescriptive legislation was not the best answer to modern safety management; rather risk should be managed by those who create it. The report also recommended worker engagement, management commitment and personal responsibility for safety (Robens 1972), all keystones of modern safety culture programmes.

In its manifestation as the Health and Safety at Work Act 1974 (The National Archives 2011), legislative duties were imposed on employers and employees relative to their conduct with regard to health and safety (Howarth and Watson 2009), as well as the need for personal responsibility, safety management systems and employee involvement in safety at work (Hughes and Ferrett 2007).
The Act also resulted in the establishment of the Health and Safety Executive (HSE 2011c). The HSE operates inspectors, who can visit any site at any time and issue notices for improvements or even prohibitions, which can halt work on the site until improvement is made, and initiate prosecution if considered necessary. They enforce the legislation set down in the Health and Safety at Work Act 1974, a breach of which is a criminal offence and can lead to penalties in terms of fines, imprisonment or both (Howarth and Watson 2009). However, this role has shifted from one of straightforward enforcement to early project interventions and working alongside industry to improve safety performance proactively. This was in part a response to the impracticalities of the HSE resources; just 150 inspectors to police over 500,000 sites and a workforce of 2 million (Smith 2004).

The Health and Safety at Work Act 1974 is supported by a number of Regulations. These Regulations are articulated where possible in goal setting form, which set standards but allows contractors to establish a suitable process by which to meet them. However, in some instances regulations are necessarily prescriptive, such as the need for two emergency escape routes from a mine, and those enforcing licenced procedures, such as the removal of asbestos (HSE 2003c). Regulations cover a variety of aspects of work, some applicable to all UK industry and some more specific to construction work, such as the Noise at Work Regulations, the Manual Handling Operations Regulations, the Work at Height Regulations (Howarth and Watson 2009), Control Of Substances Hazardous to Health (COSHH) Regulations (Fryer et al 2004) and the Personal Protective Equipment at Work Regulations (HSE 2003c). Legal requirements for the reporting of accidents and incidents to the HSE have been set out in the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) (Howarth and Watson 2009).

Risk has been dealt with under the Management of Health and Safety at Work Regulations 1999. These regulations require that the risks associated with any hazardous work activity are assessed before work starts, so any preventative and protective measures can be identified and put in place. These Risk Assessments (RAs) are themselves referenced in the vast majority of other Regulations (Read 2001) and have become the standard management tool for risk reduction and the establishment of safe systems of work, and are now included within EU law. However, despite this enshrinement in legislation, RAs have been strongly criticised, and even the HSE (2003a) has regarded them at times as of little value, generic, and including no operative consultation. Indeed, these tools for risk management are frequently inaccurately prepared, often unread, and in some cases
containing no actual bearing on the work methods to be used, which indicates a poor industry attitude to the correct evaluation and mitigation of risk at this fundamental level (Rawlinson and Farrell, 2008).

The Construction (Design and Management) Regulations (CDM) of 2007 were the practical UK embodiment of the European Economic Community (EEC) directive on construction, and the major legislative instrument directed specifically at the construction industry (Morton and Ross 2008). These Regulations placed health and safety duties on all parties in construction projects, including clients, designers and contractors and created the role of CDM co-ordinators to ensure health and safety was considered and managed at all stages of the project from conception to operation. CDM (2007) also incorporated the Construction (Health Safety and Welfare) Regulations and therefore included, for example, detailed legislative requirements in terms of the establishment and maintenance of traffic routes, including safe access for pedestrians within sites (Regulation 36), fire prevention plans (Regulation 41), establishment and signage of emergency routes and exits (Regulation 40), good order in terms of tidiness and cleanliness (Regulation 27) and sufficient lighting for work (Regulation 44). A construction phase safety plan must be prepared by main contractors to detail out their provisions in this regard and addressing management of all key safety risks on the project, such as prevention of falls, control of lifting operations, working in excavations (Howarth and Watson 2009) as well as provisions made for workforce training, competence and engagement throughout the project (HSE 2007).

The most recent piece of safety legislation to be introduced was the Corporate Manslaughter and Corporate Homicide Act (2007), through which an organisation or director can be convicted of the offence if its activities are organised in such a way that they have breached its duty of care to the person who died with corresponding evidence of senior management failure (Glackin 2008). This Act brought site safety management into much sharper focus in industry boardrooms, and indeed has gone some way to ensure the mezzo factors behind site accidents are given consideration. CDM 2007 has also been instrumental in raising health and safety on the agenda of clients, designers and contractors, following a number of successful prosecutions and fines (Raeside 2008). These changes in legislation have brought the need for early planning and co-operation within construction teams, as well as good risk identification and health and safety management on sites (HSE 2007).
4.4.2.2 Government Initiatives

In addition to developments in safety legislation, there have been significant efforts made by government and its associated bodies to improve the safety of the construction industry workforce.

The Construction Division of the HSE was established in 2002 (HSE 2009b), with specific focus on the provision of health and safety enforcement, guidance and support to the construction industry (HSE 2011c). This is supported by the Construction Industry Advisory Committee (CONIAC) which is made up of representatives from key industry stakeholders as well as local authorities. There are specific sub groups to CONIAC including an SME Working Group, a Safety Working Group and the Working Well Together Steering Group (HSE 2011d), which all operate with the belief that improvements can be better achieved by a focus on non-regulatory measures (HSE 2004).

CONIAC and the HSE have been actively involved in driving cultural change within the industry, setting the focus on behavioural change and worker engagement. CONIAC established the Behavioural Change Worker Engagement Forum, to centralise debate, discussion and best practice regarding behavioural change programmes, with the philosophy that through a behavioural approach capturing the hearts and minds of everyone on site, can greatly improve health and safety (Worthington 2007). Worker engagement has been championed by the HSE’s Worker Engagement Initiative, which aimed to encourage contractors to move beyond the minimum level of consultation to a workforce that is fully engaged and involved in site health and safety management. The Initiative also included the Achieving Behavioural Change programme, an educational tool to provide the workforce with an appreciation of the connections between attitude and behaviour and the benefits of good safety performance on site (HSE 2011j).

In addition, in the wake of the Egan Report, *Rethinking Construction* (1998), the ‘Revitalising Health and Safety’ initiative was launched in 2000 by the government to address health and safety in all UK industries (HSE 2009b) and was the first initiative of its kind to set targets for improvement over a ten year period. Action Plans were also established to assist in delivering these ambitious targets, including new processes for site health and safety management including the engagement of the workforce and a drive for cultural change (Myers 2002; HSE 2009b). However, a review by the HSE held a year later in 2002 did not manage to establish that significant achievements had been made in terms
of changing the culture and making impact at the site level within these areas of focus (Myers 2002). Yet these programmes and initiatives are ongoing, as demonstrated in the HSE’s key themes for 2009/10 which included management of occupational health in addition to safety risks, the delivery of cultural change and a continued focus on worker engagement, with a desire to raise its profile as a leading edge indicator of good health and safety management (Brearey 2009).

The HSE’s work was also supported by the establishment in 2001 of the Strategic Forum for Construction (SFfC) by the Department for Trade and Industry, to oversee the implementation of the construction industry reform through its member bodies, including Constructing Excellence (2011a) and ConstructionSkills (HSE 2009b). These reforms were supported by various initiatives, for example the 2005 ‘Respect for People’s Code of Good Working Health and Safety Practice’ (Strategic Forum 2005) which promoted behavioural change, engagement with workers, focus on occupational health, and performance verification through benchmarking.

These initiatives, alongside others developed from the Construction Safety Summits of 2001 and 2005 (HSE 2005b; HSE 2009b), have arguably resulted in the creation of a mystifying plethora of committees, forums and interrelated government sponsored bodies aiming for a myriad of assorted targets. Yet it must also be acknowledged that they have certainly raised awareness within industry of the need for developments, and instigated change in the approaches made to the management of safety on sites.

More recently, government focus has shifted slightly to the ‘Strategy for Sustainable Construction’ (BIS 2008) which incorporated Health and Safety under its remit for ‘people’; however the legacy of this decade of initiatives and their influence on the construction site context can be seen through their inclusion within many of the safety management and safety cultural change systems employed on sites.

4.4.2.3 Safety Management Systems

In addition to the legislative requirements for managing safety on site, many larger companies have also established a systematic approach to safety management within their organisations and on their sites (HSE 2009b). Safety Management Systems (SMSs) provide a structure to the legislative and other safety management requirements of organisations, and articulate their practical implementation on sites (Howarth and Watson 2009).
The key components of a SMS are established by the HSE in its guidance documentation, *Successful Health and Safety Management* (HSE 2006c) and include a company health and safety policy, a framework to incorporate health and safety in business planning at all levels, processes for ensuring the competence and training of the workforce, the setting of organisational objectives for improvements, processes for the identification of hazards, processes for assessment of risks and measuring performance, overall organisational measurement of health and safety performance, and an audit and review of the process to enable continuous improvement (HSE 2006c). As Lingard and Rowlinson (2005) noted in their support of the HSE’s earlier publication of this guidance as the fundamental components of any SMS, these were also the steps to be taken to achieve success in any area of business activity. The use and employment of SMSs has therefore brought safety considerations and management to the senior and corporate levels within large construction companies.

Other elements of good SMSs have been noted to include clear site rules, a site induction, permits to work and communication systems such as site safety notice boards and safety committee meetings (Howarth and Watson 2009). Effective communication and worker involvement strategies and processes are often seen as a key component of successful SMSs (Loosemore *et al* 2003; Fryer *et al* 2004; HSE 2007) and a characteristic of organisations with good safety performance (Lingard and Rowlinson 2005). Management commitment has also been seen as essential, in order to receive similar commitment from the workforce (Lingard and Rowlinson 2005; HSE 2007).

These additional elements are also recommended within the HSE document *Managing Health and Safety in Construction CDM(2007) Regulations Approved Code of Practice* (HSE 2007). Although an SMS was not prescribed by name, the need for management of health and safety at the site level in terms of planning, management and co-ordination is set out, and supplemented by recommended workforce training, engagement and management leadership are included, all key elements of a SMS.

There is also a British Standard OHSAS 18001:2007 for Occupational Health and Safety Management Systems. However, whilst this accreditation sets standards for compliance in occupational performance, as with many standards it does not set performance criteria nor specify the design of good management systems (BSi 2011).
SMSs have been successfully implemented by many large construction contractors (HSE 2009b). The Donaghy Report (2009) concluded that although SMSs were often found to be strong within the corporate core of the organisation, management to the very ends of the supply chains and implementation on the sites themselves was not always as successful (HSE 2009d).

4.4.2.4 Competence and Training

Manager, supervisor and worker competence and training are, to various extents, required by legislation, promoted by government initiatives and incorporated within SMSs. It is an accepted fact that to enable operatives to work safely, they need to be trained and equipped with the skills to make them competent to carry out their tasks (Teo et al 2005).

However, despite this fundamental acceptance, and repeated references to competence and training within regulations and guidance (HSE 2007), it has been suggested that there is no clear standard or benchmark for what people should know regarding safety on sites (HSE 2009c). The lack of any systematic or comprehensive training programme within industry has led to a large amount of training being carried out ‘in house’ (Fellows et al 2002) and it has been suggested that there is a lack of competency standards within the workforce (HSE 2009b), especially amongst those responsible for their own safety training provision (Loosemore et al 2003). It has also been established that a certain level of competence is required within the supervisory structure to ensure that people in safety critical positions have the knowledge and understanding to develop the correct workplace environment (Cipolla et al 2006). A lack of competence has been found to result in a lack of confidence, and result in either excessive safety management or disinterest in safety management amongst supervisors and managers (HSE 2009c).

Indeed, ‘competence’ is itself a frequently used term within safety literature, but again has not been clearly defined within the legislation (Biggs et al 2005; Hughes and Ferrett 2007); rather CDM2007 when discussing the project team, states that to be competent an individual must have:

\[\text{(a) sufficient knowledge of the specific task to be undertaken and the risks which the work will entail;}\]

\[\text{(b) sufficient experience and ability to carry out their duties in relation to the project; to recognise their limitations and take appropriate action in order to}\]

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This ‘definition’ is further supported by recommendations for the assessment of competence within the workforce itself, but these recommendations are themselves limited to establishing operatives have a basic knowledge and understanding of tasks, and that this knowledge is regularly updated through training via Tool Box Talks or more formal training programmes such as National Vocational Qualifications (NVQs) (HSE 2007). Despite this there is still a tacit understanding that competence relates more to knowledge and experience, rather than specific skills or qualifications (Hughes and Ferrett 2007).

Safety training is considered to be vital in improving safety on site (HSE 2007). There are two differing approaches to safety training for site supervisors and operatives; classroom training and on-the-job training (Kamardeen 2011; Rooke and Clarke 2005), with different underlying aims. Formal, classroom training has been suggested to seek to improve individuals’ awareness, knowledge and understanding of safety on sites (Lingard 2004), and indeed such safety training for managers has been seen as an effective method of improving competence, and has been linked to lower accident rates (Hare and Cameron 2010). On-the-job training is more often seen as attempting to achieve a positive behavioural change, by changing attitudes in the real-life context (Kamardeen 2011; Lingard 2004). Yet both methods have also received criticism; training is not necessarily successful in achieving its aims without validation and active evaluation (Lingard 2004), and doubt has been raised as to the extent of influence classroom based training actually has on work in the site environment (Kamardeen 2011).

Informal training methods have also frequently been found to operate on construction sites. Despite formal training, Rooke and Clarke (2005) found that many operatives felt they learnt more on the job by watching more experienced workers, trying things out or by direct instruction. This trial and error approach by both new and experienced operatives can mean an increased safety risks around new tasks or processes.

More recent research on the Olympic park found more structured informal safety training for the workforce to be most successful through verbal, face-to-face talks such as daily briefings, induction and tool box talks (Hartley et al 2011). Indeed site inductions are a legal requirement under CDM2007 Regulation 22, and are required for all new personnel.
before they commence work on site (HSE 2007). The aim of the induction is to impart and educate new operatives to the site as to the safety requirements, and should include basic site information such as the location of welfare facilities and accident reporting procedures alongside key risks and controls such as permits to work, traffic routes and hearing protection zones (Rowlinson 2004; HSE 2007; Hughes and Ferrett 2007). Site inductions are promoted as vital to the success of health and safety on sites by the HSE (2007), and are common within the industry on larger projects (HSE 2001).

Tool Box Talks are also common within larger organisations and are often delivered weekly around a specific topic, relevant to the operatives current or forthcoming tasks (HSE 2001; HSE 2006d), such as safe systems of work or use of special PPE (Hughes and Ferrett 2007). There have also been developments with the use of pictorial only systems for non-English speaking operatives, and these have actually been found to be more effective than text only safety training in tool box talks for all workers (Hare and Cameron 2011).

More formal safety training can lead to the award of qualifications, and safety qualifications are offered in many forms from short courses to higher education qualifications (Hare and Cameron 2010). Whilst many professional and trade qualifications vary in the extent to which they teach safety skills and understanding within their content (HSE 2000) there are some specific safety-only qualifications which are gaining momentum in the industry.

Delivered and accredited by ConstructionSkills (2011a), the Site Managers’ Safety Training Scheme is a training programme covering legislation, site establishment, risk assessments, excavations and working at height amongst its topic areas. This course results in the award of a Site Safety Plus Certificate which has been considered to be the industry standard and confirmation of competence for site managers (Hare and Cameron 2010). There is also an associated scheme for site supervisors, the Site Supervisors’ Safety Training Scheme (ConstructionSkills 2011b) which covers more site specific issues such as the control of subcontractors and effective delivery of Tool Box Talks. Both of these schemes set safety standards for the roles of ‘manager’ and ‘supervisor’ on site, which correlate to the definitions employed within this study.

In addition to these higher level certificates, the industry standard for site operatives is the Construction Skills Certification Scheme (CSCS) Card. Recommended as a minimum requirement for all site operatives by the CDM 2007 Regulations (HSE 2007), the test
required to gain a CSCS card is seen as a way to ensure a basic knowledge and understanding of safety on sites (HSE 2007) and work competency is also assessed through the holding of certain qualifications or verified industry experience (Biggs et al 2005). The CSCS card is also linked to NVQs, which are themselves awarded for the demonstration of site based competencies through practical tasks and skills (CSCS 2011).

The CSCS card is trade-specific, and issued according to an individual’s work experience and training. There are also affiliated certification schemes which require a higher standard or qualification such as the certification for plant operators, the Construction Plant Certification Scheme (CPCS) which incorporates theory tests, on site assessment and ongoing records of progression (ConstructionSkills 2011c), or the scaffolders CISRS card which can only be gained through an intensive training and the NVQ programme (CISRS 2011).

CSCS cards are now the industry standard and an essential requirement for access to work on major contractors’ sites (Biggs et al 2005; CSCS 2011), for example they were a mandatory requirement to work on the Olympic Park site (Richardson 2006). However, this scheme has not been without its critics; the CSCS card was seen by some within the industry and unions as creating a carded, rather than competent workforce (Spanswick 2007a), and indeed there has been little published evidence to link the CSCS card to overall site safety performance (Biggs et al 2005).

4.4.2.5 Safety Culture

‘Safety culture’ has recently come to the forefront of pro-active safety management in the construction industry. There has been a sea change amongst larger contractors since the safety summit of 2001 (Chevin 2007), and the concept of a ‘safety culture’ has been adopted on a significant scale by those seeking to improve safety on their construction sites (Biggs et al 2005; Ridley and Channing 2008; Dingsdag et al 2008). Seen by industry as a natural progression after the implementation of a SMS within an organisation, safety management develops to focus on the ‘safety culture’ (Hudson 2007; Meldrum et al 2009). Such development is supported by the HSE, who actively encourage a proactive ‘safety culture’ on sites, viewing it as essential to improve the safety record of the industry (HSE 2000).

The original concept of a ‘safety culture’ had close links with the human factors theory of accident causation, and unsafe behaviours were frequently cited as evidence of a poor
safety culture (Sawacha et al. 1999; HSE 2003a; Hallowell 2010). Indeed some have argued that the popularity of ‘safety culture’ as a concept was in part due to the convenience for accident investigations to conclude that poor or inadequate ‘safety culture’ was the underlying cause (Baram and Schoebel 2007). However, agreement as to what a ‘safety culture’ actually is, how to measure it, or how to effectively develop one has yet to be definitively established within the construction arena (IOSH 2004; Wamuziri 2011). There are a large variety of definitions, models and processes which attempt to answer these questions found within the literature (Mohamed 2002; ISOH 2004; Hudson 2007; Baram and Schoebel 2007; Ridley and Channing 2008; Hartley and Cheyne 2009; Maloney 2011; Wamuziri 2011 etc), however detailed exploration is beyond the scope of this study. Rather, this contextual review seeks to establish and examine the practices that are frequently employed on sites with the intention of creating a ‘safety culture’, and thus their influence within the construction site context.

Amongst other factors already explored previously within this section, such as training and SMS, Wamuziri (2011) identified the following factors as prominent components of the construction industry ‘safety culture’: top down management commitment, worker engagement with formal and informal communications on safety matters founded on trust, a ‘no-blame culture’ to encouraging accident and near miss reporting and the use of branded ‘safety culture programmes’ which disseminate these principles through ‘propaganda’ and advertising. It is the practices associated with these factors that potentially have influence within the site safety context.

Senior management commitment is commonly cited as an essential ingredient in the establishment of a positive safety culture on sites (Loosemore et al. 2003; Lingard and Rowlinson 2005; HSE 2007), indeed commitment to safety at the very top of the organisation is considered by some to be the most important factor affecting safety culture (Hughes and Ferrett 2007). In practice, this corporate ‘voice’ has permeated safety management, as ‘safety leadership’ (Doherty 2009) which has manifested through the implementation of safety culture programmes such as Incident and Injury Free.

‘Safety leadership’ is often looking to engage with the site workforce (Cameron et al. 2006; Howarth and Watson 2009). Indeed, worker engagement is legislated within the CDM 2007 Regulations which include a section devoted to worker engagement and communication (HSE 2007) and the HSE has also promoted a specific Worker Engagement Initiative for the construction industry (HSE 2011e), the intention of which was to achieve a
Workforce engagement manifests through several common site practices, such as Daily Activity Briefings (DABS), or ‘Morning Prayers’, held every morning by supervisors with operatives under their control, or more intimately by foremen or gangers with their gangs, every morning to discuss and plan the day’s work including an assessment of the key safety risks and methods employed to control them (HSE 2005d; HSE 2006e). Worker safety representatives are encouraged under worker engagement programmes (HSE 2007), to provide a link between operatives on site and management through participation in safety committee meetings and other more formal engagement events (Hughes and Ferrett 2007). Safety committees are frequently made up of representatives from differing trades, and are often advertised on site so operatives can raise concerns with their representatives (HSE 2005d). The meetings are a way for safety issues to be raised with site management, formally recorded in minutes and subsequent actions monitored and controlled. Safety committee meetings have been the traditional worker engagement approach recommended by the majority of trade unions (Cameron et al 2006).

Encouraging the workforce to communicate concerns and problems directly is often addressed through the use of anonymous safety suggestion boxes for safety improvements (Cameron et al 2006). Another approach is the use of near-miss reporting; the reporting of an incident that would have been an accident had the circumstances differed in any way or a hazard that could itself become the cause of an accident (Gadd and Collins 2002). Every worker has a duty under CDM to report anything which is likely to endanger the safety of himself or others (HSE 2007), and near miss information could be used to increase positive interventions on site and directly lead to safety improvements, as well as enable learning of common and frequent safety issues for longer term strategic interventions (Gadd and Collins 2002; Worthington 2007).

The use of a ‘no-blame’ or ‘just culture’ is another tool utilised in the development of safety culture (Mohamed 2002; HSE 2005c). In order to enable open communication and full and honest reporting of safety near misses, incidents and accidents (Gadd and Collins 2002; Illia 2006), the workforce are assured that they would not be held responsible or blamed for the event occurring (Dekker 2007). This approach is based on a move from human error as the causal factor in accidents to a systems based approach which would enable underlying reasons and causes to be established beyond the incident itself (HSE 2005c). Such an
approach is a paradigm shift from the traditional retribution, punishment and reprimand that often came with an accident or near miss on sites (Illia 2006).

The most prominent manifestation in practice of ‘safety culture’ is found in the implementation of Safety Culture Programmes (SCPs). SCPs were first implemented on UK construction sites in the late 1990s (HSE 2008), and employed a top-down change model to alter the norms, values and attitudes of organisations as a whole, leading to an improved safety culture on sites (Dingsdag et al 2006).

In order to achieve this, the programmes sought to win the ‘hearts and minds’ (Worthington 2007) of the organisation including site management and operatives, by the promotion of a caring attitude on site (Illia 2006) supported by worker engagement (IOSH 2006). The SCPs ‘make safety personal’ and asks people to take responsibility for their own safety; encouraging the desire to choose to work safely, rather than compelling safe working by enforcement and policing (CIOB 2006). The SCP approach was not reliant on rules or paperwork, but on respect and expectations, and based on effective communication, worker engagement and creating an environment which can challenge the way work is undertaken on sites (Worthington 2007). Risk taking behaviour was targeted by reminding operatives of the consequences a serious accident or even death can cause, not only to themselves, but also family and friends.

The SCP, Incident and Injury Free, originally from the USA, has been adopted in the UK by both Laing O’Rourke and LendLease. As Laing O’Rourke (2011) stated on its website, ‘IIF represents a step-change in attitudes to safety ... underlining the personal responsibility we each have to ourselves and each other’, a philosophy echoed by LendLease (2011), who have commented that IIF requires ‘ ... individuals to take a personal stand ... with a mindset intolerant of any injury or incident ...’. An alternative approach has been made in Balfour Beatty’s (2011) Zero Harm campaign, an example of a combined safety programme; in ‘identifying and planning out hazards’, establishing ‘behavioural protocols ... to eliminate fatal risks’ the programme looked to the behavioural aspects of safety management, but in ‘making safety personal’ the fundamentals of a safety culture programme were also apparent.

The SCPs involve training programmes to pass their message on (Cooper and Cotton 2000) as well as focused media and advertising campaigns on sites; the use of safety propaganda (Hughes and Ferrett 2007), such as posters, leaflets or other information, and branding.
This information is frequently delivered via the site safety notice board which is the most commonly used focus for safety on sites (HSE 2001). Forms of communication such as safety newsletters (HSE 2005c) and posters are also common on sites (Hartley et al 2011).

Frequently, such communications are personalised, adopting the notion that workers would engage at a greater level with safety messages if they understood the consequences of poor safety at the personal level (Biggs et al 2005). Indeed, the German company Bilfinger has taken this further and used pictures of worker’s mothers within their safety posters, alongside messages such as ‘think about everything that could happen, love Mum’, utilising emotional engagement (Construction Manager 2011). Many organisations have also employed branding for their SCPs to provide a focus and enable people to gain familiarity with the initiative (Hudson 2007) as well as creating a sense of personal ownership within the organisation (Baram and Schoebel 2007). Evidence of branding can be seen in Balfour Beatty’s (2011) Zero Harm programme with its highly distinctive orange logo, and in programmes outside the industry such as Shell’s ‘Hearts and Minds’ logo (Hudson 2007). However, other contractors have not felt it necessary to brand, or even title, their safety culture programmes. Skanska, for example, does not have a formal programme but is still highly proactive in its approach to safety and employs safety education officers to promote safety on sites. One of these officers is Ian Whittingham, an ex-roofer who is wheelchair bound following an accident whilst with another company, who has been quoted as saying ‘...we don’t need some fancy name. It’s about doing what’s right’ (Smith 2008).

However, these programmes have not been without their critics. There was a vocal backlash in particular to the behavioural elements of early manifestations of the programmes, both in the USA and the UK, with claims that they tended to ‘blame the worker’ rather than focus on potential hazards and unsafe conditions within the site environment (Frederick and Lessin 2000). Indeed, there is little firm evidence of the success of these types of programme, despite positive reports about implementation on large sites (HSE 2008), and their importation direct from the USA (Illia 2006) may be an optimistic attempt to procure an off-the-shelf solution from a different country, with a very different social culture (Howarth and Watson 2009).

Yet these practices are the manifestations of an industry seeking a ‘positive safety culture’, and success or failure to this end has not been debated in detail here. Rather this section has sought to familiarise readers with the terms and initiatives in place on large UK
construction sites, to enable them to position the data and subsequent analysis within this contextual framework.

4.5 Summary

It has been stated that the very nature of the construction industry is the cause of its poor accident record and has to date inhibited the development of a ‘proactive safety culture’ (Cipolla et al 2006). Some of the industry’s key characteristics have been cited again and again as the root cause of many safety accidents and incidents; competitive tendering for work winning (HSE 2001; Sang et al 2007; Morton and Ross 2008); the use of subcontracting and long supply chains (Donaghy 2009; Manu et al 2010), the transient and fragmented workforce (HSE 2001; Biggs et al 2005; Donaghy 2009), bonus and payment schemes that encourage speed and risk taking behaviours (Sawacha et al 1999; Gadd and Collins 2002; Fellows et al 2002; Spanswick 2007b) and the constant demand for progress (Lingard and Rowlinson 2005; HSE 2009d; Hartley et al 2011). Indeed one quarter of experts consulted for the Donaghy Report felt that the way the industry is set up and work is procured has created an ethos that actively encourages safety accidents and incidents (HSE 2009c).

Although criticism can be levelled at the industry for failures to accept and actively challenge these latent defects inherent within its operational practices, it has certainly made significant efforts to directly challenge safety on sites. Through the support of the HSE and development of SMS and industry-wide competency and training programmes, and more recently the development of a safety culture approach, major contractors have pro-actively sought to better manage safety on their sites.

This study looks to examine safety within this particular context. It is a potentially dangerous environment, where accidents are commonplace, yet where legislation and SMS have tried to reduce and even eliminate them. There are complicated systems of training and competence, where training itself can vary between the rigidly formal and the almost ad-hoc. It is also surrounded by the trappings of ‘safety culture’ development; worker engagement programmes, ‘no-blame cultures’ and slogans and branding.
5.0 Analysis

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5.4.4 Summary: Safety as Constructed by Documents
5.1 Introduction

The data for the study was collected using the protocols and methods as set down in Section 3.5, and consequently three distinct data sources were gathered; in-situ signage, talk and documents. The process of analysis has been undertaken in accordance with that set down in Section 3.6, although minor modifications to application and process were necessary for each data source due to the diverse nature of the data. Such modifications have been discussed in turn prior to the analysis itself through a reflective review, presented as a process summary to explicate not only the process of analysis but the handling and selection of data itself.

Where data have been reproduced within the thesis, within all sources, anonymity of either company and/or individual has been maintained by the obscuration of names or logos by white shapes as necessary. These elements are noted instead in the text and their associations acknowledged whilst still retaining the anonymity of the study participants.

Reproductions of data, either as images of sign, extracts from transcripts or copies of documentary sources have been referenced by their unique data reference code. These data reference codes correspond to those within the Data Collection Record found in Appendix D; the second letter S refers to signage, D to document and C to conversation. The first letter of the code references the site from which it was collected, and further details about the sites, such as size and regional location, can be found in the Schedule of Data Collection Sites in Table 3.1.

The constant comparison method of data collection ensured that the data from each site visit was examined and analysed with reference to all previous data collected. Therefore the development of the master discourses of safety on sites was an emergent process that spanned all three of the categories of data source: signs, talk and documents. However in order to facilitate clarity, position the emergence of the master discourses within their parent data sources and enable the developmental process to be in some way explicated to the reader, these three categories have been presented as three segregated sections. Where subsequent support was found within the texts of alternate data sources for the discourses developed, only reaffirmation has been sought through the identification of supporting sources, although where new discourses emerged and developed, these have naturally been explored in full.
5.2 Site Safety Signage

5.2.1 Process Summary

Prior to the commencement of the coding process, it became apparent that data had been collected that did not fit with the site signage categorisation. The field approach had been holistic, and therefore data had been gathered from site cabins and offices as well as from the worksites, and this included posters and documents from notice-boards within these facilities. Such documents did not satisfy the categorisation of site signage and therefore all data gathered from within such facilities was omitted from the data sample prior to coding. These omitted items can be seen within the Data Collection Record in Appendix D. Only signage located on the worksites and external access to and from the worksites has been included for analysis here.

The discursive coding of photographs which captured the site signage was undertaken within the NVIVO 8 database through several milestone passes of the data. These milestone passes themselves consisted of numerous revisits and returns to sources within the data set in the form of eddies and backflows in ‘mini-passes’, to ensure the rigorous and inclusive development and application of a discursive coding framework. The milestone data passes were applied to portions of the data in turn to enable constant comparison to be made of the both the data collected and the discursive coding frame applied. As this process was undertaken, NVIVO 8 clearly displayed the number of sources and references assigned to each code. This facilitated the application of the constant comparison method, providing reassurance that a number of sources were supporting the discursive coding and analytical framework applied to the data. It also enabled swift identification of variation within the established framework, and initiated the subsequent quest for further validation of these particular sources.

5.2.2 Signage Categorisation

Categories were identified within the signage during the coding process with relation to the physical form of the signs. These categories have subsequently been employed during the discourse analysis, as the physical nature of the sign has implications for its voice, in terms of its formality and the subject position of the author. This contextualisation therefore enabled associated discourses to be placed within a specific construction site reality, as
seen from a particular perspective. In order to ensure clarity for readers in their understanding of this analysis, these categories have been detailed within Table 5.1.

<table>
<thead>
<tr>
<th>Categorisation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Official-FORMAL</td>
<td>Professionally printed signage, requisitioned corporately, and issued to sites for use, such as standard entrance signage. Also includes formal corporate material printed for use on site.</td>
</tr>
<tr>
<td>Official-INFORMAL</td>
<td>Signage composed, produced and laminated in site offices by site management, can incorporate company branding and logos, but not a corporate issued document or sign. Can include safety signage necessitated by the progress of works on site, such as access signage.</td>
</tr>
<tr>
<td>STANDARD</td>
<td>Plasticised, professionally produced safety signs which meet common standards. For example running man fire exit signs or public warning signs at site entrances.</td>
</tr>
<tr>
<td>UNOFFICIAL-INFORMAL</td>
<td>Handwritten signage, ad-hoc, on or utilising materials to hand on the site.</td>
</tr>
</tbody>
</table>

*Table 5.1: Signage Genre Categories*

These subject positions were further enhanced by the use of branding, which added formality to the signs through the inclusion of corporate or safety programme logos. This branding supported the identification of the dominant subject positions within the signage, including main contractors, subcontractors or other companies working on the sites, and the voice of an anonymous authority, the ‘system’ or ‘management’ of the sites. Assumptions were also made within the signs of a ‘knowing subject’, able to comprehend or utilise the signs within the context of the sites. In such instances, notes have been added within the analysis to explain these terms for readers who do not have industry knowledge.
5.2.3 Findings from the Discourse Analysis

The analysis has been presented here through the main physical functions the signage was performing within the site environment, and the most prominent discourses of safety are revealed as they manifested within this data source. Examples for discussion have been selected due to their representativeness within the data as a whole, and variation has been demonstrated alongside consistency, in order to enable readers to follow the analytical process.

5.2.3.1 Hazards

The signage relating to hazards performed two distinct functions within the site environment; either it advised of an immediate hazard to the time and location of the audience, or it advised of a hazard that could be encountered in a time and place in the future of the audience.

Immediate Hazards
Both ES62 and DS24 had the same function, warning of the same immediate hazard, and initiated their interactions with their audiences through the same textual construction; ‘DANGER – DEEP EXCAVATION’. However, there was also variation in the two textual structures. DS24 provided standard imagery to support this succinct warning, and reproduced the European standard warning sign of an exclamation mark within a yellow triangle (EEC 1992) above the text, and the standard yellow colour, although faded by the elements, had been carried through behind the text. DS24 did not provide any indication of voice or authority behind its construction, and was passive in its interaction with its audience; it did not directly suggest any action to be taken because of this danger. Alternatively, ES62, despite its commencement with the same three word text, appended this with a statement of pastoral care, directed to the audience of the sign, and requested action in response. ES62 was also supported by a company logo to add authority to the statement, which implied that this pastoral concern was the concern of the company itself.

The location of both signs is on the perimeter barrier of the excavation, which confirmed the immediacy of the danger. However, this location also suggested that a primary function of the signs was making a physical connection for the audience; that a deep excavation was a potential hazard, that there was ‘DANGER’. The sign therefore justified
the physical presence of the barrier, and why the audience was on a certain side of it. The
signs were also performing a lesser function of the location identification of an excavation
on the site, which would likely have been apparent by ongoing works in the vicinity.
Therefore, these signs were in the majority concerned with the construction of danger
around a specific hazard within the site environment through both their texts and physical
location.

However, whilst ‘danger’ would suggest actual or potential exposure to risk or harm, signs
ES62 and DS24 constructed ‘DANGER’ on the physical manifestation of ‘safety’ put in place
to remove this exposure to harm. The pedestrian barriers to the excavation were a safety
measure, yet were labelled ‘DANGER’ by both signs. The fixed plywood cover to the hole
through the slab was also a safety measure and had rendered the hole safe, yet again was
labelled ‘DANGER’. These signs do not therefore construct the safety of the site; rather
they construct a discourse of danger around a manifestation of safety. This discourse of
‘safety as danger’ or was contextualised by safety management in practice, in part through
the very process of the construction of the discursive texts themselves, manifest in signage.

A variation in this construction of ‘DANGER’ was found in the text of the sign below:
The discourse of safety as ‘DANGER’ was further developed through FS27. However, in this instance the physical danger actually remained, as the construction practice to which it referred was still ongoing in action; ‘men working overhead’. The author of the sign, in this instance the company as indicated by the use of the company logo, sought to interact with the audience solely through this sign, describing workforce action, rather than a physical barrier.

Yet the same textual structure is used in FS27 as that used in ES62 and DS24 where the signs that are actually constructed on manifestations of safety; that of a warning and statement of hazard. This homogenisation of the discourses of ‘DANGER’ around circumstances that are significantly different in practice could result in complacency in situations such as FS27, and a desensitisation of the workforce. In FS27, safety has not actually been implemented through any physical segregation of the area, and the sign itself is actually performing a very different function to those of ES62 or DS24, although it employs an identical textual structure.

Variation to this construction within the hazards signage was the substitution of ‘Caution’ for ‘DANGER’.

Variation to this construction within the hazards signage was the substitution of ‘Caution’ for ‘DANGER’.

ES55
The two signs contained within ES55 again employed the standard constructions of the discourse of hazards, utilising the European standard warning sign and yellow background for the text of the sign (EEC 1992).

Both signs also advised ‘Caution’ above the textual statement of practice that necessitated their production. However, alternative to ‘DANGER’, the use of the word ‘Caution’, which has a more ambiguous existence between noun and verb, does seek some form of responsive action from the audience of the signs. Rather than a statement of fact, it is a call to action; to take care. Who is making this call remains anonymous in their authority, as no logo or company name is located on the signs, although assumptions are made about the audience and their level of understanding of these construction site practices. Indeed, even with an understanding of ‘hot works’, this activity can actually cover a wide range of practices with a wide range of different safety concerns associated.

Indeed, none of the ‘DANGER’ or ‘Caution’ signs actually explicited why these events or activities were hazardous within their texts. Nor did they incorporate any statements of desired action from the audience. Beyond the rather imprecise pastoral ‘extra care’ requested by ES62, the audience is left to determine what action should be taken as a consequence of the sign.

There were two distinct interactions found within the discourse of safety as danger, as developed through the signage of hazards. There was the construction of hazards around safety in practice, and the construction of hazards around construction in practice. The latter created a reality of inherent hazards which were either tolerated or accepted as inevitable within safety management, whilst the former created hazards where they were actually neutralised through safety management practice. Within these two realities, the text was also less than effusive; there was a lack of audience information or guidance within the discourses as to the consequences of these hazards, which reduced the functional impact of the signage. Neither the ‘DANGER’ nor ‘Caution’ signs, operating within either reality, actually constructed safety within their discourses.

An alternative construction within the hazard signage was the use of standard mandatory images to construct the presence of a hazard as shown below:
Both FS29 employed standard European mandatory sign structure and blue colour to advise that PPE must be worn, in this instance ear protection. The official meaning of this standard logo was explicated in text below the image in FS29, which also specified a location for implementation, although this was not itself definitive in terms of scope for the relevance of the sign. The hazard was constructed through necessary employment of PPE.

In contrast to the previously identified discourse of ‘safety as danger’, within FS29 the associations of safety constructed the danger and therefore an alternative discourse of ‘safety as PPE’ emerged. Although similarities were apparent, such as a reluctance to impart information; whilst the discourses of ‘safety as danger’ did not advise any audience action for self-protection or mitigation of the hazard, FS29, in its construction of the hazard discourse around these mitigating actions neglected to inform the origin or nature of the hazard itself. Instead, both FS29 constructed the hazard through safety, associated with the familiar manifestation in PPE, rather than through explication of a present danger.

Indeed FS29 operated in a reality where the audience did not need to be made aware of the hazards and made their own decisions for their own behaviours as previously examined through ES55 or DS24; rather the anonymous authority demands action from the audience as it deems necessary through the signage. These two discursive approaches to
danger/safety made very different demands on their audiences, and created inconsistency in the discourse of hazards in terms of their construction as well as in the interaction they created with their audience.

A lack of clarity and ambiguity in the constructions of the hazards and necessary audience action was in fact prevalent within the discourses of hazards, although highly variable in its manifestations. This may have been connected to the fact that all the signs with reference to immediate hazards on the sites were informal; they had been created in the site office by site teams for employment in specific locations and at specific instances. Although consistent in authority of the voice, this resulted in differences of approach and assumptions of audience awareness and knowledge that possibly resulted in this variation. A further consideration of the practical construction of the signs was also related to this informal construction; the site teams were able to construct precisely the texts they desired in each instance and for each location. There were no limitations in terms of text, cost or standardisation which would have manifested in the use of mass-produced signage.

The discourses of ‘safety as danger’ and ‘safety as PPE’ can be seen as having constructed several different versions of the reality of safety on sites; there is the reality in which hazards have been resolved yet are still articulated as danger, the reality in which hazards are accepted and considered an inherent part of the site and there is the reality where hazards remain hidden and safety is articulated through the command driven discourse of PPE. These different realities make different assumptions of their participative audiences in terms of knowledge and interaction, and although inconsistent amongst themselves, these realities are all consistently affected by the ambiguities as noted above.

**Future Hazards**

Hazard signage was also found in contexts remote from the time and physical location of the hazards to which they referred. Examples of this can be seen below:
Through their use of the standard warning sign triangle, yellow identification colour (EEC 1992) and text, both DS41 and ES16 were constructing the hazard rather than safety, or safety management of the hazard, through the discourse of ‘safety as danger’.

DS41 was located at a site entrance turnstile, and was a component part of a larger sign incorporating many safety related texts. The hazard sign advised the audience of the presence of a hazard within the site boundary, although it did not construct action on the part of this audience as a consequence of this hazard directly. Rather, the action was articulated in a contextually associated text, albeit not adjacent, which referred to walking routes, the safety practice established to avoid this particular hazard.

ES16 also constructed the same hazard in practice, and also specified a location for the text of the sign. The use of ‘WARNING’ below the standard logo, identified the sign and its function to inform of the presence of danger, above the textual construction of the hazard itself. This alternative construction to ‘DANGER’ or ‘Caution’ was active within its own construction, rather than passive or active only in seeking action from its audience. Rather the use of ‘WARNING’ actively announced the hazard to the audience, for which it did not demand response, and the sign was passive once it had performed its initial action.

Future hazards were also constructed on a more informal basis by the site teams themselves. For example through the creation and maintenance of daily hazard identifications such as those used in the daily activity briefing and recorded as shown below:
ES13

ES13 is a daily activity briefing board, located alongside the walkway to site. This board was intended for completion each day by its gang, and ‘Today’s Hazards and Precautions’ were handwritten in the spaces provided. This board was out of date by four weeks. Five different hazards were articulated within the spaces provided, although hazards one and two were identical in content and textual construction. Due to the lack of clarity in the above image, these hazards are repeated here:

1. Area open to pedestrians
2. Leg of tables falling out
3. Area open to pedestrians
4. Wagon movement
5. Work area barred (sic) off

Through these texts, different versions of hazards were constructed. 1/3 and 4 did not actually construct hazards within themselves; rather the audience were left to continue the discourse to ascertain potential dangers or repercussions. Neither did 5 construct a hazard rather it constructed safety through reporting the traditional practice of segregating the working area. All of these constructions were also passive; they were not constructing
action themselves nor seeking response from their audience. Only 2 actually constructed a hazard, and this was very specific to the works being undertaken and assumed full audience knowledge of the specific details in terms of repercussions and avoidance (researcher’s note: tables are large structures used in the construction of in-situ concrete floor slabs, they are lifted by crane and swung up level by level as buildings grow. There is a risk that once the tables are lowered from the deck they have just formed, through adjustment of the legs, that this joint may become loose if not correctly checked, and so when lifted by the crane the leg could fall from the table to the ground below).

These audience assumptions were unsurprising given the construction of the discourses, which are written by and for a work team who were likely to have understanding and familiarity with the terms and practices contained within them. However, these texts, although grouped under the heading of hazards, were not in the majority actually concerned with hazards or danger, nor were they particularly concerned with constructions of safety; rather they were operating in a reality where much of the discourse of hazards, danger and safety was left unwritten.

Inherent Danger?

To conclude this examination of the hazard signage, a highly prominent signage display was examined, that found on the front gates of large construction sites, as illustrated in ES73 below:

This sign employs standard protocols to construct a warning, and through its discourse constructs a reality where ‘DANGER’ is inherent to the very existence of the construction site. The construction of an all-encompassing hazard, present simply due to the existence
of the site is itself not supportive of constructions of safety. Although this sign, associated contextually as it is, is directed at an unauthorised audience or the general public, it is still observed and noted by everyone who passes through the site gates as well as those who remain on the outside. Creating a reality where ‘DANGER’ is inherent to the site itself will inevitably challenge any reality of safety constructed within this same site environment.

5.2.3.2 PPE

The discourse of ‘safety as PPE’ emerged from within the data of hazards, where the safety signage constructed hazards through the PPE needed to mitigate or eliminate them. This discourse was supplemented and developed by signs that were themselves directly associated with PPE.

The most prominent discourses of PPE were those found at the site entrances, with the function of ensuring compliance with the basic site safety requirements, through the stimulation of immediate action from their audience. An example can be seen in DS16 below:

This sign commanded compliance with the safety requirements of site PPE through the use of bold text and red writing, enhanced by the use of the company logo on the sign and its official-formal construction to further add authority to the discourse. No allowance was made for non-compliance and no punishments were located within the discourse itself.

By numerically listing and highlighting the items of PPE required, this sign challenged its audience to comply through a variety of interactive approaches and verbal, numerical or
visual codes, as the text was further supported by standard imagery for the individual elements within the blue circles of mandatory compliance below it. The sign also discursively constructed a boundary for the employment of the PPE on the site, reinforced by the physical presence of the sign itself. Compliance with the sign was bound up in the action of the audience to wear the PPE in order to pass this constructed boundary. DS16 also constructed a future reality where the listed PPE may not satisfy requirements. The employment of ‘as a minimum’ within the discourse indicated the potential for future situations where more PPE may be required, however, this alternative reality was not itself constructed in detail.

The discourse of safety as PPE developed beyond that associated with specific and localised hazards, to encompass a far broader field. This discourse has itself been employed by management at the gates of the sites in the construction of location specific, minimum safety standards.

An alternative construction of this same discursive function can be seen in ES06 below:
ES06 combined the texts of PPE with texts of other safety management functions such as access and training. However, in variation to the texts of DS16 which directly detailed the PPE to be worn, ES06 only advised the audience that they must be ‘equipped’ before they go onto site. This variation sought a different action from the audience of the sign through this alternative linguistic structure, and in fact did not construct a site environment where the wearing of PPE is a compulsory requirement, although it did provide a boundary demarcation for this action. In referring to ‘Protection clothing and equipment’, ES06 also constructed an alternative to the familiar interpretive repertoire of PPE. ES06 did incorporate the statement ‘No PPE – No Work!’ which created a situation where PPE is required for work, but as this was reliant on the previous constructions of PPE within the text; possession rather than deportment of PPE could be deemed necessary for compliance. The earlier boundary demarcation of effectiveness also indicated that this statement was performing a restrictive function in terms of requirements for access, rather than establishing a disciplinary process for the lack of compliance once work has commenced. As found in DS16, there was no provision or acceptance of non-compliance once on the site within the discourse itself.

However within DS16, safety itself was directly constructed through text with safety positioned as a descriptive construct to the artefacts of PPE, which created a direct association between the items and their safety function within the site context. ES06 only constructed safety through any audience knowledge of PPE as a safety artefact, as it was not discursively positioned as such, although the incorporation of the discourse of induction and association of the safety programme logo did provide some level of association through proximity.

These patterns within the data constructed both consistency and variation within the discourse of ‘safety as PPE’. The linguistic ambiguity within the signs constructed realities potentially at odds with the overall demands of the use of PPE in practice and the understanding of the audience. However, despite the potential flux within the discourse of safety as PPE in terms of its own definitive parameters, this discourse was reaffirmed by the repeated construction of PPE as a ‘safety’ artefact with the texts of the sites.

Within both of the signs, no provision was made for non-compliance in terms of discipline or punishment. The lack of textual reference to punishment for non-compliance within the official-formal signage indicated they were constructed to operate within a reality where
everyone complied with PPE requirements. This was reinforced by the unofficial-informal
creation of AS29 below:

![Image of AS29 sign]

AS29

The construction of AS29 placed PPE non-compliance within the reality of the site
management, rather than corporate management. Although the text that heads the sign
was an amalgamation of that found within the official-formal constructions, the highly
informal construction of AS29, marker pen on A4 paper taped to the wall, including a
misspelling which has been corrected in another pen, suggested that PPE compliance may
even be a matter for the lower levels of site management, such as supervisors and
foremen. The physical nature of the sign suggests that it was written by people without
easy access to a computer and laminator, as in the majority of the official-informal signs,
indicating those whose time is more spent on site than in the office.

The discursive structure also provided information as to the subject position of the author.
AS29 was not seeking authority for its own voice which was anonymous; rather it made
reference to the management company of the site as a third party, and positioned itself as
passing on a message from this authority rather than constructing the message itself.
Again, this suggested an author that did not closely associate themself with the
management control of the site and the setting of rules, rather someone who implemented
the orders of others. The audience was not specified within the text; however the physical location of the sign above the clocking-in/out machine within the site entrance cabin meant that in practice all site operatives had to physically position themselves in front of the sign twice daily. It was inherently assumed that the audience is aware of what PPE constitutes in this situation, no clarification or visual support was provided, as was included within the formal constructions.

Within the text, only through association by proximity that the wearing of PPE becomes one of ‘the rules’, it was not specifically identified as such. Safety itself was not constructed anywhere within AS29, and the wearing of PPE was only bound up with the penalties for non-compliance rather than any safety benefits.

This sign connected PPE to the discourse of ‘safety as enforcement’. The punishment aspect of enforcement has been passed down along the management hierarchical chain to a lower level. This discourse segregates punishment from the senior management role, which through the discourse of safety as PPE found here, operates in a reality where, despite the potential for confusion and variation, all comply with safety on sites.

5.2.3.3 Access

Access signage was the most common type of signage within the data collected, and two prominent types could be identified. The signs either sought to direct their audiences through the establishment of walking routes or alternatively prohibit access to certain areas of the sites.

Walking Routes

Directional signage formed the majority of the walking route signage, and was mainly constructed through the use of simple text and a directional arrow. This raised difficulties in the identification and isolation of the intended audience, which was not decipherable from the field notes or sign positions within the site context. In addition, the commonality of the signs, which employed repeated use of standard iconography with minimal variations in texts, also hindered a discursive approach to the data. Two examples have been illustrated below:
Whilst the employment of the signs within a wider safety management process could be established, the content and construction was considered to be that of the locutionary speech act; they were simply imparting information. Indeed, this could be further developed to query the subject positions of both author and audience within such signs, and issues of ‘who is saying what to whom?’, which may itself have further repercussions in the response to the signage in practice.

However, although the majority of the access signage was clearly associated with the discourses of the site, site management and site signage, it did not contribute to the discourse of safety, despite its use within the site environment. No discourse of safe access or indeed safety as access could be developed from within this type of data, however within alternative access signage discourses of safety could be identified.

Within the walking route signage, signs were identified which were concerned with the management of the walking routes and safe access. Indeed, managerial care of the workforce was manifest through the negative, through signage which addressed unsafe behaviours and violations:
These two signs provided contrasting texts of violations of management access provisions. ES08 was an official-formal sign at the entrance to a site, whilst AS19 was an official-informal sign located within a site area.

ES08 asked its audience to ‘choose ... to work safely ... not to enter segregated areas ... not to enter lifting zones ... not to jump barriers’. In making this statement, this sign was clearly operating within a reality where people performed these behaviours, acted unsafely and specifically violated the access provisions. This sign firstly employed a discourse of ‘safety as engagement’, and sought to develop safe practice through appeal to the individual’s autonomy, although this was subsequently juxtaposed with the contradictory discourse of ‘safety as enforcement’, with prohibitive rules located within the text.

AS19 was also operating in a reality where people had violated the access provisions, although its function was to manage a specific problem with relation to the walking route. As stated ‘Barriers and yellow walkways are their (sic) for your safety and protection and should not be moved ... anyone found to be moving barriers or walkways will be subject to .... disciplinary procedures! ... if you require barriers or walkways to be moved contact block managers first!’ This text was very much bound up in addressing a specific previous action by others and establishing future control. The need to construct and display such signs by site management clearly indicated past non-compliance with site rules, and the threat of ‘...disciplinary procedures!’ implied the need to reinforce compliance and addressed the audience in straightforward terms of punishment avoidance. Although within the text there was also the acceptance that for retribution to occur, the perpetrator must be ‘ ... found to be ... ’, which indicated the practical level of control managers have over site space. The physical length and detail of the sign, where arguably the information could have been far more concise, implied that this was an on-going battle on which there had been much previous discussion, which had resulted in the need for this convoluted discourse of requirements and punishments. Clearly this sign was operating from within the discourse of ‘safety as enforcement’, drawing on rules, violation and punishment to undertake the safety management function.

AS19 constructed its text from the voice of the block management, and used company disciplinary procedures as the threat for non-compliance. Defining these as the company’s, and not the block management’s, methods of punishment constructed a hierarchy within the overall site management, and positioned block managers closer to operatives, and likely offenders, than the senior or project management. This use of a ‘local’ management
voice supported the likely longevity of this issue within this area of the site, and constructed a reality where the block management were themselves under criticism from more senior management for their own non-compliance in the provision of continuous or safe walking routes. This construction was reinforced by the final text of the sign, which did not prohibit the moving of barriers, and rather implored the audience to contact the block management first. Here, the discourse of safety as engagement was again positioned alongside that of safety as enforcement, appealing to individuals to participate in the safety management of their own volition.

When compared to ES08, the discourse of AS19 appeared harsh in its approach to managing the violating behaviours. Where AS19 made statements and issued threats, ES08 asked its audience to choose their behaviour to comply with the site access strategy, with no threat of punishment or repercussions, and drew on cognitive theories of volition to stimulate avoidance of these violations. The formal construction and company voice, supported by the safety programme logo, gave a level of authority to ES08, as well as implications that this was a safety issue through the first text of the sign, although this was again through association, rather than any direct construction of safety within the texts.

The signage seeking to manage the walking routes did not directly construct safety itself and rather drew on discourses of ‘safety as engagement’ and ‘safety as enforcement’. Engagement was sought through the construction of the walking route as there for the audience’s safety, although this also developed associations with the discourses of enforcement, through violation and punishment, and engagement. The constructed reality was one in which walking routes and barriers were constructed by management as a safety asset, but in practice were positioned by others as a hindrance, and were consequently violated on a sufficiently regular basis to require both official-formal and official-informal signage addressing such practices.

**Prohibitive Access**

This discourse of ‘safety as enforcement’ was further developed through the analysis of signage which was directly concerned with prohibition of access to certain areas of sites for a variety of reasons. These signs were naturally associated with authorisation, ownership and management of restricted areas, although these attributes were often only inferred rather than expressly articulated.
For example, DS39 identified a ‘construction exclusion zone’, reinforced by the standard prohibitive logo, albeit empty of content, and concluded with the text ‘keep out’. The
function of this sign was clearly restricting access and the establishment of the area to which this exclusion applies, yet there was no identifiable voice laying claim to the area or managing access to it. The audience was universal, and told to keep out with no further justification, explanation, or hint of who to direct any required access query to.

The function of FS30 was also to restrict access, yet there were variations in genre when compared to DS39. The voice behind FS30 was clearly articulated through both a company logo and a safety programme logo, although the inclusion of the latter implied an inherent safety reason for the restriction of access only by association. This voice established ownership of the restricted area and its management by the company. The sign also addressed two different audiences; those who were authorised personnel and can breach the sign, and those who were not. However, this distinction is assumed to be inherently known by the audience, as it is not clarified within the text.

Consistent with the discourse of DS39, FS30 did not articulate a specific reason or justification for this restriction within the text, relying instead on the formal voices behind the sign to provide sufficient weight to the prohibition for it to remain unquestioned. However some signage did employ constructions of reasoning to justify restrictions of access, an example of which can be seen below.

![Image of ES38 sign]

*ES38*

The function of ES38 above was again to restrict access. This was realised through the creation of an ‘EXCLUSION ZONE’ within the discourse, further reiterated by a standard no-
entry sign and clear ‘NO ENTRY’. The use of the company logo constructed ownership and management of this zone within the text, the creation of which was, in variation to DS39 and FS30, justified by explanation. That a construction activity was ‘... in progress’ adds a dimension of action to the discourse, yet again did not articulate a safety reason or justification for the exclusion, rather this justification was given through the identification of a work practice alone.

Although rare within the site environment, there were instances of unofficial-informal signage being employed. The informal text shown in ES36 below sought to restrict access through the employment of a physical plywood barrier scrawled upon with marker pen. However, whilst no voice was present, and no anonymous authority implied through any formal sign construction, this discourse was given some credence by its context. The official barrier and hazard tape construction behind the plywood on which the sign was written implied ongoing works and some formalisation of activity that has dictated the need for the sign. This text may not actually have been as unofficial as first sight would imply, and the variation in its construction may simply have been a manifestation of the time pressures and production rate of the site context.

ES36

Within the texts of the prohibitive signs the dominant discourse was that of ‘safety as enforcement’, where safety was managed through prohibition and potential boundaries of
violation, the understanding of safety within this association coming from the safety programme logos or knowledge of work practices.

5.2.3.4 The Discourse of Safety

The lack of direct constructions of safety itself within the majority of the signage undertaking prominent safety management roles in practice indicated the need for further examination of the data. An approach was therefore made which explored the signs that actually constructed safety within their texts.

Informal Constructions of Safety

One informal construction of safety has already been examined within this analysis related to the management of safe walking routes on site. The official-informal AS19, discussed in detail within Section 5.2.3.1, sought to manage walking routes through justification of their presence, that they were ‘... there for your safety and protection ...’ This sign was bound up in the discourse of enforcement, and constructed safety in juxtaposition to the threat of punishment.

This discourse was also the concern of the only other construction of safety within the text of an informal sign found within the data, the official-informal AS17 shown below:

![AS17 Signage Image]

AS17
Within AS17, safety was actually constructed in the negative, as ‘working unsafely’ and as a component of the ‘… health and safety rules …’, amongst the four listed behaviours that will garner punishment. As in AS19, the text of AS17 was bound up in addressing previous action by others and establishing future control. The need to construct and display such signs by the site management indicates a reality where compliance with safety rules and safe behaviours was not necessarily the case, and this was not limited to operatives as the discursive clarification of the audience as ‘… all operatives and management’ clearly states. There is also an acceptance that for retribution to occur, the perpetrator must be ‘… found to be …’, an indicator of the practical level of control management have over the site space. This sign further developed the discourse of safety as enforcement operating within a reality of violations and necessary punishments. However, punishment is contextualised within the physical reality of the sites, with the acceptance that the perpetrator must be ‘found’ for punishment to be meted out.

In variation to the text of AS19, AS17 did not have a distinctive voice. The main contractor for the site was only referred to as a creator of safety rules in the third person, and not the voice of this particular discourse. In keeping with the discourse of safety as punishment, this disassociated the author of the sign from those who make the ‘rules’. A further variation was the lack of recourse to the discourse of safety as engagement which was found alongside enforcement within AS19; AS17 had no desire to seek out and engage with individuals with regard to safety, rather a more authoritarian, almost dictatorial aspect is developed here within the discourse of enforcement.

A shared structure of the texts on the two signs was the physical length and detail; the information could have been far more concise. This implied that both addressed an ongoing battle on which there had been much previous discussion as did the inclusion of a set timescale in which compliance was required, which resulted in the need for this convoluted discourse of requirements and punishments. Both signs also assumed no special effort to communicate clearly with their readership, and approach the human subjectivity of their readers in straightforward terms of punishment avoidance.

These official-informal constructions of safety were bound up with the discourse of ‘safety as enforcement’, with discipline and punishment for violations of safety practices, and operated in a reality of non-compliance, rather than constructing safety in a positive way. Despite the many safety management functions performed through the official-informal site signage as a whole, safety itself was not championed amongst them. This lack of
attention to safety by site management within the safety signage could indicate that safety is more frequently constructed and implemented through verbal or documentary modes on sites, or alternatively that the authors of safety signage were totally bound up in management practice and knowledge assumptions and therefore did not consider safety to be a necessary discursive inclusion. This latter assumption constructed a site environment which did not support the promotion or development of safety; rather it enabled the perpetuation of silence and non-attendance to safety except through violation. Consequently through the official-informal site signage, the dominant discourse is one of ‘safety as enforcement’, where safety operates in a reality of rules and punishments, rather than safe access, a safe workplace and safe working practices.

**Formal Constructions of Safety**

Safety was addressed more frequently within the formal site signage than the informal, and was constructed within the official-formal signs performing both PPE and access functions, which were examined in detail in Sections 5.2.3.2 and 5.2.3.3 respectively.

The most prominent pattern in terms of direct construction of safety within the signage was in that found at site entrances. An example of this can be seen in ES70 below. This sign grouped the safety discourses of enforcement, PPE and danger together under the construction of ‘✓ SITE SAFETY HERE’, segregated through borders and colours yet collated through a uniform background to the sign.
ES70 groups together the discourses that contribute to ‘✓ SITE SAFETY HERE’, its inherent tick indicating that compliance and correctness with these associated signs is required to meet the safety standards. In variance to DS45, no reference is made to legislation within the sign, nor is there any overall voice or authority provided; there is no logo or company name within the sign, nor any adjacent on the hoarding to which it was affixed. The discourses contained within this sign have been unpacked elsewhere.

ES70 formally constructed safety at the entrance to the sites. It was therefore unsurprising that a key function of safety construction in this location was to ensure management of visitors and prevent unauthorised access of people and children onto the site, rather than the people who are actually needed there for work. The audience in terms of the workforce was only addressed through constructions of PPE, and, in DS45, through the need for compliance with legislation and the need to follow the site rules and procedures as set out through signage. Where safety was addressed through formal constructions of site signage, or indeed specifically made reference to within the signage texts, it was directed not to the workers on the sites, but to visitors and the general public.

Safety Slogans and Branding

Found within both the official-formal and official-informal safety signage was the use of safety programme branding through the use of logos to construct an authoritative voice of safety behind the signage. Whereas previously the use of logos would have been limited to formal and professionally printed signs, computer software now permits the easy inclusion of such images within any document, and therefore explains their use within both formal and informal sign constructions. For reasons of anonymity, the safety programme logos were not examined here, although their presence has been made reference to as appropriate.

However, associated with these safety branding logos was the use of associated safety ‘slogans’, although these were only found within the official-formal signage. This indicated that such slogans are solely the tools of corporate management and had not yet been adopted alongside the logos for more common use within the site environment on a more informal level.

The safety slogans all directly constructed safety, and therefore contribute to the discourse of safety on sites. Although the slogans were unique, as they were in essence marketing and advertising tools for the safety management or safety programme of the site, there
was found to be regularity in their construction and discursive structures. An example of such a slogan is shown below in FS11:

FS11 (detail)

FS11 constructed action alongside safety; the slogan was in fact a ‘call to action’. Through a direct command, it demanded a response from its audience in their own constructions of safety on sites. Despite the function of the slogan to link safety to the personal aspect of the workforce, the discursive structure of this sign actually constructed a reality where safety was not personal at the present moment in time, and was not the concern of the individual.

An alternative slogan construction can be found in ES06:

ES06 (detail)
Although hard to distinguish due to the letter and background colour, the slogan of ES06, ‘LET’S ALL GET HOME SAFELY. EVERY DAY.’, was not as militant in its address to the audience as the previous safety slogans, and indeed did not seek any direct response in terms of action. Rather this slogan established a team of the workforce through the use of ‘LET’S’, before relating this to the personal element ‘HOME’. These elements contributed to the overall discursive structure of the slogan, which constructed safety in terms of a team goal with an associated, infinite timescale. However, this construction inevitably also suggested the contrary scenario, a reality where some people did not get home safely, although this seemed to be a conscious element of the slogan, as this further reinforced the personal nature of the discourse and its overall function. This was in contrast to FS11 where the alternative reality constructed through the discourse was not as harsh or immediately relevant to the audiences’ own realities. ES06 therefore constructed a reality where safety was critical to everyday life and, although there was no direct discursive demand for action from the audience as seen in the other slogans, ES06 sought to perform this function through the creation of the worst possible alternative to any lack of attention to, or change in construction of, safety from its audience.

Overall, the slogans of the construction sites, although all official-formal in construction, contained two disparate approaches in the delivery of their message. Most common was the direct challenge to the audience by the company or the safety management programme, to think or act in a way to alter their current constructions of safety on sites. The variant to this pattern was found in ES06, which was more sophisticated in its approach, and relied on empathy and emotion to deliver its unspoken request for action from the audience. Despite these two approaches, the overall function and discourse of ‘safety as slogans’ was consistent; to alter the audience’s own personal constructions of safety on sites, and consequently realise improvements in site safety performance.

5.2.4 Summary: Safety as Constructed by Signage

Despite the data being that of site safety signage, the actual construction of safety within the text of the signs was most prominent through its omission. Although the signage was explored through its most common safety management functions within specific contexts, such as safe access, notification of hazards and PPE management, it did not generally construct safety as safe access, a safe workplace and safe working practices.
Rather, discourses emerged and developed associated with the practices of safety on sites. The discourse of safety as danger developed through the access and hazard safety signage which both constructed hazards around safety in practice, as well as hazards around construction in practice. Safety as PPE was also evident in the hazard signage and also that directly associated with PPE itself, reaffirmed by the identification of the PPE artefacts as ‘safety’ within adjacent discursive constructs. Safety as enforcement was also a prominent discourse, associated with rules and prohibition, violation and subsequent punishment, and indeed further developed when focus was placed on the signage that directly addressed safety on sites. This discourse was also found paired with a ‘sister’ discourse, that of safety as engagement, which sought to ‘sweeten’ the relationship between text author and recipient, and appeal to autonomous individuals to comply with the requirements of the sign, which were themselves often founded on the discourse of safety as enforcement.

The discourses of safety as slogans did seek an alternative approach to this regulated construction of safety, by challenging their audience to challenge in turn their own personal constructions of safety. In practice this approach may have lacked reciprocal action; however these slogans did evidence and create an environment where safety was constructed beyond enforcement and rules and regulations, albeit by the hand of the professional slogan writer rather than the construction manager.
5.3 Site Safety Talk

5.3.1 Process Summary

All conversations undertaken on the sites were digitally recorded and the audio files transferred to computer. These files were subsequently transcribed using Jefferson (2004) notation to ensure all features of the talk were included in the transcripts. These transcripts employed the traditional protocol of ‘I:’ for interviewer and ‘R:’ for respondent, in order to ensure anonymity of the subjects. This protocol was also followed to enable easy identification of the researcher within the transcripts, using nomenclature familiar to the research community.

The transcriptions were then uploaded to NVIVO 8 and a database created to facilitate fully inclusive coding of the data. The first passes coded the broad constructions around safety that had developed through the conversations into patterns around theme. Multiple repeated passes further developed the coding framework to establish the key themes and representations of safety found within the data. As this process was undertaken, NVIVO 8 clearly displayed the number of sources and references assigned to each code. This again enabled application of the constant comparison method, providing reassurance that a number of sources were supporting the coding framework. Two final passes were made of the data within the confines of the established coding framework to ensure all instances were captured.

The talk around safety was collected at various stages in the development of the study. All conversations were undertaken without a script or pre-determined questions, as set out in Section 3.5, but due to the association with the developing focus of the study, some conversations led more to discussions of safety training, whilst others were more abstract in their approach to safety itself. However, during the coding process, the research context in which the conversations had taken place was not found to be intrusive nor indeed particularly identifiable. All the conversations were participant led, which resulted in significant variety in the patterns of the talk around safety, rather than a limited focus on any specific aspects or consequences of safety on sites. Inclusion of the researcher’s voice within the conversations also ensured full explication of the interaction as it occurred, providing a measure of validity in terms of the development of the themes.
Despite its prevalent use within the construction site arena, ‘safety’ is itself an abstract term. In addition to the state of being safe, which itself is the state of freedom from danger or risk, safety also associates with a large variety of other associated meanings and personal interpretations. This variability in definition, and consequently construction, was highly evident in the talk.

The coding process initially developed around the key themes found within the talk which were employed in various ways to construct safety on sites. Further passes of the data enabled a more fine grain exploration of these patterns, regularities and dissonance. This resulted in further examination of the discourses around safety, and what ‘safety’ means to those on sites, as well as the positioning of this concept in context, how safe is safe on sites?

Examples from the transcripts have been used to illustrate the analysis were appropriate, to explicate the processes undertaken and the findings drawn. The line numbers from the original full transcripts have been retained within these examples, to be used as points of reference within the analysis. These examples have been drawn from the coding process itself, enabled by the use of NVIVO 8, and were therefore considered to be representative by both researcher identification and selection through the coding framework itself.

5.3.2 Findings from the Discourse Analysis

This analysis has been presented through the examination and development of the discourses of safety found within the data. The presentation of this analysis does not sequentially reflect the developmental analysis undertaken during the coding process; rather it has been presented in order to assist the understanding of the reader, introducing the discursive themes and patterns as they further inform each other, building on those already identified and explored through the analysis of the signage data.

5.3.2.1 What (or Rather How) is Safety?

The definition of safety is itself somewhat abstract. Therefore, rather than try to answer the question ‘what is safety?’ for those who work on sites, an initial deductive decision was made to explore the coded data through the question ‘how is safety?’ This examination sought to establish the patterns and variations in the actual constructions of safety within the talk of the construction site.
Within DC02, a subcontractor’s supervisor discussed safety:

Source DC02

Within this extract, safety was constructed through the characteristic of its importance, and this importance was given justification through the associations of family, personal injury and complacency. These associations provided a linked chain of events, constructed in reverse order of cause and effect within the discourse, which ultimately lead to the construction of safety as an independent active entity. The talk created and distinguished the identity of ‘safety’ from the identity of the speaker, rather than positioning safety as something inherent within the individuals of the site or the environment itself; and constructed an abstract behemoth of safety. The talk also established safety as an active participant in the site environment, with a ‘role to play’. This created further distinction in terms of the responsibilities of safety and the responsibilities of individuals in terms of action, and the speaker ultimately constructed safety as the key participant in its own manifestation.

In contrast, another subcontractor’s foreman constructed safety as inherently linked to personal ownership and mutual practice in EC01 below:

Source EC01

In contrast, another subcontractor’s foreman constructed safety as inherently linked to personal ownership and mutual practice in EC01 below:
EC01 initially constructed safety as the abstract ‘everything’. However, this abstraction, although not justified or further explored within itself, was then immediately placed within a context. In contrast to DC02, EC01 positioned safety as inherently bound up with people, including the speaker himself. This relationship was further emphasised by the example of practice subsequently employed in the talk, which constructed safety as part of the interaction of people in practice. The ‘everything’ of safety was represented as a team practice, and the speaker positioned his own identity within this team, and as an active participant within the team practice of site work. The discourse ultimately directed this team practice towards progression and action. Through the establishment of the negative alternative, ‘not gonna be getting anywhere’, the speaker also constructed the alternative, ‘getting somewhere’, as the ultimate action or goal of safety within this team context.

Whilst both ED01 with DC02 constructed safety as abstract, both ‘important’ and ‘everything’, the subsequent dissonant development of these constructions lead to the suggestion of two identifiable representations of safety. Where DC02 constructed safety as distinct, separate from the individual in both entity and responsibility, the safety of EC01 was bound up with people and practice in terms of their own actions and responsibilities. These contrasting constructions of safety served to illustrate the abstract nature of safety itself, and indicated the very personal nature of the associations and interpretations that ultimately inform interactions and responses to safety within the construction site context.
The potential for interaction between these two representational constructs of safety was illustrated by FC02, through the voice of a main contractor’s site manager:

Source FC02

20. R: Its-its very kind of (.) in your ↑ face from-from-from the word-
21. word go (0.4) as soon as you start in construction. the first
22. thing you (0.2) the word you hear a-most is-is safety (.) and
23. you go through the whole .hhh induction ↓process (0.2) and the
24. kind of (0.4) [like and the)n-and ↑ then you get the health and-
25. I: [is that what]
26. R: = safety agenda first before you get [(0.4)] anything to do-
27. I: [right]
28. R: =with-with Construction if you like .hhhh

As with DC02, FC02 initially constructed safety as a separate physical entity, through the metaphor of safety getting ‘in your face’. However, this entity was subsequently abstracted within the discourse to the status of a word; ‘safety’ converted back to its common name within the site context. Yet safety was also constructed here as a process, comprising the elements of practice of ‘induction’ and ‘agenda’ to which the speaker constructed his own identity as the passive recipient of safety through an active process, although with no personal interaction or participation as was articulated in EC01.

Despite the variation within the constructions of safety found within the talk of FC02, there was regularity between all three of these constructions in terms of place and time. The timescale positioned safety in pre-construction; the process was discursively positioned prior to any construction work, and indeed the associated practices were those of a preparatory nature, rather than the production nature of the site itself. There was no extension of safety to production practices within the discourse, and safety in this instance was constructed as a precursor to the construction works itself rather than an inherent part of construction processes.

These three representations of the ‘how of safety’ served to illuminate its highly variable nature which reflected the abstract nature of the linguistic term itself. From the above
analysis, it is suggested that safety, whilst constructed as both inherent in personal activity or alternatively as distinct from personal responsibility, ownership or action, was ultimately bound up within the discourse of ‘safety as practice’. This discourse of safety as a part of mutual or individual practice was able to incorporate the extensive variations with the individual’s constructions of safety, yet maintain contextualisation within the construction site environment. Safety was frequently bound up in the practices of the site itself and there was consequently variation in terms of these constructions, in part through variation in the associated practices themselves. From this encompassing position, the discourse of safety as practice also developed associations with other discursive constructions of safety that had previously been identified within the signage data, themselves also associated with practice. The three most prominent of these were safety as PPE, safety as enforcement and safety as danger. However, other discursive elements, most notably the ‘but… of safety’, its negative association with practice, were also identified and their contribution to the discourse of safety as practice explored.

5.3.2.2 Safety as PPE

The discourse of ‘safety as PPE’ was a prominent representation within the data through various constructions of safety around this common practice, or rather artefact, of the construction site. Either invoked as a construction of safety itself, or employed as an active participant of safety in practice, the prominence of PPE within a variety of contexts suggested further exploration of this discourse within the data was necessary.

Safety as PPE was constructed as an inherent part of safety in practice itself within the talk of a subcontractor’s site foreman in BC03 below:

Source BC03

189. R: the other hand some people have now—you know will work safely
190. all the time. (0.8) Not saying that they won’t take the odd
191. risk with (.). the glasses and things like that but (0.8)
192. I: yeah that’s a ("slightly different")

Here, the speaker incorporated the construction of safety as PPE as an inherent part of safety in practice, more specifically an inherent part of the construction of non-safety in practice, safety as PPE providing the most convenient discourse within the speaker’s
repertoire. However, this violation of safety as PPE was positioned within the sphere of people who did conform to safety in practice. Safety as PPE was constructed as a minor infringement, the ‘odd risk’ within the overall behaviours of ‘work safely’. This minor status associated with the discourse of safety as PPE was found elsewhere within the talk. Safety as PPE was prioritised within the repertoires surrounding safety, yet it also bound up with the larger construct of safety in practice and attributed status accordingly. However it was rarely positioned as a prominent element of practice, rather it was positioned as an indicator and convenient example of safety.

Within source EC03, a subcontractor’s site supervisor, safety was again initially constructed through the discourse of safety as PPE:

Source EC03

103. I: would you feel comfortable talking
102. to other people on site maybe that you didn’t know? (0.4) about
103. it [or is something]
104. R: [I-I didn’t but ]now I’ve become a manager I do
105. I: yeah?
106. R: if someone’s not got their glasses on I’ll tell em put their
107. glasses on [and that .hhhhh].

In response to the question surrounding safety management in practice, the speaker invoked an interaction around safety as PPE as illustrative of this practice. Again, safety as PPE was prioritised as the most prominent discourse of safety. Safety as PPE was bound up with the speaker’s constructions of safety management practice in action; although there is no development of this within talk of practice which could indicate the level of status the speaker accords this construction. Indeed, when considered adjacent to BC03, these discourses could actually be constructing alternative positions of interaction at the same event.

Safety as PPE was one of the most prominent discourses found within the data. The nature of PPE implied that safety through this medium would be constructed as an independent entity; the straightforward manifestation of the common artefacts of site safety within the talk. However, the discourse analysis revealed safety as PPE to also be inherently bound up
with the discourses of active site practice and safety management processes. Safety as PPE was highly prominent within the repertoires of those participating in talk around safety, and was therefore prevalent within the social constructions of safety on sites, although this consistent prevalence was accompanied by variation in the associations of safety as PPE in terms of accorded status, construction and within the wider constructive context itself.

5.3.2.3 Safety as Enforcement

Safety was also prominently constructed through a further discourse already identified through the analysis of the site signage that of safety as enforcement, again associated with the overarching discourse of safety as practice.

The discourse of safety as enforcement was placed in the context of site practice, as illustrated by the talk of a subcontractor’s site foreman in BC03 below:

Source BC03

225. R: I think (0.4) I think it’s more sort of erm (0.2) driven from management isn’t it ↑↑whether it’s because of the ((safety programme)) I’m not one hundred percent sure .hhhh I think it’s more to do with whoever’s running (0.2) the site. (0.6) if they’re (..) health and safety conscious (0.6) then I think it drives everybody else to be health and safety conscious. If they’re giving out yellow cards and red cards and people see they’re doing that then (..) I think it makes them more aware (0.4)that people are (0.2) you know coming down hard on health and safety.

The talk within BC03 above initially commenced in a debate around the construction of safety itself, the speaker unsure of responsibility, influence or indeed what constructs safety on sites, however he did ultimately ground the construction of safety within a specific location. This emphasis of ‘the site’ as the physical focus for safety firmly places it within practice; it is those who practice within this place, in the tangible reality of location, that the speaker feels are critical in the construction of safety.
However, from this establishment of location and participants, the speaker further developed safety through the discourse of enforcement. Rather than looking to management practices that may have supported or encouraged safe actions on site, the speaker drew on the practice of enforcement as illustrated through the common site process of a card based punishment system, to develop his talk around safety. Safety as enforcement was constructed as active, associated with a process that interacted with people through both direct involvement and awareness, that ‘drives’ people towards certain behaviours through the deterrent of punishment. Action was also positioned around the construction of safety as an independent entity participating in practice, an entity that was ‘com(e) down hard on’.

By its very nature, the discourse of safety as enforcement also constructed a reality where enforcement was seen as an inherent part of the practice of safety itself. By drawing on the practices of enforcement in the talk of safety, the speaker constructed a reality where people need enforcement in order to positively participate in safety in practice.

The need for enforcement as an integral part of safety in practice was also constructed by a subcontractor’s site supervisor within the discourse of EC03 below:

Source EC03

49. R: I’ve always sa-tty’ve always been good the lads who work with
50. us and like (..) they don’t really break the rules but (..) just
51. to enforce them cos sometimes .hhhh you do a lot like the odd
52. thing or like they might not put the barriers round the machine
53. proper but now .hhhhh I tend to go out now and reinforce it a
54. bit more.

Here, the speaker constructed safety through the discourse of enforcement within the context of site practice. In contrast to BC03 above, the speaker positioned himself as the enforcer within the talk, although this positioning was again located within a reality where people did not always fully participate in safety in practice (the actual discursive construct of the level of this participation in L.50 is examined below). The speaker as enforcer did not position the enforcement process in a practice or process framework although it was still
active within itself. In contrast to BC03 the enforcement was not linked to punishment, rather safety as enforcement was seen as the means to its own end.

As identified through the talk of BC03 within the discourse of safety as PPE above, a minor status was again accorded to the violation of safety used as the illustrative need for enforcement. Indeed this minor status was actually constructed through the use of the same linguistic phrasing, EC03’s violation described as an ‘odd thing’, compared to BC03’s ‘odd risk’. The construction of a violation as ‘odd’ reduced its impact in both in frequency and severity, and revealed a reality where violations (which in practice could be very serious in terms of consequences) were themselves minimised through relatively casual talk and linguistic associations.

The above two texts are those of people with a management responsibility in their role on sites. It may therefore be unsurprising that two of them explicitly placed themselves in the role of enforcer within the discourse of safety as enforcement. However, an alternative position was taken by the speaker of DC01, also a subcontractor’s site foreman, who positioned himself as the recipient within the discourse of safety as enforcement:

Source DC01

125. I: new initiatives like em:::have you seen the boards out there
126. where it says health and safety [is a] habit not a reg[uest]=
127. R: [yeah] [yeah]
128. I: [what] d’you think about that [in terms of a
129. R: [well] [it is a-it does (.). it works
130. dunnit? It’s like cleaning your teeth innit? I mean
131. I: yeah so it’s [just]
132. R: ↑[like] I say when we-we fir-we first came on um:::
133. (1.4) y’know w-i-it is drummed into you
134. I: yeah
135. R: um::: but at the end of the day you start doing things (0.2) by
136. habit then don’t you so it’s not a bind then in-[is i]t sort-
137. I: [yeah]
Initially, a safety slogan was introduced in the talk which positioned safety as ‘a habit not a request’. After assessment of the slogan, the speaker linked this directly to the discourse of safety as enforcement, associating his arrival on the site with the enforcement of this slogan. This enforcement was strongly linked to action in terms of the enforcement practice, which was constructed in an almost militaristic way by the speaker, with the slogan being ‘drummed into you’.

The speaker positioned himself as the recipient of this enforcement and consequently developed the discourse in association with a positive part of safety as practice, and actually drew upon the discursive structure of the slogan itself for his language.

The discourse of safety as enforcement was also evident later in the same conversation:

Source DC01 cont/d

151. R: =y’know after (0.2) s-say-you should be allowed a say couple of
152. times=say if you haven’t got your gloves on or sommat like that
153. I: mmhm
154. R: well (. ) would you mind putting your gloves on please (0.4) and
155. then say the second time (0.4) I saw you the last time [y’kn]ow
156. I: [yeah]
157. and I’ve got-you’ve got to make sure you (0.4) you (0.2) put
158. your gloves on [oth]erwise there’s going to be consequences=
159. I: [mmm]
160. R: =all that=you know fa-you can handle that can’t you?
161. I: yeah
162. R: y’know if it’s done (0.4) y’know politely and er[:::] y’know=
163. I: [right so it’s-
163. de-decently]
However, this later discourse of safety as enforcement, and safety as practice, was in sharp contrast to that explored previously; the speaker has now established safety as a request, not a habit, precisely the reverse of the initial slogan construction.

In keeping with the previous texts around safety as enforcement, the speaker constructed a reality where violation was commonplace. Although the speaker did not openly position himself as a violator, neither did he clearly disassociate himself from this potential scenario, and indeed his positioning is ambiguous throughout the talk.

Through the use of the role play trope, the interactions of safety as enforcement in practice were explored through the wishes of the speaker rather than any reflection of actual practice. This interaction was entirely constructed with reference to the acceptability of the interaction with the violator, associated with what could be described as the old fashioned values of politeness and decency. No association was made to the potential consequences of the violation or indeed any actual need for compliance. The sole concern of the speaker was the need for the violator not to feel violated, through specific management practices concerning safety violations. The role play drew on the discourse of safety as PPE to provide the topic of ‘gloves’, which were constructed as an association or tool of enforcement rather than an artefact of safety in practice. Punishment in any form was not reached within the role play scenario, and was not explored at any time within the talk, and was therefore notable through its absence.

In the earlier talk, the speaker had constructed a reality where safety as enforcement supported participation with safety in practice, such practice then becoming ‘habit’. However, the later talk constructed a reality where safety rules were associated with the acceptance that violation will repeatedly occur, and it was the social management of this violation that was most important. This was prioritised by the speaker above any further associations of safety in practice, such as resulting incidents or accidents as a potential consequence of the violation, or indeed punishment or repercussions arising from the enforcement itself.

This talk provided a somewhat dramatic reinforcement of a contextual theme prevalent throughout the discourse of safety as enforcement; that violations were an inherent part of the construction site environment. Safety as enforcement was constructed from a variety of positions and with various associations, however the presence of violations remains an accepted constant throughout.
The talk was also consistent in terms of the application and association of safety as enforcement to safety in practice. The talk of the supervisors, positioned as enforcers, and the operatives, the recipients of the enforcement, were all to some extent focused on safety in practice, although there was variation in perspective. The supervisors’ constructions of how they enforce safety in practice were contrasted by those at the receiving end of this interaction, who were most concerned with fairness and the social management of these violations. Safety as enforcement rarely led to its natural conclusion, that of punishment, within the talk of both the operatives and the supervisors, and there was a lack of focus on the potential repercussions of the violations. This was constructed through associated reductions in importance of the potential consequences in terms of accidents or incidents, and in some cases this connection was omitted altogether.

This exploration of safety as enforcement has not only enabled an understanding of the realities of the site environment, but also the variation in associated positions in terms of both enforcement itself and the application of enforcement as safety in practice.

5.3.2.4 Safety as Danger

The discourse of safety as danger, as identified within the site signage data, was also located and further developed through the talk. Within the talk, safety was itself positioned at the very point where it had become ineffective, at the point of accident occurrence, associating the scope and participation of safety to the elements of its own failure. An example can be seen in the talk of a subcontractor’s site operative in BC02 below:

Source BC02

88. R: yeah a lot (.) well even meself now I can tell you >like when I
89. was serving me time a few years ago< obviously I’m a bit more
90. er::: immature=a bit younger .hhhhh but even people around me
91. (.) I noticed a lot more accidents (.) a lot more people
92. breaking limbs and falling off things and ladders and (0.2)
93. I’ve noticed in the last few years especially (.) especially on
94. jobs I’ve been on like for the likes of ((main contractor)) and
95. even some ((another main contractor)) jobs (0.2) I’ve noticed
that er:: with the attention being made to safety (0.2) I’ve
noticed that (. ) it’s actually being - been reined in er: >a hell
of a lot< like (0.2) there’s a lot less accidents in my opinion
than there was then yeah—a lot less

BC02 employed an abstracted framework of change for the association of a lack of accidents with safety. A construction of safety in the past was employed to demonstrate and illustrate the contrast to safety in the present, and the speaker placed himself as a participant within both of these arenas. Accidents were established as the evidence of safety, both in the past and present. Safety itself was positioned in the present, creating the juxtaposition with the past and unspoken lack of safety resulting in accidents as the consequence, contrasted to the reduction in accidents of the present. The speaker further developed a cause and effect scenario around this interaction, relating to safety as an entity, whereby the action was associated with those who had interacted with safety and subsequent ‘reined in’ practices and processes accordingly.

Safety as danger was also previously illustrated within the talk of DC02, which was explored earlier from an alternative perspective:

Source DC02

- to be . hhhh going home injured any day I’ve— I had (0.4) a
couple of (. ) very close escapes—I nearly lost my foot (0.2) a
few weeks back a—(0.2) y’know it’s—it does ;sometimes you can
(0.4) take for granted some of the things you do [y’kn]ow—

This particular extract positioned what was a potentially horrific incident quite neutrally within the normal talk of safety. The speaker did not emphasise the construction or positioning of this event within the talk, other than with regard to explication of the precise body part he was almost relieved of, nor did the researcher make any response. This talk constructed a reality where the practice of injury or incident was not an unusual or even unexpected event, indeed the speaker positioned this particular event amongst ‘a couple’ of others.

All three of these discursive extracts developed the discourse of safety as danger through accidents, or near-accidents, albeit through alternative associations. Whilst FC01
constructed safety as accidents, or their prevention, BC02 constructed safety as the level and frequency of accidents, and DC02 constructed safety within a reality where accidents are an accepted, and indeed personal, occurrence. Somewhat surprisingly safety was not constructed at any time within the talk data as a state of ‘no accidents’. Rather it was the presence or prevalence of accidents that supported the discourse of safety as danger, and constructed safety through the unsafe, positioned in a reality where accidents themselves were an inherent part of the environment.

5.3.2.5 Safety as Practice: ‘But...’

Safety as practice was itself most prominently represented through the data by negative association. This manifested through two alternative themes; the negative influences of safety on site practice and the negative influences of site practice on safety.

The first of these themes can be seen within FC01, the talk of a main contractor’s operative, below:

Source FC01

31. I: cos you’ve got
32. all this {(safety programme)} [and all that wh]¬¬what d’you=
33. R: [yeah this is it]
34. I: ¬make of that? d’you think it’s .hhh(0.6) made (. ) any more
35. difference o::r
36. R: yeah=(it has but (0.2)) erm (0.8) sometimes its (0.2) it just
37. I: [what "d’ya think"]
38. R: stops the jobs half the time some of it, dun[nit?]  
39. I: [yeah]
40. R: you know when some of the stuff gets too (02.) carried away
41. really I think (0.8) when it’s just common sense at some of the
42. ti[me ]=

In continuation of a discussion of the changes in safety in recent years, the speaker FC01 turned the conversation to the contemporary negative influence of safety on practice.
Rather than explore improvements in terms of reduced accidents or better working practices, the speaker instead positioned safety as a hindrance to work practice.

Safety was constructed as the entity rather than inherently linked to any specific practices or tasks; it was positioned by the speaker as a behemoth with the power to actually stop work. This construction was then developed into safety practices, although these remained distinct from site practices and were themselves belittled by the speaker as beyond ‘common sense’. Safety was again active in its operation within the site environment; however this interaction was not constructed as beneficial or practical alongside practice.

There was no consideration of the potential consequences of these practices in terms of accidents or incidents if the safety impositions were not in place, nor of the possible good these safety practices may be performing. Rather these illustrations of safety in the ‘ridiculous’ were positioned as directly hindering work practices, indeed the speaker developed these illustrations with reference to the ‘worst sites (they’ve) ever been on’.

In drawing on the discourse of safety in practice through the negative within such extreme evaluations, when considered against the many other influential facets of the construction site environment beyond safety, the speaker constructed a version of reality where production was king. These illustrated practices, although arguably not actually too onerous when considered practically within the scope of site work, were accorded the status of a considerable hindrance when positioned within this production-driven reality.

This construction of safety in practice juxtaposed with production was common within the data, as further illustrated through the talk of a subcontractor’s operative BCO2 below:

Source BCO2

113. R:  - probably fall into the same bracket as everyone else in that
114.  respect whereas .hhhh er:: where yeah-in- (0.2) doing the job
115.  where its unsafe and you c-can find little shortcut ways round
116.  things I suppose it’s just (0.4) jumping in the room you
117.  shouldn’t be in for two minutes which’s got li:ve parts in
118.  (0.2) and you know you can be in th-in and out of there in two
119.  minutes-you’re job’s done (0.2) the alternative might’ve been
two or three days sorting stuff out (. ) to get in that job

I just find er::: (0.4) the hassle of safety [is t]he-

[yeah]

R: =mo:is mo:re=sometimes it (. ) outweighs the actual job (0.2)

Here, the speaker again positions safety in practice, and initially develops a detailed scenario where safety has been violated in order to achieve production. This scenario was then contrasted to the correct and safe procedure in which the speaker positioned time as the key variable, and contrasted ‘two minutes’ with ‘two or three days’ in order to illustrate their justification for the behaviours within the scenario. This scenario construction served to position ‘everyone’ as justified in behaviours which value time and consequently production against safety, and the speaker ultimately positioned production as the ultimate goal.

Through the negative of the discourse of safety as practice, the speaker not only segregated safety from production, but actually placed it in direct competition. The potential consequences of the safety violation, which in this speaker’s own scenario could actually be death, were not explored and the construction of the event did not entertain the fact that the individual concerned could come to harm.

Despite the variations in terms of illustration and construction of the discourse of safety as practice through the negative, areas of commonality were identified within the talk of BC02 and FC01. Safety as practice was positioned in contrast to production; either through abstract associations or more detailed descriptions of practice, safety was referenced as either entity or practice, yet both were ascribed the power to stop or delay work to the detriment of those concerned. There was no extrapolation of the consequences of safety in terms of positive influence, such as accident mitigation or improvements in process, which added further complexity to the discourse; the negative positioning to practice ultimately formed a link to the inherent assumption of safety as practice, despite any level of violation.

In contrast, the second theme arose around the influence of site practice on safety itself. An example can be seen in the talk of a main contractor’s supervisor BC01 below:
Source BC01

20. R: because in a way y-y-er::m (0.8) I _still_ believe that we-we’re
21. in a confrontational situation with subcontractors I-I- believe
22. i-in in the fact that er:::m (2.0) I think if you >give them
23. and inch they’ll take a mile<
24. I: uhuh
25. R: _erm (0.2) some_ subcontractors, they'll _embrace_ it and they’ll
26. work with you.
27. I: yeah
28. R: a _lot_ of subcontractors I _mean you be specific the likes of
29. ((subcontractor name)) the likes—you know what I mean?
30. I: uhuh
31. R: they’re not interested—all they’re interested in is giving you
32. lip service for the health and safety

This talk within BC01 developed in consideration of safety training for all of the site team. The first response of the speaker was to construct a distinction within this site team, and establish subcontractors as other. The speaker also constructed the relationship between themself, their team and this other as ‘confrontational’.

This objectification of the subcontractor as an outsider to the position of the speaker constructed a reality of a segregated rather than inclusive project team, with inherent conflict and challenging interactions. Safety was itself positioned as inherent in practice, however the contextual reality results in disparity in terms of safety in practice, with variation in terms of relative participation.

However, the speaker did not construct this reality without justification; the disassociation of subcontractors from safety in practice was also considered later in the talk:

Source BC01 cont/d

97. R: Well if you go down to the root cause of that it comes back to
The speaker here constructed a response to the continuation of unsafe behaviours on sites. Again, the discourse initially took the form of the establishment of the subcontractor as other, with the subcontractor positioned almost as a different species, with a distinct ‘nature’. This nature was then developed as the justification for subcontractor behaviours within the site environment and the lack of participation in safety in practice. In contrast to the earlier talk around segregation and confrontation, this justification appeared to be somewhat sympathetic. Despite the continued distinction between subcontractor and management supervisor, the speaker’s construction of the subcontractor was accepting of the subcontractor’s own concerns; considerations of the economy and family were then developed to further justify this inherent ‘nature’ and consequential action.

The participation of subcontractors in safety in practice was constructed here as inherently bound up with money, or rather the traditional payment process within the site context. In this discourse, it was the site practice of payment on price that was positioned as the negative influence on safety.

The contrasting position to the talk of BC01 was seen in the talk of BC03, a supervisor for a subcontractor:

Source BC03

100. R: I think ((clears throat)) the way that the (.) construction industry is designed is everything’s got to be a quick price
101. you know-like a cheap (.) price job .hhh and er:m (0.4) if you can get away with something doing something ↓slightly unsafe
104. (0.2) but you get the job done its (.) er:: its done quicker
Here, the speaker also alluded to the common practices around payment for production within the site context. These practices were then employed as justification for a lack of adherence to safety, although as previously identified through the discourse of safety as enforcement; the unsafe action was accorded minimal importance and a lack of consequence. The speaker did not position himself in the role of violator, rather this is again ambiguous.

The reality here is represented as one where taking a few small risks could mean benefitting employers in terms of speed and profit. As found within the talk positioning safety as a hindrance to site practice, BC03 also considered production is critical. However, in contrast to these earlier discourses, in BC03 the speaker justified his own position, although this position was itself not dissimilar to those of the speakers of the earlier talk, with regard to safety as positioned within the negative influences of site practice.

When considered alongside BC01, this discourse was found to be highly consistent in the constructed reality in which it operated, and indeed supports the constructions of the earlier speaker. Although BC03 did not establish the arena of conflict as clearly as BC01 through the contractor/subcontractor distinction, both discourses constructed a reality where the site practices of subcontracting, payment on price and the need for production, had a negative influence on safety as practice. These influences were identified and related to action in contrasting ways by the two speakers, which further illustrated both sides of the construction site coin and the alternative versions of the environment within which both parties interacted.

Indeed, the discourse of safety as practice, explored through the ‘but...’ of safety, maintained consistent in terms of the reality in which they operated, although the perspective of the reality was to some extent dictated by the perspectives of those who operated within them. Although within the discourse of safety as practice, safety was considered to be a negative influence on the key elements of the site context, such as time, money and production, these elements were also considered conversely to be a negative influence on safety in practice itself.
5.3.2.6 Safety as Practice: Education and Training

There were two prominent representations found within the data associated with training and education for safety. Although an inherent part of safety as practice, the distinction in subtitle was generated from these representations which alternatively placed emphasis on either safety as education, through programmes and practices that made people think, and safety as training, manifested through tickets (Researcher’s Note: Tickets are the common term for construction site training certificates and indicate specific training and skills for specific activities, e.g. dumper driving or alloy tower construction). A further development of safety as education was the associated construction of safety as something that ‘wears off’, analogous with a magic potion that lost its effect as time went on.

Education: Safety Culture Programmes

Safety culture programmes (SCPs) were present in some form on each of the sites where talk data was gathered, although in different manifestations and to different levels of promotion and incorporation within the site environment, for example through logo branded signage.

Talk around the SCPs developed with those who had experienced this in their everyday working lives. Both positive and negative associations grew from the data, which were interconnected by a highly consistent feature of the talk surrounding these programmes; an initial construction of the positive aspects of the programmes juxtaposed by the same speaker, often within the same sentence, with a negative qualification. This initial praise for the programmes could have had the function of self-alignment with what would be considered the social norm; the ultimate aim of such programmes is to reduce accidents on sites and it would be hard to challenge such a philosophy directly. The negative qualification was itself highly varied in its form and construction throughout the talk, although in the majority it further reflected the ‘but...’ of safety as examined above. The same two key representations of this negative association with the discourse of safety as practice also developed here, distinguishing the effect of the SCPs on site practice with the effect of practice on the SCPs.

Such a construction was found in the talk of a subcontractor’s supervisor below:

Source BC03

8.   R:   (0.5) Em::: (3) .hhh I thought it was good to an extent (0.4)
The speaker initially established a positive association with the SCP, however this was far more limited than that constructed previously in both the extent and enthusiasm of the talk. This initial positive position was then immediately countered by a constraint, which the speaker developed into a specific criticism, with no pause for breath between the two contrasting constructions. This negative criticism was highly specific to the SCP itself and its method of educational delivery. Indeed, the speaker constructed other negative criticisms of the programme on several subsequent occasions within their talk, all focused on the specificity of the delivery of the material and application to site practice. This was further reiterated in the closing comments of the conversation:

Source BC03 cont/d

236. R: I don’t think its necessarily just because you’ve seen a video
237. (0.6) and had a bit of a chat about it I don’t think it
238. necessarily (. ) instructs you to be (0.7) safety conscious.

Here the speaker positioned his own personal construction of safety alongside the SCP and found it lacking; safety was not something that could be developed in practice through the educational methods of this type of programme. In this instance, rather than site practice affecting the implementation of the SCP, the negative constructions were associated with a lack of coherence between the SCP and site practice itself. The speaker dismissed the programme’s effect on workers and its ability to affect practice, and positioned safety consciousness as something more fundamentally innate to the worker.

This lack of coherence was also positioned in the negative through the talk of another main contractor’s supervisor:
Erm I think ((safety programme))’s obviously one of our initiatives by our company I think . hhhh ; to the right people pitched well (0.2) they get it (. ) to the normal person that’s out doing the job (0.4) it ; hasn’t >linked that in< they just want to get their money and do the job and get away . hhhh it’s a lot harder then to describe it (0.8) being er:: stereotypical its generally the gen- the older generation that’ve done the job for twenty years and hasn’t changed the attitude or the ways and they still wanna do that.

The speaker here is debating the impact of an SCP on site practice. Again, a positive construction is initially established, in this instance with relation to the success of implementation within the site context, rather than the effect on the speaker themselves. A specific site reality is constructed with specified players; the ‘right’ people and the right delivery mechanism positioned as necessary for success. This is then followed by a shift to the negative. The speaker constructs an alternative reality, one considered ‘normal’, with reference to site practice and an alternative reality of the site, where implementation is not as successful.

As implied within the talk of BC03 above, FC03 also made reference to the inherent nature of the worker with relation to safety, although here previous experience was associated with a hindrance to safety in practice. Rather than positioning the safety consciousness of the worker as a positively innate, as was suggested by the talk of BC03, FC03 contradicted this, positioning this innate nature of the worker as something which actually resisted contemporary safety practice.

Despite the speaker’s initial construction of the positive impact of the safety cultural change programmes, the talk again developed to position the site practice of ‘normal’ site reality, as a negative influence on the programme itself.
An alternative construction in the negative of the SCPs was developed in the talk of BC02 below, a subcontractor’s operative, which developed the theme of safety as a magic potion which actually wears off:

Source BC02

195. R: it does make you most
194. of the time (0.2) just step back for that second-now that
195. second >might be enough< to say hang on a minute (.). that’s
196. not-that’s not clever (.) best go and do the >er: c- er-do the-
197. do this the right way< (.) so yeah I’d say it helps but I’d say
198. the further you go from the ((safety programme)) away from
199. doing the actual (.) day course itself (0.2) I think the less
200. and less you’re actually er:: (0.4) f-well (.) stick to it

The speaker here followed the initial pattern established by BC01, with the positive construction of the SCP developed through self-reflection. BC02 then developed this further by establishing a scenario in which this self-reflection is demonstrated through situational role play and the positive influence of the programme was positioned as supportive of the safe behaviours in practice.

However, contrary to the previous speakers, who then juxtaposed the negative through constructions of the influence of site practice or a lack of cohesion between the programmes and the site realities, this speaker did not make any connection to site practice. Rather here, the negative construction of the safety programme was itself developed through self-reflection in which safety education was constructed as a treatment which becomes less influential the further away in time the speaker travelled from the application. Emphasis was placed on the active participation with the safety course, although rather than development of practice, the education gained there was constructed almost as an entity that will fade over time, like a Polaroid picture.

Overall, the educational motivations of the safety cultural change programmes were realised and evidenced through the employment of self-reflection within the talk of those who had attended them. However, there was conflict in their ultimate effectiveness due to the alternative constructed realities in which they operated; the influence of site practice
evident in the talk. In addition, the development of talk around the transient effectiveness of such programmes also emerged both directly and indirectly from the data, which could also be linked back to the realities of the site and common practices. This talk further developed the discourse of safety as practice, linking it to education around safety and the associations with such education within the context of the site itself.

**Training: Tickets**

The alternative representation within the theme of education and training were the constructions directly associated with practice; manifest in the training certificates for specific operations and activities. The development of this alternative representation of training in practice was itself positioned at times within the talk in contrast to the SCPs and their educational approach:

Source BC03

59. R: like we could go onto like ah >when you know< you do IPAF or
60. PASMA things like that at least you’re getting your hands dirty
61. you=you’re getting trained how to do things .hhh its not just a
62. (. ) a sit down in front of a video an (0.8) y’know this is what
63. you’ve gotta do.

The speaker here identified two key tickets, necessary for specific activities on site.

(Researchers note: IPAF (International Powered Access Federation) is the certification for the operation of high level access machinery, and PASMA (Prefabricated Access Suppliers’ and Manufacturers’ Association) for the construction of alloy towers. Both are in common use on sites and main contractors will insist on their possession by anyone performing these activities on sites). The practice of acquiring these tickets was associated with practice and interaction with the site environment; ‘getting your hands dirty’. The speaker drew on the concept of training to emphasise this, and positioned training as an active process itself directly linked to the ability for subsequent action on the part of the trainee.

This active association was then positioned against a passive ‘sit down’ approach of SCPs in their delivery outside of practice. Through this talk, the speaker constructed a clear distinction between education, represented through the traditional approach of the SCPs
with both visual and verbal methods of delivery, away from the active site context, and training, as associated with practice in terms of finding out ‘how to do things’.

An alternative association of safety with training and tickets was developed in the talk of EC02, a main contractor’s operative, below:

Source EC02

167. I: right s-s-s-so it’s a joint yeah
168. R: [and training]
169. R: it’s mostly training as well
170. I: yep
171. R: y’know you’ve gotta keep people up training like y’know like
172. y’have people where they’ve (0.4) they’ve run out of tickets
173. I: yeah
174. R: for a certain plant (0.4) y’know they need to (0.6) as a
175. company they need to keep that up for the-for the workers
176. y’know

Training here was initially constructed as the significant part of safety as practice. However, as the talk developed, the practice surrounding tickets shifted from safety itself to a more straightforward association with practice. The speaker constructed a reality where training was undertaken for the benefit of the operatives, but this was not directly positioned alongside safe practice or the knowledge gained during the training process, rather it was positioned against the consequences when the tickets have ‘run out’. This construction was concerned with the potential limitations for operatives whose tickets have expired which would in practice limit their involvement in certain activities of the site, rather than any direct association to their safety or the safety of the site.

Whilst both training and tickets were explored in the data, there was no direct association to safety within the talk. Rather the talk around training constructed a reality where training was specific to the practicalities of certain tasks and activities, in contrast to the intentions of the educational approach which sought to inform all aspects of practice and associated interactions. Associations with training were made to specific practices and the
practicalities of site activities, and indeed the consequences of possession of such tickets was emphasised, rather than the increased safety of those activities subsequent to training.

5.3.2.7 How Safe is Safe?

The fine grain analysis undertaken of the data revealed patterns within the detailed construction of the talk itself as it developed around safety, and more specifically assessments of ‘safe’. Exploration has already been made through developments of the discourse of safety in practice. Patterns within the talk explored risk taking, where the construction of violations as ‘odd’ reduced their implied impact in both in frequency and severity. Although the risks themselves were constructed through relatively casual talk and verbal associations, this was in a situation where these violations in practice could have very serious consequences.

Similar verbal constructions were also found within the data when the talk examined other aspects of the realities of the site and associations with safety.

Source BC03

102. R: if you
103. can get away with something doing something ;slightly unsafe
104. (0.2) but you get the job done its (.7 er:: its done quicker
105. (0.2) you can make a little bit of money out of

For example, in his discussion of safety violation above, the subcontractor’s supervisor speaking BC03 ascribed quantification to the action, that it was ‘slightly unsafe’. This assessment was then positioned alongside site practice as justification for the action, and no alternative scenario was constructed where this violation did not result in successful completion of the job. This talk constructed a situation in which safety was assessed and balanced against site practice. Safety did not exist in a definitive or stable state; rather it was fluid and flexible depending on the associated circumstances of practice.

This further developed the initial constructions explored within the discourse of safety as practice within the ‘how’ of safety in Section 5.3.2.1. Here, safety as an inherent part of practice was only as robust as the associations with that practice will allow within the given context. This was further demonstrated by the speaker of EC03, a subcontractor’s supervisor, below:
R: I wouldn’t say so—I work quite safe anyway (0.2) it’s made me be more: (.) even more stringent like with our lads making sure (0.4) .hhh they don’t break the rules

I: yeah

R: I’ve always sa-: they’ve always been good the lads who work with us and like (..) they don’t really break the rules but (.)

Here, the speaker positioned his own actions and interaction with site practice as ‘quite safe’. Again, although inherently bound up with action, safety was again constructed as a flexible assessment, which itself suggested the acceptability of this type of association within the speaker’s reality, rather than any firmer or higher commitment to safety itself.

The speaker also constructed safety in association with his operatives, initially emphasising their position as fully compliant with safety in practice, although this was later again softened to ‘don’t really break the rules’, which again associated a level of flexibility within the reality of accepted behaviours. This was further emphasised by the description of the operatives as ‘good’, positioning them against an alternative that would be even less compliant with safety in practice.

The talk above exploring ‘how safe is safe?’ revealed a reality where safety inherent in practice was highly fluid in terms of practical associations and levels of overall commitment. This supported an emergent theme developed within the discourse of safety as enforcement (Section 5.3.2.3) where violations formed an accepted aspect of the realities of sites around safety.

5.3.3 Summary: Safety as Constructed by Talk

Within the talk, there was found to be a lack of an agreed measure or benchmark for safety within the site environment. However, the discourses of safety as PPE, safety as danger and safety as enforcement were readily identified, and further developed from their initial emergence and establishment within the signage data. Furthermore, the highly diffuse discourse of safety as practice was also identified, which itself was bound up with these previously established discourses through the nature of its associations with the construction site reality and operations.
Safety as practice also developed through the negative associations with safety as either entity or inherent in practice, in terms of its hindrance to work, as well as the hindrance of work to the practice of safety. Indeed, safety as practice was found to be highly variable in its associations, including the flexibility around ‘safe’ as well as the actual effects of safety training or education on workers constructed as either innately safe or alternatively entrenched in their ways and innately unsafe.

Exploration of the site realities further illuminated areas of dissonance within the discourses of safety and conflict between the constructions of safety and the everyday practices and processes of the work itself, such as payment schemes and the drive for production. This was further identified within the extensive representation of most specifically the discourse of safety as enforcement, which naturally occurred within this context. Indeed, the violation of safety rules was found to be an inherent and accepted aspect of these construction site realities and consequently influenced the prominence of this discourse. However, punishment for safety violations was not represented within the talk, which also frequently omitted any acknowledgement of the consequences of violations, and indeed the discursive structures employed served to reduce the apparent importance and impact of the constructed violations themselves.
5.4 Site Safety Documents

5.4.1 Process Summary

Documentary data was indiscriminately gathered during each site visit; all available sources were collected and therefore the range of documentary data collected was highly variable, dependent on the main contractor operating the site and its operational processes and procedures. The use of an on-site collection process, undertaken by the researcher herself, as opposed to reliance on the issue of documentary data by a third party, enabled assessment and compliance for all gathered sources with Scott’s (1990) four criteria for acceptance.

However, following a detailed review of the data prior to analysis, some documents had to be rejected from the data due to issues of confidentiality, for example some sources had been gathered that noted within their text as being restricted to circulation amongst main contractor staff only. This criterion was deemed to place the documentary source within corporate confidentiality and such sources were discarded from the data set. All the documents ultimately analysed were in the ‘public domain’ of the site. They were not regarded as confidential, and were themselves freely issued to all operatives of contractors, subcontractors or visitors to the sites, who attended an induction or visited the site welfare facilities. In addition, the necessary approach to the data through the examination of its employment as a communicative and constructive device, rather than as straightforward containers of content, meant that for the constant comparison method to prove effective, comparable documents were required from alternative sites in order to validate their inclusion within the data; where no comparable source could be located the unique documents were also set aside.

Consequently, the following documentary data sources were included for analysis; safety reporting cards, site induction booklets, site induction presentations and site safety guides. Each document was scanned if necessary, although the site induction presentations were obtained originally in electronic format (Microsoft PowerPoint), and all were inputted into NVIVO 8. A coding process was undertaken, initially driven by the identification of constructions of safety within the documents themselves, to explore the key themes and representations around safety, and their associations in terms of regularities and variations within the data. Discourse analysis was then undertaken of the coded data, and drew on the discursive framework already established within this thesis through the signage and
talk data, yet which, as previously noted, was actually developed concurrently in practice. Again, the use of the constant comparison method resulted in the development of strong themes within the data.

5.4.2 The Documentary Sources

In order to provide contextualisation of the documentary data sources, the four categories used within the analysis have briefly been described here.

The safety reporting cards took the form of pre-printed, double sided cards, to be completed by the person reporting the incident. The reporting of such ‘near misses’ is a duty under CDM2007 (HSE 2007 CDM ACp) and is seen as a learning tool to enable safety improvements (Gadd and Collins 2002; Worthington 2007) as well as a component of a positive safety culture (Wamuziri 2011). For the cards to operate in practice, as a mechanism for the passing of information, there is necessarily be a certain threshold of motivation that needed to be overcome by a reporter before they seek out a card to complete. However, by their very existence the discourses and constructions of the cards made a contribution to the social constructions of safety with the context of incident reporting on sites.

Two forms of documentary data were collected with relation to site inductions; the induction booklets and the induction presentations. Site inductions were common practice on the sites, not only were they seen as best practice, they were also supported by legislation (HSE 2001; HSE 2007 CDM ACp). Inductions occurred each morning on the sites, and were usually held in a dedicated room within the welfare facilities. They were delivered by a member of the site management team, usually on a rota basis, to new site operatives who are starting work that day. Inductions can last from an hour to a full day, depending on the project and material to be covered. The aim of the induction was to impart and educate the new operatives as to the safety requirements of the site, and should include basic site information such as the location of welfare facilities and accident reporting procedures alongside key risks and controls such as permits to work, traffic routes and hearing protection zones (Rowlinson 2004; HSE 2007; Hughes and Ferrett 2007).

The site induction booklets were printed within the site offices (as opposed to professionally printed) in colour on A4 paper, which had been folded to create an A5 booklet; the booklets were not stapled or fixed together in any way. The two induction presentations were both collected electronically in the form of Microsoft PowerPoint
presentations, and employed different template backgrounds to present their content information.

Two Site Safety Guides were also included within the documentary data, a categorisation which arose from the titles of the data sources themselves and their focus on safety on site. In both instances, site practice dictated that the guides were issued during or immediately after the site induction process, however due to the specific nature of the guides, a distinction was made during the initial analysis between these sources and the Site Induction Booklets, which contained data beyond that of a safety nature, and were themselves differently titled. Both guides were professionally printed on plasticised card.

The following references within the analysis refer to the following types of documentary source:

<table>
<thead>
<tr>
<th>Documentary Data Type</th>
<th>References for Documentary Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Reporting</td>
<td>AD01; DD01; ED02</td>
</tr>
<tr>
<td>Site Induction Booklets</td>
<td>DD04; AD01</td>
</tr>
<tr>
<td>Site Induction Presentations</td>
<td>CD01; BD01</td>
</tr>
<tr>
<td>Site Safety Booklets</td>
<td>AD03; FD03</td>
</tr>
</tbody>
</table>

*Table 5.2: References for Documentary Sources*

Relevant extracts have been incorporated within the analysis in order to assist readers in their understanding and checking of the analysis itself.

5.4.3 Findings from the Discourse Analysis

The analysis has been presented here with reference to the master discourses of safety already established through the reviews of the signage and talk data, as they manifested and were developed by the documentary data sources. The documentary data, by its nature, led to a deepening development of various discourses of safety as the relationships between the text and the reader were analysed. Two new discourses of safety were also
identified as unique to the documentary data, and these are subsequently examined and explored in full.

5.4.3.1 Development of the Discourses of Safety

Safety as Danger

The discourse of safety as danger, identified within both the signage and talk data, was also readily identified within the documentary sources and in representations consistent with those previously established. For example, the construction of safety as danger through accidents was illustrated within FD03 below:

![Image of a safety sign]

Source FD03, p2

Within the first text of the site safety guide FD03, ‘health and safety’ was directly associated with work, and this work was positioned within the ownership of the authoring company. This context was then developed through accident statistics, a familiar representation of the discourse, although no clarification was made as to the actual ownership of the sites on which the accidents represented through these statistics had occurred. Indeed, the text as a whole possibly miss-associated the main contractor with these accident statistics, although such responsibility was never clearly stated. However,
the text ultimately constructed a future in which these ‘statistics’ would not be increased and this aspect of safety as danger was placed within the responsibility of both the main contractor as author, and the individual as the reader of the guide itself. Within this text, alongside the master discourse of safety as danger, the discourses of safety as engagement and the development of ‘safety as entity’ within the master discourse of ‘safety as practice’ were also drawn upon to support this constructed reality.

A further contextualisation of the discourse of safety as danger could be found within the safety reporting documentation:

![Near hit Card](image)

*Source DD01, Safety Reporting Card Header*

![Hazard/Near Miss card](image)

*Source AD01, Safety Reporting Card Header*

![HAZARD / NEAR MISS CARD](image)

*Source ED02, Safety Reporting Card Header*

These cards, ostensibly operating within the sites’ safety management systems, were instead grounded within the discourse of safety as danger, positioning danger as their expressed term, whilst safety remained suppressed and indeed omitted from their texts. Although the terms ‘hazard’, ‘incident’ and ‘failure’ were all present within the texts, ‘safety’ itself did not appear on any of the cards. The only references were contained within the safety programme logos, the discourse of safety as slogans, rather than within the textual constructions of the cards.
The titles of the cards further developed the discourse of safety as danger; two employed the term ‘near miss’ to construct a safety incident in which there was no accident occurrence, as employed within government regulations (HSE 2007), whilst one utilised an alternative term, that of ‘near hit’. This alteration of the standard text subsequently altered the construction of the event itself. A ‘near miss’ arguably constructed an incident which failed to occur – it missed, whereas a ‘near hit’ constructed an incident which almost did occur, or hit. This has consequences in terms of the impact of the statement and the associations with accident occurrence or avoidance. The employment of the term ‘hazard’ within AD01 and ED02 further associated these documents with the discourse of safety as danger.

**Safety as PPE**

Safety as PPE was a common discourse of safety found within the documentary data, a representative example of its employment was found within the site induction booklet DD04:

![Source DD04 p10](image)

In keeping with previous explorations of safety associated with PPE within the signage and talk, safety was again positioned as a descriptor, identifying PPE the artefacts of ‘safety’. The text also developed the artefacts of safety with relation to their function, reaffirming the association with the discourse of safety as practice.

However, within the documentary data further development was identified within the site safety guide AD03:
On this page of the guide, the reader is addressed through two alternative texts, stating ‘expectations’ for both reader and author. Within the first portion of the text, the provision of PPE, written in its full form as ‘personal protective equipment’, was suggested as ‘our’ responsibility, which within the context of the guide would be the company managing the site. This was in sharp contrast to previous references to responsibility made within the discourse of PPE in which the employee was held responsible for their own PPE, and indeed would be personally disciplined should it be found to be lacking. This was further developed on the following page of the guide in which the statement was made that it was ‘your employer (who) will provide PPE for your benefit...’. Whilst clarification was made in the assignment of responsibility, and shifted the provision made within the earlier text to that of the employing company and not the site management company, this text remained dissonant with other constructions of responsibility with relation to PPE and their more personal associations with the discourse of safety as enforcement should the PPE requirements not be met.

Further representations of the discourse were readily identified within all of the documentary data sources, and indeed it was as prevalent within this data as it had been
within the signage and talk and as readily associated with the other discourses of safety, such as enforcement and practice.

**Safety as Practice**

The discourse of safety as practice was also identified within the documentary data sources:

![Source BD01, Slide 10](image)

A direct construction of safety as practice was found within the second bullet pointed text of the site induction presentation BD01 above, which addressed a key element of practice, that of ‘production’, and directly challenged the priority and dominance of ‘production’ through the construct of safety. Through its own construction, this text positioned safety within a reality where this prioritisation was not itself inevitable, and which has resulted in the need to explicate a revised relationship between safety and production here.

An alternative development was found at a later instance within the same presentation:
This text constructed safety as practice through the use of scenarios, and associated safety with personalised and active work practices. The final bullet point of the slide also set out several detailed aspects of work practice from the perspective of the induction recipient, again making the clear association between safety and everyday work practice.

This text also developed a further aspect of the discourse of safety as practice through the polarisation of safety. Within the text safety had two ‘states’; safe or unsafe. No grey area or development from one state to the other was considered or allowed for within the text. This was also found elsewhere within the data, including within the induction booklet DD04, which again determined two states, safe or unsafe, although in this instance in association with ‘behaviour’. Again, there was no acceptance of the potential for the states to change or develop in practice. The emergence of this polarisation within the written documentary data may have been due to the inflexible nature of the communicative medium and its subsequent demands for such clear categorisation.

Yet an alternative to this construction was found within the site induction presentation of CD01:
Within this text, safety was positioned with relation to practice as the ‘safest site it can possibly be’. Safety was constructed in a reality without benchmark; no precise measure of safety was held up for attainment, nor were any rigid standards established, rather safety was considered to be assessable relative to the site reality; there was no defined polarisation of the safe or unsafe. However, this approach whilst fluid, flexible and undefined did not lack rigour in setting its own target. Safety was also represented as an ongoing process, the development of the engagement through ‘making this…’ further constructed safety as something that requires action and participation in its establishment, rather than a finite state to be ascribed to practice. Indeed this was further developed within the text through the act of ‘help’, which further explicated the participation as direct action in practice.

A further alternative to the polarised construction of safety was found within a different site induction booklet, that of AD01:

Source AD01 p2

Safety within this extracted text from AD01 was directly associated with practice and change within the site environment. Safety, or rather un-safety, was constructed as situated and positioned as a descriptive prefix to the working conditions. This text drew on
the discourse of safety as practice to construct it as integral to action, both consequential and preceding.

The reality in which this construction operated was therefore also closely linked to practice, and through this text the construction site environment was constructed as one of change, where unsafe or unhealthy conditions can ‘develop’. Change in the working environment was not exceptional, although change did remain an ‘if’ rather than a ‘when’, which therefore constructed safety, or rather un-safety, as a potentially developing process. Contrary to the polarised dichotomy of safety in the states of safe/unsafe, this text constructed safety as fluid, the changing environment itself the influence to safe or unsafe conditions. This further developed the discourse of safety as practice, to incorporate these alternative and dichotic constructions.

**Safety as Practice: Education and Training**

The discourse of safety as education and training was initially developed through the talk with reference to safety as practice, and this was again referred to within the documentary data:
Education was addressed through the ‘Induction’ information, which further developed this practice within this context as site specific. The guide was constructed as ‘general safety information’ within the more specific context of the induction itself. The discourse here considered safety as variable in terms of its associated knowledge, from specific to general, and further associates this knowledge with the different mediums of communication. Reference was also made to training tickets, in the form of ‘CSCS/CPSC card(s)’, with an assumption made that readers held and were currently in possession of tickets at that moment in time.

A further construction, previously identified within the talk, was also identified within the documentary data in association with education and training; the construction of safety as something that ‘wears off’:

![Image](image.png)

*Source AD03, p2*

The text of AD03 and its heading, pleadingly entitled ‘Please remember’, made the suggestion that safety was something that could be forgotten about. However this concept appeared to be somewhat out of place within a safety guide which actively sought to position safety as central and embed it firmly within work practices. This could either be interpreted as insightful awareness of the reality of safety on sites in which the document was operating, or alternatively an opportunity to reinforce safety at a personal level. The discourse of safety as engagement was employed below the title to make emotive associations with family and friends, as well as reiterating the personal nature of safety within its role in practice to ‘prevent injury and ill health.’

### 5.4.3.2 Relationships and Interactions: Safety as Enforcement or Engagement

Analysis of the documentary data necessarily focused on the relationships that were constructed by the authors of the documents and their readers, which was able to reveal
and develop discourses and the realities in which they were situated. The subject positions of those participating within the relationships was established through either textual reference or more commonly through branding in terms of the corporate or safety programme logos, which established ownership and authorship of the documents.

As this process continued, the discourses of safety as enforcement and safety as engagement became most prominent with reference to the relationship and interactions between the addressors and the addressees. The analysis found that the two were closely associated, at various times both contradictory and conspiratory in their own discursive relationships.

This analytical development has been presented here from the understanding of the discourse of safety as enforcement as previously established within the signage and talk data, and subsequently developed through associations with the discourse of safety as engagement.

**Safety as Enforcement**

Safety as enforcement was previously found to be a highly diffuse discourse, with associations to rules, prohibition, violation and punishment. Within the documentary data, these aspects were again prominent, for example the site induction booklet AD01 itself comprised a bullet pointed list of the ‘Site Rules’, the discourse of safety as enforcement highly evident in the extract below:

---

**Disciplinary Code: Breach of H&S rules on site e.g. misuse or lack of PPE.**

Where any operative has been charged by a supervisor with a breach of H&S rules/procedures on site, the person charged and the subcontractor’s manager will be required to re-take a site induction on the day following the incident. If the operative/manager continues to ignore H&S rules/procedures or fails to attend a re-induction, the subcontractor will be requested to remove these personnel from site. On a monthly basis, [ ] will review the number of re inductions undertaken for each subcontractor and request remedial action plans from any relevant director identified.

**Serious Breach of H&S rules/procedures e.g. any actions/breach that may cause or have the potential to cause a serious injury/accident** Where any operative has been charged by a supervisor with a serious breach of H&S rules/procedures, we will require the operative to be removed from site pending an investigation. Upon completion of the investigation, the operative may be required to be permanently removed from site. Where a serious breach has occurred, the relevant director of the company will be requested to provide evidence of remedial action undertaken to avoid further incidents.

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*Source AD01 p2*
This rule, entitled ‘((main contractor)) Disciplinary Code; Breach of H&S rules on site e.g. misuse or lack of PPE’ formed the longest independent text within the site induction booklet. Although the bold typeface at the commencement of the text was indicative of a heading, this rule actually covered two independent events, although these were linked through function. The second paragraph of the text was headed ‘Serious Breach of H&S rules/procedures…’ and was a development of the first text, in which the severity of the violation had been increased.

Within the rule, safety was consistently bound up with health, and represented only as ‘H&S’, which was then employed within the discourse as a prefix to the ‘rules’ or ‘rules/procedures’. Actual identification of the ‘H&S rules’ or ‘H&S rules/procedures’ as referred to within the text was not clarified within the context. The booklet was entitled ‘Site Rules’, and was therefore not specifically directed towards safety. Safety was not constructed within every discourse of the rules, and several were not directly performing a direct safety function, such as those associated with vandalism or harassment. Further obfuscation developed from the initial entitlement of the section as ‘H&S rules’ which then consistently became ‘rules/procedures’ within the text. These ‘procedures’ were not explicated within the booklet and this construction appeared to be performing a catch-all function for incorporation of all H&S processes and procedures in use on the site.

The length of the text itself constructed something of the reality in which it was operating. Indeed by its very existence the construction site was a place where violation did occur, and necessitated the need for a ‘Disciplinary Code’. However, this text was very detailed in terms of the disciplinary practice and process associated with enforcement of the rules. This process was not only directed at the individual violator, but positioned compliance as the responsibility of the company, and incorporated the individual’s ‘manager’ and ‘director’ within the interaction. This inclusion was emphasised by the use of boldface type within the text. This detailed and hierarchically associated process developed a reality which accepted that individuals will perform ‘H&S’ violations, but also accepted the need to amplify the threat of discipline beyond the individual, to those who actually provide and manage their employment, in order for compliance. This detailed approach suggested development through practice, that to discipline the individual had historically proved ineffective which therefore necessitated the establishment of a more convoluted and detailed process incorporating the violator’s company and employers.
The subject positions and relationships constructed within this discourse between the violator and their associated management were contrasted with their relationship to those who initiated the ‘Disciplinary Code’. There was clear identification within the discourse of the ‘[(main contractor)] supervisor’ as the individual who made the initial assessment of ‘breach’. This was supplemented through the positioning of the main contractor as overall manager of the process, with reference to its involvement in interventions within the overall process. The establishment of these contrasting positions constructed segregation within the site team between the main contractor and the subcontractors, potentially creating a them-and-us relationship. This suggested a reality where the enforcement and discipline occurred within a site environment structured around two distinct camps; the violators and the enforcers.

Examples were also given within the text of violations. Within the initial construction of a ‘breach of H&S rules’, the breach was directly associated with PPE, or the ‘misuse or lack of PPE’. This drew upon the discourse of PPE, and echoed earlier findings in which the artefacts of safety had become safety itself. For a ‘Serious Breach’, the example given was positioned through the potential consequences, that of serious injury/accident, which again drew on another associated discourse of safety, that of safety as danger.

This extensive text not only allowed for the further development of the discourse of safety as enforcement, it also enabled more detailed focus on the social identities of addressor and addressee, and consequently the identification of several representations of the site reality in which these discourses of safety operate.

This was further illustrated through the site safety guide AD03:

![Site Safety Guide AD03](Source AD03 p12)
Again, although rules were not expressly established, the ‘always’ and ‘never’ partnered to establish parameters for behaviour through prohibition through the discourse of safety as enforcement.

However, despite the positioning of addressor and addressee through the communication of rules regarding certain behaviours around safety in practice, no mention of punishment was located within either guide. Despite this presence of prohibition and rules, which established the benchmark for violation, no reality of enforcement or punishment was further development and indeed it was notable in its absence. Within the site safety guides, the discourse of safety as enforcement was employed in a constrained manner; whilst rules were set, the consequential actions for their violation were not explicated.

This could have been a conscious omission by the authors, to construct a reality where violation did not occur and therefore made punishment unnecessary. However the reality of this suggestion was contradicted by the text of AD01 above, which specifically focused on violation and punishment. Both site safety guides were professionally produced by the overarching corporate management, yet the site induction booklets were the product of the site itself, which itself indicated a further development in the discourse of enforcement.

The potential for the level of management undertaking the role of addressor to have been an influential factor within the discourse of safety as enforcement was identified through a shift in the standard discursive rhetoric within the professionally produced site safety guides, and a growing association with the discourse of safety as engagement:

![Incident and Injury Free (IIF)](image)

*Source AD03, p2*
Within the above text, ‘behaviours’ were ‘encouraged’, yet the final bullet point still drew on the discourse of safety as enforcement through its identification and establishment of the ‘safety rules’. However, within this context the rules were positioned within a discourse of choice and engagement rather than the traditional rhetoric of compliance and enforcement. Whilst there was still a reality of regulation which must be adhered to by the addressee, whether the individual followed the suggested behavioural approach or not, the discourse was one of engagement in association with enforcement, which have become intertwined. Although the suggestion remained that there was a need for such regulation within the site environment, rather than a reality which would accept a shift, for example, to safety ‘processes’ which would encompass the same information without the traditional connotations of enforcement and punishment.

Indeed, later within the same safety guide, the safety rules were again referred from within the collaborating discourses of enforcement and engagement:

![Safety Rules]

Source AD03 p6

Within this text dissonance was found in reference to the specifics of enforcement; the rules were not ‘safety rules’ as the heading stated, within the text they became the ‘site rules’, and therefore allocated an authority to enforce them, the site management as opposed to safety management. Indeed, the ownership of the rules as either site or safety may have itself influenced the level of acceptance within the workforce, and the actions undertaken by those carrying out the enforcements.

The text then developed an exchange relationship for compliance with the rules, rather than punishments or enforcement mechanisms, in keeping with the previous establishment of expectation that the addressee will ‘choose’ to follow the rules. Alternatively, a sharing of information is proposed in ‘return’ for compliance, which itself is not a legally supported process on the part of the site management. Through this relationship, the discourse
further developed the reality of segregation between the workforce and the management, the information sharing based on ‘you and your’ behaviour resulting in reciprocal action from ‘we’. Despite the lack of an explicit enforcement process for the rules, this discourse still established a hierarchy of control and management, through the traditional ‘them and us’ dichotomy of the site structure.

This engaged enforcement was further developed in the induction presentation BD01:

In its presentation of the IIF programme, the text made reference to the ‘new approach’ of ‘choosing to follow rules’, however, this was still retained within the traditional ‘systems’ and ‘procedures’. This discursive development drew on the discourse of safety as engagement to ultimately deliver safety as enforcement, intertwining the two discourses within the text.

This data also developed the context of this engagement by ‘making safety personal, relevant and important’. A representation of the current site reality, through the language of the ‘change programme’, was constructed through the negative; that safety has been seen or indeed positioned as impersonal, irrelevant and unimportant.

Through these documents, the discourse of safety as an interdiscursive enforcement/engagement was established and developed, however this process did not result in a clearly defined product. Rather this increased the diversity within the already disparate discourse of safety as enforcement, developing constructions of safety as choice,
safety as following the rules, safety as punishment avoidance, alongside development of safety as engagement.

Safety as Engagement

In addition to the close association with the discourse of safety as enforcement, safety as engagement as an independent discourse was also identifiable from the texts and language of the documents. For example, within the site safety guides, a personalisation of the language was found throughout, the author directly addressed the reader throughout the texts, including those of safety. This was also evidenced in the site induction booklets, as shown in the extract from DD04 below:

Source DD04 p3

Within this ‘Foreword by Project Leader’, the role of the main contractor was firstly positioned within practice, the ‘minimise(ation of) risk’. This was further developed as the author addressed the audience firstly through work role, and then directly as an individual reader, ‘you’, which developed and positioned safety in practice. Although rules were included within the text, these were associated abstractly, as something established which can be amended, rather than a protocol to be followed, which was previously addressed in the text, again in the abstract, through the concept of endangerment. The construction of the text as a whole further developed the relationship between author and reader, with the potential for further dialogue. Personalisation of the reader within the address was
established early within the text, which constructed and positioned safety within the personal sphere of action, directly related to the individual and his actions in practice.

Yet, this personalisation inevitably also constructed a segregated position; the reader as ‘you’, an individual, and the main contractor as the voice of instruction and management. Therefore, the discourse of safety as engagement was found to have inherent segregation through the linguistic constructions necessary to develop personal and individual messages within the texts.

An alternative development of this concept was found in the site induction presentation CD01:

![Image of a presentation slide](image)

**Our commitment to your safety on this site**

*Your management safety representative is:*

*We have a Workforce Safety Committee who are:*

*We operate an open door policy to everyone when it comes to safety but both ___ and ___ can raise any concerns with ___ on your behalf if you prefer.*

*Source CD01, Slide 19*

Within the text of this slide, the discourse of safety as engagement was prominent. Several identities were established within the text, including that of viewer, as in the case of a presentation, and the author. Other roles further developed safety as engagement by the assignment of managerial and organisational positions, specifically entitled ‘safety’, to named members of the site team. Yet through these role assignments, two separate camps were again established within the reality of the site, the inevitable segregation within the engagement process. However, through its final text the engagement process within this particular text did seek to construct a link between the two segregated parties, and positioned the ‘workforce safety committee’ as a potential bridge between the two. Although this text constructed a reality where segregation did exist between the main contractor and subcontractors on the site; it also developed, through explicated awareness
of that segregation, an implementation of practice in order to overcome the segregation/engagement ‘paradox’.

Further development of the discourse of safety as engagement was identified through negative associations:

Further associations also developed around the segregated/engaged reality with relation to the responsibility for safety. Safety as engagement has in part been explicated as the
desire for collaboration and team working between the site management and individuals within the site context. However, this shift towards collaboration inevitably initiated a shift away from single point responsibility, therefore the construction of autonomous individuals also involved the concurrent construction of their own responsibilities with relation to safety and safety management.

Within both site induction presentations, evidence of this shift in responsibility could be located:

![Image](Source CD01, Slide 22)

Within CD01 above, the entire text was personally directed towards the audience though the use of ‘your’ and ‘you’, and constructed a direct association with their behaviour and safety. Safety itself was bound up with practice, the use of ‘time’ and ‘important’ positioned it firmly within the reality of productivity, yet also challenged the association with reference to safe working practice. However, in positioning the audience as agents of their own actions, it was suggested that the responsibility for safety had also been shifted to the individual. In establishing the autonomy of evaluation and decision making in ‘conducting your works’, the individual had also been given the responsibility of evaluation in terms of safety.

An alternative example of this shift in responsibility was explicitly made within the concluding paragraph of the site induction booklet AD01.
Here, although site management did take responsibility and emphasised its interaction and involvement in the processes around safety as situated in place, this was then developed to incorporate the individual. Addressed directly, the individual’s engagement and interaction with safety was emphasised within the text as ‘vital’, the taking of responsibility constructed through the negative positioning of those who do not, as ‘passengers’.

This shift in responsibility through engagement and the assignment of autonomy to the site workers was found throughout the documentary data in association with the discourse of safety as engagement. Engagement frequently positioned the audience of the documents as a co-worker in the safety management of the sites, linked to an associated shift in responsibility for this management. However, this release of responsibility by the site management was itself contradicted by other constructions within the data. Despite the language and appearance of engagement, the constructed realities, reinforced through the segregation/engagement dichotomy, also to some extent ensured the retention of management control.

Analysis indicated that the discourse of safety as engagement was as diffuse as that of safety as enforcement, with which it became intertwined. Safety as engagement also associated with the personalisation of safety to the individual, and the associated potential for responsibility for that safety to be constructed as part of the autonomy of the site worker. Despite the apparent prominence of engagement and interactions between management and workers, this relationship inevitably developed along these segregated lines. However, this was also challenged by alternative positive construction of this dichotomy, which positioned it as necessary for safety management in practice.

**Segregated Realities**

There has been frequent recourse within the documentary data analysis of both safety as enforcement and safety as engagement to the representative realities in which these two discourses operated. Segregation between management and workforce, the contractors and subcontractors was identified, which further developed a reality of conflict and
dissonance. The discourse of safety as enforcement perpetuated this segregation, through the need for rules, prohibitions and from the perspective of the site management teams, punishments. The discourse of safety as enforcement further supported this segregation through the necessary constructions of the separate parties who subsequently wished to engage.

The addressors of the documentary data were found to be highly influential in the construction of their own realities. Documents produced at the corporate level, the professionally produced site safety guides for example, constructed a reality where there was no need for punishment as an aspect of enforcements; the rules and prohibitions were made with no recompense for potential violations. Indeed, through the discourse of safety as engagement, these documentary sources sought to obscure the segregation of the site in terms of management/workforce and the presence of any management hierarchy through the employment of the language of unity and community.

In contrast, the site-office produced site induction booklets were found to operate within a reality of violation, in which discipline and rules were needed in order to manage such actions, and punishment was detailed out meticulously. These realities were also ones of conflict and a lack of consistency. Within both site induction booklets, at various points and in various contexts, a dichotomy was established within the site team; that of the main contractor/subcontractor relationship. Segregation was constructed through distinctions of management and violation, positioned against the two parties respectively. However, again in both data sources, this reality once established was then frequently contradicted through their own texts, which drew on the discourse of engagement and espoused cooperation and interaction. These constructions of engaged/segregated realities were often contained within the same discursive structures within the booklets, constructing incoherence within the reality of the site team.

Both of these documentary sources operated within the same reality and indeed specifically within the same site process, that of the induction. The variation and lack of harmony within the relationships and interactions taking place in the realities of the discourses of safety as enforcement and safety as engagement could potentially diffuse effectiveness within the constructions of safety itself.
5.4.3.3 Bundled Up: Safety as Cliché

A discursive development unique to the documentary data around safety was the variety of bundling of safety with other associated practices. This included the common cliché ‘health and safety’, a phrase which was employed within the talk data and has significant social connotations beyond the construction site, which will be explored later within the discussion. However, within the documentary data the use of this standard cliché was further developed in scope to also encompass other site management roles.

For example, the cover of induction booklet DD04 contained a personnel list for the project detailing roles and the appointed person. Here, safety was bundled up with health and the environment in the role of ‘Safety, Health and Environment Advisor’. Although this construct prioritised safety and positioned it first within the three aspects of the role, out of alphabetical position or compliance with the common cliché of ‘health and safety’, it was still bound up in amalgamation with the other elements. Alternatively, site induction booklet AD01 also contained the role of a ‘HS&E Coordinator’, re-ordering and abbreviating the same bundled text. Safety was again bound up with health and environment into one overarching co-ordination role, positioning it within this common amalgamation.

This discourse was further developed through the associations of these amalgamations within the documentary data contexts, for example as demonstrated by the following slide from site induction presentation CD01:

\[ Source \ CD01, \ Slide \ 6 \]

Here, the physical segregation of safety, manifest in the presentation of this information on a separate slide to that of the others containing the rest of the site management team,
could be interpreted in one of two ways. This segregation could be seen as a prioritisation of this role within the site team, the separate slide employed to emphasise the importance of the role. Alternatively, the physical segregation could be seen to be reinforcing segregation in reality between the operational and production roles and the role of health and safety advisor. Both of these interpretations are valid, however the sequencing of the slides would indicate that this role was segregated within the presentation in a reflection of the exclusion of this role from the team who manage the daily operations of the site. Indeed, the role title of ‘advisor’ further positions this role and individual beyond the day-to-day site team, rather constructing a supporting role, that of ‘advisor’, rather than one of management in practice. Therefore safety itself was also segregated from site practice and processes by these constructions.

5.4.3.4 Legislation: Safety as Legalese

Another unique feature of the site safety guides was their parrot-like repetition of the legalese of safety:

![Image of THE LAW]

*Source FD03, p3*

Within the text of FD03 above, the language of the Health and Safety at Work Act 1974 (The National Archives 2011) was reproduced within the site safety guide through the use of the terminology ‘safe place’ and ‘safe system of work’. These terms constructed safety in the descriptive state, in direct association with practice, through the language of the legislation, the legalese.

Direct extracts from the Health and Safety at Work Act 1974 (The National Archives 2011) were employed both in a general framework of management as well as in association with specific site practices, such as falls/fall prevention and excavations, within the texts of the
guides. These textual constructs, such as a ‘safe system of work’ were frequently found within both of the safety guides, the commonality of the language reflecting the legislation itself.

The use of such terms within the text performed a discursive function of legitimisation for the various discourses of safety as a whole. For example, the discourse of safety as practice was developed and validated through the explicit positioning of the legalese within the ‘systems of work’ from Section 2 (2) a of the Health and Safety at Work Act 1974 (The National Archives 2011):

![Image](image.png)

*Source AD03, p9-10*

The employment of legalese was unique to the documentary data, and was not ultimately established as a discourse of safety itself, rather it was itself drawn upon and incorporated within the various discourses of safety in order to provide legitimisation within their own constructions. This could be considered somewhat inevitable, due to the nature of the topic under investigation and the central position of legislation within safety management of construction sites.

5.5.4 Summary: Safety as Constructed by Documents

Analysis of the documentary data enabled further development of the discourses of safety as previously identified by the talk and signage data. The discourse of safety as danger remained prominent, associated with accidents, dangerous occurrences and the consequences of un-safety. Safety as PPE was identified within all of the documentary data source types, and again was found to support alternative discourses when the most convenient manifestation of safety was required. The discourse of safety as practice also developed to incorporate various constructions of safety which alternatively polarised the states of safety or established its mutability within site practice.
By its very nature as a communicative tool, analysis of the documentary data enabled substantial development of the discourses of safety as enforcement and engagement, and ultimately suggested close association and intertwining between the two. Realities of segregation between the parties of enforcement further developed to suggest a potential conflict with the subsequent quest for engagement and participation in the management of safety on sites. This in turn associated with a potential shift in responsibility for safety through new shared and co-operative management, yet many of the practices of engagement were not constructed around dialogues, despite their presentation, and management retention of control was identified even within the collaborative systems operating within the discourse of engagement.

The documentary data also allowed the identification of two new discourses, or contributory discursive constructions. Safety as cliché found safety to be bound up with other management processes of the site, distanced and even segregated from production. Safety as Legalese provided supporting constructions to the discourses of safety, and examined the role and language of the safety legislation itself within the safety documents of the sites.
6.0 Discussion

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6.1 Introduction

Within Section 5 the three categories of data, site safety signage, talk and documents, were each analysed in turn. Although presented in three distinct sections, the data was holistically gathered, coded and analysed throughout the collection process, with reference to constant comparison, which itself directed further data collection.

This analysis has now been developed through further discussion, and the master discourses of safety on UK construction sites have been collated and examined through the wider social context. This exploration has been directed by the three objectives of the study:

1. To examine the social constructions of safety manifest on UK construction sites.

2. To examine how UK construction site management, supervisors and operatives construct and situate safety within their working lives.

3. To examine the contextualisation of safety on UK construction sites and the socially constructed realities in which it is positioned.

Recourse has also been made to the theoretical and academic context as explored within Section 4, to support or challenge these emergent truths as they developed within the discussion.

6.2 The Discourses of Safety

Safety on UK construction sites was found to be highly chimeric, demonstrated by the variety of discourses of safety identified within the data, as well as the variety and disparate nature of the discourses themselves. Safety was constructed as un-safety, through the discourse of safety as danger which placed safety at the moment of its failure, the accident, or alternatively constructed danger on the manifestations of safety. Safety as PPE, the artefacts of safety, was a common discourse that was drawn upon by all others, and provided the most common crystallisation of safety within all fields.

The widely diverse discourse of safety as practice was bound up with the activity of both safety as work practice and safety as safe practice, with the potential for direct competition between the two. The language of legalese was evident, referenced as legislation was put
into practice. Safety was bundled with health, or the environment, to form a single amalgamated unit, which potentially developed segregation from safety in practice and ascribed equal importance to the component elements, regardless of their individual relevance or significance in a given situation. Safety was also found to be represented in several states; as fluid, something that developed, and could contain shades of grey, as well as constructions of a more polarised safe/unsafe dichotomy.

The discourse of safety as enforcement, of rules, violations and punishments was closely associated with the discourse of safety as engagement; the two often interrelated within contemporary approaches to safety management on sites, yet also at times conflicted through constructed shifts in responsibility and the segregation of the site teams. The written rhetoric of enforcement and engagement was itself peppered by the use of legalese, and drew on the language of legislation to validate and add gravitas to its own constructions. Safety slogans were also identified, often in support of safety through the engagement of the workforce, as advertising for the safety programmes.

These discourses and their relationships both between themselves and with the context of the construction site and beyond have been discussed in more detail below. However this discursive variation alone demonstrated the complexity that surrounded safety within the construction site context. As suggested by social constructionism (Burr 2003, Gergen 2009), there was no answer to the question ‘safety is…’ that was fully embraced and championed on sites, there was no one truth of construction site safety.

6.3 Un-Safety

The discourse of safety as danger constructed safety through its opposite, un-safety, and most prominently either in practice or through the moment of un-safety as accidents. Safety as danger was most prominent within the signage data - Danger! Hazard! Warning! Caution! Yet there was often little supporting text to explicate or validate these almost hysterical constructions. This could simply be a consequence of the medium itself, the signs were limited by their physical constraints which dictated the volume of content that could be read at the necessary distance.

However, the discourse of safety as danger was most frequently identified within the signage to be manifest in one of two constructions; signs that constructed danger around safety in practice, and signs that constructed danger around work in practice. Despite the
significant difference in context, the same textual constructions were employed within both types of sign, leading to no practical distinctions between a scenario in which safety management, such as barriers or other physical segregation, had been undertaken and one in which no safety measures, signage excepted, had been taken. This clearly has significant repercussions for those working in such environments, where indiscriminate employment of the discourse of safety as danger, whether a situation is ‘safe’ or ‘un-safe’ in practice has homogenised the sites into a realm of ‘danger’, despite the implementation of safety management in practice. This has the potential to lead to ‘danger fatigue’, if everything is dangerous, even when ‘safe’, then tolerance and even ignorance of danger when it does manifest, whether explicated or not by signage, is likely to be affected. This was to some extent manifest within the talk data where safety violations, which could be considered as danger in practice, were couched in belittling and inconsequential terms. It could be suggested that the construction site is crying wolf; in assigning ‘safety’ the label of ‘danger’, what resources can be drawn upon to identify the dangerous wolf when he actually does appear?

The continued employment of hazards and danger through this particular discourse of safety has likely perpetuated their prominence within the site environment, although the actual hazards or dangers have in many cases been neutralised through safety management processes. Yet, as previously noted, the nature of the most prominent medium of safety as danger, the site signage, will contribute to the discursive construction. The need to seize the audience’s attention, the need to advise of consequences should the environment change – should the plywood cover be shifted from the manhole below – and the need to protect against claims of negligence, are all potentially contributory factors that provide an alternative reading of this discourse in practice.

The construction of safety as danger at the moment of un-safety was associated with safety as accidents, safety as the prevention of accidents and safety as a certain measure or rate of accidents. This association was unsurprising as accidents can be described as the ultimate manifestation of un-safety in practice. An accident is a tangible event, and although there are many further connotations around the use of the term accident itself and indeed an identifiable discourse of accidents within the wider social sphere, here its frequent employment in the rhetoric could be traced to the industry’s own focus on accidents as safety. The industry is benchmarked by its accident rate by the government
(Strategic Forum 2010) and the HSE (2010) so it is somewhat unsurprising that this has cascaded down to the site level and become part of the discourses of safety.

A level of personalisation was also associated with safety as accidents. The accident rate suggesting that the majority of site workers have likely been witness to a safety accident or near miss, if not been party to one themselves, which could in turn have also have contributed to their prominence in the measure of un-safety. This was evident within the talk data, in which the discourse of safety as danger was solely represented through association with accidents.

This construction had been adopted by the safety culture programmes, who ‘defined’ safety as ‘Incident and Injury Free’, yet this did not itself challenge the construction of safety as accidents. Rather it developed it to the state of safety as no-accidents, which was still representative of the discourse of safety as danger, and drew on the social construction of safety as its own failure. Indeed, it can be suggested that here the discourse of safety as danger is itself paradoxical, similar to that described by Hepburn (2003) with relation to freedom; in constructing safety as the absence of danger, the construction site is constructed as intrinsically unsafe, as a source of danger.

Away from the physically limited signage data, safety as danger was further developed through the rhetoric used within its constructions, the prominence of ‘un-safe’ and ‘not safe’ developing danger in the abstract. The frequent construction and indeed identification of safety in the negative would suggest a certain ease by which this process is associated with practice. Whilst it is easy to identify the ‘unsafe’ there may be too many factors of potential risk to ever confidently proclaim ‘safety’ in a given situation. Indeed the way constructions sites legislatively construct safety in practice, through the use of risk assessments and method statements (HSE 2009a) necessitates focus on the negative and asks ‘what are the risks?’, the manifestations of safety as danger, rather than ‘what does safety look like?’ These familiar assessment methods and the contextual and legislative reality in which these processes are operating, further supports the discourse of safety as danger. Indeed the ‘un-safe’ may be so prominent simply due to the complexities in discursively constructing the ‘safe’.

The discourse of safety as danger also had close associations with the other discourses of safety. Safety as PPE was a common contributory discourse, with the artefacts of PPE positioned as the solution to the danger. Safety as danger was itself drawn upon by the
discourses of safety in practice, providing a convenient rhetoric to illustrate the practice of un-safety made manifest in accidents.

Indeed, the discourse of safety as danger within the construction site context arguably started at the very gates of the site. UK construction sites labelled themselves ‘Danger’, as something inherent in the very presence of the construction site itself. Although such warnings are likely directed at those for whom the site was not a place of work, it still serves to construct the reality of the construction site place as one of danger, that it is an inherent truth that there is danger on the sites. Although safety was also frequently constructed at the gates of the site for the workers, this paradoxical labelling of construction sites as dangerous only serves to further perpetuate danger within an environment that is actually seeking the utmost safety.

6.4 The Practice of Work and the Practice of Safety

The discourse of safety as practice was highly diverse. Indeed, one association with safety as practice was its representation through two opposing positions; safety as entity and safety bound in practice.

Safety as entity was constructed as related to practice, but not inherent within it and also separated from all other associations, set apart as a tangible entity to which attention was paid, reference was made and which could even find itself in jeopardy. This construction of safety disassociated it from the social, engagement or interaction with the site environment unnecessary for its existence or function. This has significant consequences in terms of practice. Separation from the social sets safety apart from the quotidian interactions of sites; although present, safety is not necessarily engaged with the everyday practices and work processes of the site. This is in sharp contrast to the aims of the safety management systems and safety culture programmes of the industry, which seek to instil safety within all aspects of the construction site environment, and embed safety principles within all work practices (Lingard and Rowlinson 2005; HSE 2007).

Furthermore, the disassociation of safety from practice also set it apart from any personal responsibility, ownership and action by the individual. Safety as entity was constructed by those who did not adopt it as an inherent part of their own practice, rather it was developed and positioned outside of personal practice, to become someone else’s
responsibility. Although these constructions were placed within the overall context of practice, they were a significant variation within the overall discourse of safety as practice.

The opposing construction of safety found within the data, safety as inherent in practice, fulfilled the aims of the safety culture programmes far more satisfactorily. In contrast to safety as entity, safety was bound up as an inherent part of practice, embedded within the actions and interactions of the site. Safety as practice was a highly prominent construction of safety found within the data, and was incorporated within a wide variety of specific work practices and processes as well as more general social interactions on sites.

Safety as entity and safety as practice reflect the variety within the individuals of the site and their own personal social constructions of safety. Although the safety management systems have demonstrably achieved some success in embedding safety within construction site practices, there are still representations which construct safety as somebody else’s problem. Although it could be suggested that safety as entity is a simple rhetorical manifestation of reference to an abstract concept, it is equally suggestible that it is the associations of ownership and responsibility that are important here and have actually directed the rhetoric. Indeed, as evidenced by the legalese that permeated the texts of the discourses of safety, it actually is, to some extent, somebody else’s problem, articulated through a language far remote from the ‘muck and bullets’ of the site itself.

This linguistic employment also developed the discourse of safety as practice further, through the language of the Health and Safety at Work Act 1974 (The National Archives 2011) and the legislative ‘safe system of work’, to the practice of safety itself. Within this construction, safety was isolated within its own particular practices, distinct from the work practices with which they were positioned in context, yet segregated from in actual process. This construction also had associations with the construction of safety as entity, as safety was again isolated and separated from the practical processes and work interactions of the site, as well as individuals’ responsibilities.

Safety as safe practice was employed within various constructs, and particularly prevalent within the management documentation for the sites. Within this construction, although safety is prioritised and promoted through safe practice, the lack of integration with work practice does not necessarily facilitate interaction of these safe practices with the work environment.
The practice of safety was closely bound up with the highly prominent discourse of safety as PPE; PPE as the artefacts of safety were themselves subsequently employed in the practice of safety. Safety as PPE was the most convenient example, manifestation or crystallisation of safety within the common site repertoire and was frequently found within all the data types and drawn on by all discourses of safety. This association was likely perpetuated through the linguistic constructions of PPE which prefix the artefacts with ‘safety – ′, not least to reaffirm and identify their function within the site environment.

However, within the site context PPE should be considered the ‘last resort’, and its prominence within the social constructions of safety is not comparable to the relatively low position it should hold within the safety risk management hierarchy according to UK legislation (HSE 2003c). Yet, within safety as the practice of safety, PPE was the most prominent manifestation of safety on sites. This could be due to the high visibility of the artefacts of PPE, which make it an easily and quickly assessable in terms of safety compliance. No special knowledge or skills are required to ascertain whether people are wearing their basic PPE, which therefore makes it a straightforward assessment of safety as safe practice. This therefore provides management with a simple measure of safety to employ as a benchmark for enforcement, which may not be as personally or professionally threatening as, for example, being able to assess the ‘safety’ of a complex scaffold erection. These factors combined could have contributed to make PPE the most immediate manifestation of safety as safe practice, as drawn on by a wide variety of discourses. This high visibility and indeed the legal necessity for PPE on construction sites are likely to continue and perpetuate the construction of safety as PPE.

Within the discourse of safety as practice, the practices of work and the practices of safety were found to negatively interrelate through the negative influences of safety on site practice and the negative influences of site practice on safety.

Indeed the practice of safety was constructed as a direct challenge to the practice of work and sought to prioritise safety within the work environment, as promoted within safety management systems (Lingard and Rowlinson 2005). Safety as practice was seen as interfering with the work of the site, and was placed in direct competition to positive production, either abstractly or through development of detailed scenarios of practice. This negative attitude towards safety is itself not uncommon within wider society, where ‘elf’n’safety madness’, in the terminology of Richard Littlejohn of the Daily Mail, has created a ‘high-viz jacket culture of risk aversion to the point of mental illness’ (Littlejohn
Indeed, the ‘Jeremy Clarkson Effect’ has been described as creating an ‘unhealthy disrespect of health and safety’ through his frequent derogatory comments on his TV shows (Hewitt 2010). These external factors will to some extent influence and further develop the constructions of safety as negative to practice, beyond the actual realities of the workplace.

However, the constructions of safety as a negative influence on practice were also challenged by constructions of practice as a negative influence on safety. Within the site environment, common processes within construction site management, such as payment on price (Spanswick 2007b), the perpetual pressures of time and money (Fellows et al 2002; HSE 2003a) were seen as negative to the positive implementation of safety in practice; either safety must be sacrificed for production or production sacrificed for safety. These two constructions also developed through the hierarchical positions of main contractors and subcontractors, although both also acknowledged the potential influences of these pressures on the other. Although the wider social consideration of ‘elf’n’safety’ inevitably brings its own negative associations to safety in practice, the prominence of these construction specific elements of practice as contradictory to the requirements of safety within the site environment suggests that the constructions surrounding safety and practice were developed locally. Indeed, very rarely was the negative effect of safety on practice constructed outside of a context of production and pressure. Safety was not negated for and because of itself; rather it was very much discursively associated with practice.

This association was also addressed directly by site safety management, whose prioritisation of safety within the construction site place was often made in direct contrast to the values of production. The recipients of the site inductions were given the direct instruction to value safety above production and productivity. Ongoing tension between productivity and safety is itself a recognised aspect of construction site life (HSE 2009b), and its manifestation within the discourse of safety as practice has served to further highlight its scope of influence.

Further recourse can be made to ‘elf’n’safety’ and its derogatory construction when examined alongside the frequent amalgamations of safety found within the data, and subsequently drawn upon by the various discourses of safety. The discursive bundles of ‘health and safety’, ‘health, safety and welfare’, safety, health and welfare’, ‘health, safety and environment’, ‘H&S’ and ‘HS&E’ were all located. Again, when considered within the
wider social context of ‘elf’n’safety’, which negates and derogates the terminology itself and its associations in practice, the use of these bundles will bring wider associations than simply those of the construction sites.

These amalgamations also have potential repercussions for the segregation of safety from practice, through the construction of safety as a disassociated entity, conjoined to other construction management processes remote from the critical site activities of practice and productivity (Fellows et al 2002; HSE 2003; Spanswick 2007b). Such bundling could potentially reduce the impact of the elements, and result in the construction of a convenient generic term, similar to the dismissive ‘elf’n’safety’ of common social parlance.

These bundled terms constructed inherent associations between the component elements within the site environment, despite the significant variation between them in terms of practice and associated behaviours or actions. This potentially reduced the impact of the individual elements, ascribing all elements within the bundle an equal level of priority. Whilst health and safety, although distinct, are still closely associated in terms of their focus on well-being, the incorporation of environment to this pairing is more incongruous, positioning a relatively unrelated and indeed impersonal element alongside the more humanistic original construction. Bundles construct unrealistic amalgamations in terms of the relative associations and implications of the contributory elements themselves.

The use of these amalgamations was also found in the job descriptions of members of site teams. Listed amongst management roles and other elements of practical responsibility, the use of amalgamative constructions can be seen as reflective of the industry approach to bundle these ‘supplementary’ concerns together into one role. Rather than develop each element through its directly associated practices, the use of these amalgamated interpretive repertoires has created an entity which is so vast in terms of actual scope and knowledge that it is difficult to see how it can be effectively managed by one individual. Although in practice, the amalgamated elements are indeed the responsibility of all, the use of amalgamations could reduce focus on individual requirements within specific contexts.

Indeed, the continued use of such bundles on sites that are seeking to independently prioritise and develop safety, health and environmental management systems may itself prove to be a limiting and constraining factor in their practical success.
6.5 The State of Safety

This title has been employed here in a chemical context, to enable discussion as to the discursive representations of safety beyond entity and practice to more fundamental levels of construction; akin to solid, liquid or gas.

Closely bound up with action, and with a lack of fixed association across the various discourses of safety, two states of safety were identifiable, either the solid; static and polarised, safe or unsafe, or the liquid or gas; a fluid, flexible and mutable state.

The polarisation of safety constructed two opposing representations; the safe or the unsafe. This black/white assessment was most frequently made within the documentary data sources, and possibly employed due to the need for clear categorisation of safety in practice through this particular medium. In addition, the reliance on the legalese around safety to validate the written documentation also necessitated the use of safety in its fixed states. The use of terms such as ‘safety system of work’, ‘safe access’ and ‘safe place’ can be identified almost verbatim within the discourses of the Health and Safety at Work Act 1974 (The National Archives 2011). The use of this terminology constructed safety as a descriptive state, and the prefix ‘safe –’ was found throughout the discourses. However, the frequency of use of the polarisation of safety does not necessarily support the complexity of the associated individual elements in practice. Yet this clear, crisp, binary approach to safety does facilitate management and assessment, as required by the legislation, providing just two boxes to choose between when making the tick on the clipboard.

In contrast, safety as fluid and flexible was firmly situated within site practice, and was positioned as variable, dependent on the variable circumstances of the context in which it was operating. Safety or un-safety could develop within any context, and was constructed through shades of grey in contrast to the black/white representations of polarisation. The close association of this state with site practice would suggest that safety is reflecting the variability of its context, fully accepting and developing alongside the change inherent in the site environment (Haro and Kleiner 2008; HSE 2009b).

This latter construction of safety was summed up in practice by one example from the data, which sought to make the site the ‘safest site it can possibly be’. This allows safety to be fluid and flexible, although not necessarily lacking in rigour, reflective of the site conditions at a specific point in time. However, this construction does not itself fit well with the desire
for measurement and KPIs currently prevalent in the construction industry (Strategic Forum 2010). Rather, safety in its polarised state does meet measurable criteria and can be employed to deliver such discursive ‘definitions’ of safety as the reduction of accidents in practice or as incident and injury free. Through the constructions of a polarised state, safety can be benchmarked, and measured as a quantifiable rate, or indeed lack of any rate.

The state of safety, an identifiable representation within many of the discourses of safety, was able to demonstrate contrasting and conflicting variation within the constructions of safety. That safety is an abstract concept has been clearly illustrated, and the confusion in terms of state reflects the complexity and contradictory nature of an aspect which the written word and indeed legislation appear to consider simple and easily defined given their casual deployments.

6.6 The Society of Safety: Engagement and Enforcement

Within the site environment, construction site people can be categorised in a variety of ways, the most prominent of these being by trade or subcontractor (Loosemore et al 2003). The common practice of subcontracting construction projects divides the work into individual trade packages to be completed by separate subcontractor organisations (Dainty et al 2007). This process can create conflict and disharmony within sites, as conflict in terms of individual goals and production patterns are developed through the segregation of work (Ankrah et al 2007). The management of this process has therefore developed a distinct site hierarchy. The main contractors of sites will provide both corporate and site management, as well as on-site supervision. Below the main contractors’ level are the subcontractors, who provide management, on-site supervisors or foremen and the operatives who actually undertake the work in practice (Morton and Ross 2008). This hierarchy with its potentially conflicting goals and motivators provide the context for the society of safety.

Two discourses of safety were intrinsically involved with the people of the construction sites and their interactions and relationships; safety as enforcement and safety as engagement. Developed within all data sources, closely associated to each other, these two discourses of safety were distinctly identifiable and constructed two aspects of the management of safety in practice.
The discourse of safety as enforcement developed around safety management in terms of the rules and regulations governing management in practice. The process of prohibition and the establishment of rules, the subsequent violation of these rules and the ultimate punishments for these actions all contributed to its development. Rules and regulations are part of a much wider social paradigm which advocates compliance and rule following, which contextualises site rules with the much wider concept of the legal framework of governance in which society operates as UK citizens.

Incorporation of the language of legalese within the documentary records of site safety rules, taken from the safety regulations themselves, gave the rules through the voice of the ‘ultimate’ level of management. This direct translation to the site environment is somewhat unsurprising given the volume of highly specific legislation applicable to construction sites, and such employment within the safety management systems ensures nothing is ‘lost in translation’. The formal language of site signage, rules made manifest within the site environment, commonly drew on the standard colours and symbols of legislation to construct safety, again validating the textual constructions by drawing on discourses beyond the local context. Whether these uses were seen as such by the site audiences could not be guaranteed by the authors, however this conformity to standardisation ascribes the rules a higher authority within safety management than that of merely the site itself.

However, within the site environment compliance with the rules was not as commonplace as the wider social discourse would suggest, and the violation of safety rules was found to be an inherent and accepted aspect of the construction site realities, and consequently influenced the prominence of the discourse of safety as enforcement. Many of the other associated discourses of safety also operated within a reality of non-compliance to safety rules, constructing the society of safety as one of violation as a matter of course. Indeed, violations were constructed as such an everyday occurrence that detailed development of such instances was minimal within the data.

The way in which these violations were constructed and employed specifically within the talk data, served to reduce their apparent importance and impact. The language of unsafety developed with an emphasis of mitigation of any violation. The majority of safety violations were only ‘slightly unsafe’, with the ‘odd’ factor of concern as most behaviour was ‘quite safe’, admittances which positioned the violations in negligible terms and with minimal safety consequences. Safety violations were seen as bending rather than breaking
the rules and violations were consequently constructed with a lack of any associated
danger or the potential for incident or injury. Indeed, none of the constructed violations
within the data had any repercussions beyond the potential to be caught and punished;
instead it was the possibility of precisely having to follow all of the safety rules that was
seen to be arduous. This construction did not serve to reinforce the prioritisation of safety
within the site context; rather safety was minimised, devalued and even negated.

However, alongside acceptance of the violations as the natural state of affairs, punishment
or some other form of redress for such violations was actually expected within the
discourse of safety as enforcement. Although violations were constructed without
consequences of personal injury or accidents, they were constructed within a context
where punishment was the correct course of action, should the perpetrator be caught.
Construction site people expect safety rules to be bent as a matter of course, and if the
perpetrators are caught, punishment is due.

The overall violation-punishment process complies with the low status accorded safety
violations within the talk data; the violation was minimal therefore the punishment will not
be too severe. These violations commonly drew on the discourses of safety as PPE to set
the rule that had been broken, and punishment received accordingly. Constructed through
the talk from both sites of the interaction, the supervisors delivering the enforcement
associated it with compliance to rules, however those on the receiving end of the
enforcement had a very different perspective. Although punishment for such incidents was
not resented by those performing the violation, prioritisation was given to the social
management of the context in which it is delivered. The personal approach of the
punisher, and how the punishment was delivered and the enforcement made in practice
were critical to this acceptance. This negates the rule itself and avoids all association with
the practices that have led to its creation and enforcement, rather the rule appears to be
‘made to be broken’, particularly in the case of certain elements of PPE which were
repeatedly drawn upon to manifest violation as practice.

A further aspect of the acceptance of punishments for performed safety violations was the
suggestion that the site workforce actually need enforcement in order to positively
participate in safety in practice. This reinforced the realities of violation within the site
context. The workforce, through their ‘natural’ behaviours of bending and breaking site
rules, were constructed as actually needing enforcement and punishment to enable the
development of a level of safety management on sites. This has associations with the
responsibility for safety. In positioning themselves as violators, minimising the potential repercussions of these violations and accepting punishment as it is meted out, this discourse of safety as enforcement also enables the site workforce to absolve themselves of any responsibility for their own safety or that of others on sites. They need to be punished and managed in order to achieve safe working, reducing themselves to the level of children who need to be controlled, yet contradictorily only accepting this control if it is delivered in a ‘fair’ and respectful fashion.

This necessitates construction of a framework of responsibility, and a hierarchy of management within site society to actually enforce safety, which was reflected within the social constructions and identifiable through the discourses of safety within all of the data sources.

Most prominent was the clear identification of main contractor is management as the speaker and voice of authority within much of the signage and documentary data constructing safety on sites. Inclusion of the main contractor company name or logos added a ‘signature’ to the written data sources. Identification of a hierarchy below the senior site management was suggested within the literature (Watts 2007), and was indeed illustrated through its own constructions of safety signage. Several levels of management constructed their own identities through the safety signage, with repercussions for the associated responsibilities for enforcements and punishments.

The informal signage, constructed by the on-site management teams, was at times employed to segregate themselves from the corporate level of management, and sought to shift the responsibility for management and control of safety to higher echelons, whilst simultaneously developing collaborative associations between the lower levels, aligning the main contractor’s on-site supervisors with the subcontractor on-site supervisors and operatives. This transfer of control and the setting of the rules to a higher power than the on-site management could be symptomatic of the need to maintain a level of harmony within the social environment of the site. With such a shift in the responsibility for the rules, site management take up the position of ‘only following orders’, and can develop a level of camaraderie with the site workforce in order to facilitate the other necessary processes of the site such as production. Such a construction generates a ‘them-and-us’ at a tangent to the more traditional main contractor/subcontractor divide, and positions it at an on-site supervisory/office level management instead. However, the main contractor/subcontractor divide was also evident within constructions of safety.
management and enforcement, and as would be expected, these dichotomies were certainly not without change, dependent on context.

This dissonance was found throughout the data. Whilst those at the higher corporate level sought to develop and position safety only positively, through no-blame cultures and realities intolerant of violation to the point of denial, those who managed and participated in construction site practices on a daily basis at the site level constructed safety within a reality of rules, violations, enforcements and punishments. Indeed the acceptance of a site hierarchy as necessary to provide such enforcement by the workforce themselves is a further incongruity within this aspect of the site reality. That the two constructions are in operation concurrently also suggests the potential for conflict and dissonance in practice and process, not least the potential for exploitation of engagement through the reality of enforcement.

The emergence of the philosophies and language of the safety culture programmes within the discourse of safety as enforcement led to a close association with the discourse of safety as engagement. Indeed, the two became interwoven at times, dressing enforcement in the clothes of engagement.

The corporate constructions of safety as enforcement drew on this blended discourse in order to develop enforcement from the implementation of rules through punishment to the encouragement of individuals to want to follow the rules of their own volition. Although the rules remain the same, the constructions surrounding them had changed. This leads to the assumed realities of the sites of the safety cultural change programmes as places of an obedient and willingly participative workforce in the safety management of the sites. Yet this is at variance with the reality of site level management, which has alternatively been constructed as one of violation, discipline and segregation between main contractors and subcontractors, something that does not necessarily also support engagement and interaction.

The discourse of safety as engagement also developed beyond that associated with enforcement to seek out workforce compliance through personalisation, and the suggestion can be made that this may have begun to manifest with the social constructions of the sites. In keeping with the literature around IIF, which seeks to ‘make safety personal’ (CIOB 2006), the personalisation of safety was indeed frequently identified within both the talk and documentary data. Through individual’s talk, safety was frequently positioned in
direct relation to the speaker, through personal associations of family and the wider repercussions of un-safety. The individual was also identified within the written data, directly addressed through repeated use of ‘you’ as the reader of the text and consequent identification as the participant in the associated safety processes and practices on site. These constructions are potentially symbiotic; the personalisation of safety at the formal corporate level has developed safety for individuals as personal, which through talk further develops safety within the site context as a personal ‘truth’.

However, through the constructions of this reality of participation and engagement within the texts of the signage and documents, the alternative was inevitably also constructed. The reality before the safety cultural change programmes developed was constructed as one of un-engagement where workforce participation in safety was considered irrelevant and the workforce were there for productivity rather than stopping the work for every little safety concern. The development of these constructions, considered alongside the still prominent discourse of safety as enforcement, to some extent maintains this past within the present; this reality still has to be constructed in order to negate it and develop change within the accepted norm. This is in contrast to the constructions of the safety cultural change programmes with relation to ‘no-blame’ and therefore no violation which has been adopted more totally within their texts. This could suggest a development within the programmes as they work to become more rooted and an inherent part of the context of the sites, or alternatively that this earlier ‘reality’ is still the dominant social construction of site life and therefore needs explicating in order to ultimately purge it.

The constructions of the safety culture programmes by those outside them, the workforce and supervisors whose engagement was being sought, also represented the site realities as dissonant from the programmes in terms of these negative realities. The effect of the programmes was constructed in conversation as transient, linked back to the common practices and realities of the sites where production and speed were king. Safety was ascribed the powers of a magic potion, which gave the worker initial safety powers, but which wore off over time.

Indeed, safety as engagement was constructed at an explicit level, that people can be told how to work safety, but safety as practice was constructed as implicit in the work; people either know and want to work safely or they do not. The educational and interactional nature of the programmes was challenged in its effectiveness, again founded on the construction of safety as inherent within individuals and not something that could be
developed in practice through the educational methods of this type of programme. In fact, safety training and safety qualifications were themselves associated with the ability to be accepted for work, rather than the ability to work safely.

However, a further association with the approach to safety management through engagement also has potential repercussions of a more practical nature for the engaged individual. Engagement and participation are necessarily bound up with consequential personal responsibility. In enabling individuals to ‘make safety personal’, a level of engagement gives individuals a role of safety in practice, co-opting them into the safety management of the sites and assigning personal responsibilities for safety. This is in direct contrast to the developments of responsibility identified through the discourse of safety as enforcement. Whilst the workforce have constructed a reality in which they are absolved of all responsibility, to be managed and punished when necessary to deliver ‘safety management ‘within the sites, the safety cultural change programmes directly challenge this through their own construction of personalisation. This could be the demonstration of a clear understanding on behalf of the programmes and the discourses they have drawn on in order to generate change on sites as to the reality in which they are themselves operating.

That the discourse of safety as engagement constructs an inherent segregation, similar to that of safety as enforcement, could also be tempered by this desire for hierarchy and management of safety on sites from the workforce. The natural segregation of engagement in terms of main contractor/subcontractor roles needed to seek and respond to engagement practices has been suggested to construct dissonance within the process of engagement around safety. The texts of engagement and interaction around safety were frequently positioned within a segregated/engaged context, potentially developing incoherence around this aspect of safety, as personalisation and engagement were associated with the site hierarchy and its mechanistic framework.

However, an alternative reading of these segregated realities, considered within the context of this management hierarchy, actually constructs segregation as a positive aspect of site reality. Alongside the acceptance of management for the enforcement of safety, management was positioned as necessary for the practice of safety management. The enabling and facilitating of work practice approvals, safety rules and process were identified within the data, further developing the pattern of acceptance for management with relation to the positioning of safety on sites. Indeed through these various

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constructions positioning of the responsibility for safety was made clear, supporting notions that good management is essential for the safe running of sites (HSE 2006c).

This can be related to the discourses of safety as enforcement and engagement. Although safety is being constructed through the safety cultural change programmes through the language of engagement, directly challenging the ‘old’ realities and practices of the sites, there is still retention of management control. Although the workforce is asked to follow the rules, the rules themselves remain. Where engagement and participation is sought, there is frequently still more a monologue than a dialogue of safety developed. Despite the interweaving of enforcement and engagement, there are still constructions within the society of safety on sites which retain the traditional enforcement approach to safety management, albeit clad in the discourse dominant within the modern safety culture programmes.

6.7 Summary

Through this discussion, explorations of safety have developed not a single ‘truth of safety’ on sites, but rather provided insight into the variety and complexity of the truths that surround safety, reflective themselves of the highly variable site context.

The master discourses of safety have been employed to explore the wider context in which they are operating, through the practices and the society of the site. Relatively straightforward constructs and discourses have developed around safety, such as its polarisation, the construction of safety as PPE itself, and the development of safety as unsafety. However these were drawn on and further developed by the more complicated and interrelated webs of the wider discourses of safety as practice, enforcement and engagement.

This discussion of these master discourses has enabled the research problem to be explored in detail. It has illuminated the relationships and interactions that the people of the construction sites have to safety throughout their everyday work. It has examined the response to the safety management systems and cultural change programmes that have been established and implemented on large UK construction sites, and assisted in the understanding of how safety is seen in terms of its relevance and importance in the construction site environment.
This discussion has been able to develop the analysis from the three data sources and found them harmonious in their social constructions of safety on sites. The explication of the analytical process as a whole has added rigour and validity to the study, and indeed allows readers to trace each thread to the claims made from the data, enabling them to support or challenge these findings as they are made. It is hoped that this process has persuaded readers of the truths that surround safety within the construction site context.
7.0 Industry Review

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7.1 Introduction

In order to meet the final objective of the research design, the study was presented to industry through the form of a practitioner review, prior to its final conclusion. This process identified those directly involved with the phenomenon under study, and sought out their opinions as to the authenticity and credibility of the study and its findings (Taylor 2001b; Creswell 2003). In addition, the extent to which the practitioners felt the findings could be put to use beyond the academic environment was also explored (Angrosino 2007).

7.2 Method

Consequently, the key findings of the discussion were drawn out and provisional recommendations for interventions developed and collated within a summary document suitable for industry review. This document took the form of a two page précis of the findings and recommendations. The size of the review document was itself suggested by one of the participants during the scheduling of the meetings, as acceptable in scope and content for familiarisation prior to the discussion. A copy of the review document is contained within Appendix H.

Two discussions were undertaken separately with two industry experts, both employed as senior Health and Safety managers by two large contractors operating in the NW of England who had previously assisted with the study. The two experts were known to the researcher through her network of contacts in the industry and formed a sample of convenience. The review document was emailed out to the participants two weeks prior to the discussion to allow time for review. The two interviews were undertaken on the 12th and 13th of January 2012 and have been identified only through the date on which they were undertaken in order to ensure anonymity. A participation sheet was produced to inform the practitioners of the process and how their data would be utilised within the study, and to confirm that ethical procedures were followed as previously stated. A copy of the participation sheet can be found in Appendix J. The interviews were digitally recorded.

The subsequent treatment of this data instigated reflexive consideration and debate. The ultimate aim of this element of the study was to seek validation of the findings, to establish whether the study did ‘tell the truths’ of safety in the construction site environment. Therefore it did not seem appropriate to transcribe the interviews in the Jefferson style as the content would not itself be discursively analysed; these discussions were not adding to
the dataset of the study, rather they were providing a validation process for the final product of the study itself.

Yet this data and its development must remain within the social constructionist epistemology of the study. Arguably a transcript would provide a true reflection of the discussion, yet this would itself contain variations and inconsistencies within the talk, which would not facilitate a validation process seeking to award a status of ‘truth’ to the study. It was therefore proposed to crystallise the opinions of the practitioners in a written document, prepared by the researcher, to enable review and further discussion. A feedback summary document was duly produced after each interview, and sent to the practitioners for their approval and to permit them to edit them as they saw fit. These documents were then confirmed as accurate representations of their comments, the review added a further validatory step into the process, and ultimately produced a feedback document that was a valid summation of the discussion. The two feedback documents can be found in Appendix K.

One further consideration, necessary due to the epistemological position taken by this study, is that in order for this validation to be valid, the opinions of these two practitioners must be unconditionally awarded the status of ‘truth’. This assumption is made here through necessity, in order to bring this study to a point of closure and enable the exercise to be of value.

7.3 Précis for Industry Review

Refer to Appendix H for a copy of the précis document which formed the basis of the industry review.

7.4 Feedback from Industry: Practitioner Response and Researcher Reflection

Following the direction of Taylor (2001b) and Creswell (2003), the main function of the industry review exercise was to consider the credibility and validity of the study, and the extent to which it reflected real life experiences around safety on sites. In direct response to this, both practitioners stated that they felt the study was indeed credible, and was a true reflection of the current status of safety on large construction sites. The areas highlighted through the findings did resonate with the practitioners in terms of their
current opinions of safety and the recommendations further enhanced this, in some cases developing and clarifying areas which they had already been examining through their own safety management processes.

The industry review document had actually been put in to practice by both the practitioners within their organisations, within the two week period prior to the discussions with the researcher taking place. Either used to reinforce their current direction of thinking or as support for proposed new developments in terms of practical safety management, the study findings had already been taken up by industry in a practical way. In both instances, the document had been communicated beyond the practitioners themselves, and had been discussed in safety meetings within the companies. That the very brief précis alone was able to instigate such mobility within industry would suggest that the findings and recommendations were indeed considered to be of high value to the practitioners of safety on sites.

The method behind the study was explored within the review discussion. Both practitioners noted that traditional research around safety was conducted through behavioural studies and this study with its alternative approach was welcomed, although given the scope of the précis document the nuances of the method itself were not fully detailed. This positive attitude was most likely grounded in the credibility of the findings themselves, and that the alternative method of research had produced such findings was indicative of its reliability as a method in this field of study. The different perspective of the study was further highlighted as beneficial, as a major change within safety management and safety research was seen as necessary to take the next steps towards the reduction of incidents on sites.

The most fundamental finding from the study presented in the précis, that there was no clear or socially accepted definition of safety on construction sites, was of interest to both practitioners. Both identified this as a significant finding, and were able to relate this directly to their experiences in practice, although they had not directly considered this previously in their work. Following receipt of the précis document, one practitioner was already developing their thinking to the extent of removal of safe/unsafe and replacement with right/wrong to avoid this ambiguity.

The findings relating to safety and practice were also seen by the practitioners to be highly relevant to the current methods of safety management on sites, and both were in agreement that safety must become inherent in work practices. Both companies were
looking to develop this further within their own safety management processes, and this finding further reinforced their own thinking in this area. Both practitioners also identified that safe working leads to increased productivity and quality in the work and was something they were actively seeking to develop on their sites.

The ‘bundling’ of Health Safety and Environment to HS&E was also relevant to current industry practice. One practitioner had not considered the potential negative impact of using such bundles, especially as within industry there is a current trend for them to expand further to also cover quality and corporate responsibility. However, the other practitioner was highly aware of this concern, as his company had very recently removed the environment management responsibility from his department to reduce it to health and safety for the very reasons stated within the study. Again, that the study findings and recommendations were so in tune with industry practices would indicate the methods used for both data collection and analysis were valid in the area of safety research.

The findings and recommendations around safety violations were also identified as relevant by the practitioners, and both were already seeking to make changes in their own company practices to challenge the continuation of violations on sites, albeit through distinctly different processes. One of the practitioners identified this as fundamental to a significant step change they were introducing on their sites and linked this through to the final recommendation, which identified the potential hierarchy behind a safety violation. The practitioner felt this final recommendation resonated deeply with the current direction of their safety management process, which was focused on revealing the potential for decisions made by senior management to be the cause of site based violations, and that this responsibility needs to be identified and acknowledged.

Both practitioners felt that the findings did indeed tell the truth of construction site safety: the study was seen as credible and authentic in the way it had identified and explored safety on sites. The findings either reinforced current practitioner thinking, or illuminated new areas, which in turn had inspired further thought in the potential development of safety management in practice.

The recommendations made by the study were also considered to be valid, and through the contemporary developments in industry, were already being taken up in practice to various extents. The findings and recommendations were therefore of use beyond the academic, and were able to easily be translated into the industry environment.
The industry review also satisfied the potential for generalisation of the findings, concerned with the translatability of the findings and how well they fit into practice. This review has indicated that for these two practitioners, the findings did represent the truth of construction sites, which inevitably included their own construction sites beyond those directly examined by the study. The findings did translate to other instances, indicating a certain level of homogeneity within large construction sites in the North West of England, which in turn would enable generalisation of the findings within the study parameters.

The two industry reviews were beneficial to the study in three key ways. Firstly they have provided a ‘member check’ to affirm the validity of the study itself, both in the method used and the findings and recommendations drawn by the researcher. Secondly, they have confirmed the study as relevant to current industry thinking and developments, through both harmonisations with contemporary developments and with providing further insight around other elements which had also been considered as necessary for change. Finally, they have illustrated the potential for generalisation of the study findings beyond the direct sample, which again further reinforces the validity of the study within the industry as a whole. The practitioner comments have also further informed the final recommendations of the study made within Section 9.
## 8.0 Conclusions

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8.1 Overview

When this study commenced in 2007, the HSE announced that 78 people had died in the period 2006/07 on UK construction sites, a rate of over 3 deaths per 100 000 workers. At the time of writing, this figure had reduced to less than one worker death per week, and less than 2 workers per 100 000 involved in a fatal accident within the same timescale (HSE 2011b). However despite these improvements, the relatively high fatality and accident rate remains unacceptable (Donaghty 2009) and construction still remains the third most dangerous occupation in the UK (HSE 2011a).

Indeed, industry, government and academia were, and still are making best efforts to further reduce these statistics, and improve safety within the UK construction industry. The introduction of safety culture programmes by large UK contractors has also attempted to create a paradigm shift in the management and approach to safety on large UK construction sites. However, incidents and accidents still occur on these sites. This situation inspired the initial research question for this study with its focus on people. It wished to explore how people have responded to the safety management systems and safety culture programmes that had been established and implemented on large UK construction sites. It looked to people to examine how they saw safety, in terms of relevance and importance, within their everyday work on the large construction sites of the UK.

From the academic perspective, studies examining safety on UK construction sites are not uncommon, and have approached the problem in a variety of ways, for example seeking to further explore accident causation (Gibb et al 2001), the influence of project features (Manu et al 2010) of the safety culture of sites (Wamuziri 2011). Yet the majority of CMR around safety has been ‘scientific’, an approach which was unsatisfactory to the researcher. From her position as a site manager for a large construction contractor, involved with safety in practice on a daily basis, she was able to see that with reference to safety people did not behave rationally, they did not behave consistently and they did not conform to the patterns and behaviours that positivist research would imply could be measured and predicted. Therefore an alternative approach was proposed. Fields beyond CMR were explored, focusing on the philosophies, epistemologies and methods of the social sciences.
Ultimately a research design was established based on a social constructionist epistemology. Social constructionism sees the world as socially constructed by the people within it through their everyday interactions and practices (Gergen and Gergen 2004; Crowther and Green 2006). The nature of these interactions therefore considers that realities, as they are experienced, are in constant flux and change with variations in both people and contexts. This particular epistemology was not only able to accept variation around safety as experienced by the research on sites, but also to provide a level of explanation and understanding of such phenomena in context (Burr 2003). The most common analytical approach utilised within social construction, discourse analysis, was also explored and the approach of discursive psychology as proposed by Potter et al (2007) was ultimately employed for the study. This enabled an inductive analytical process to be undertaken to reveal variations and variability in the constructions, functions and actions of the data around safety in context. The findings of such a study would enable increased knowledge of safety within the construction site environment and therefore begin the process in furthering understanding of why, despite best efforts by all, accidents and fatalities are still occurring.

This contextualisation was explored through an examination of both literature around construction sites as places of work as well as literature focusing on safety on sites. From these two perspectives a holistic, albeit academic, understanding was developed of the potential dynamics of the realities in which safety was constructed.

The data for the study were gathered through six site visits, and comprised three types; safety documents, talk around safety, and photographic records of site safety signage. Detailed and explicated analysis was undertaken through the inductive method of discursive psychology, incorporating triangulation both amongst the data and between the three data types, to reveal how safety was constructed on sites through these particular sources. Key findings were in keeping with the theoretical suggestions of social constructionism and discursive psychology; there was indeed significant variation in the constructions of safety on sites, identifiable through the master discourses of safety. Indeed, there was no consensus which could answer the question ‘what is safety on sites?’ Alternative and occasionally dissonant realities were also identified between the different levels of site management, supervision and operatives, the research suggesting potential conflict between safety in its various constructions and the traditional site practices, with focus on production and speed.
From this overview, which sets out the study as a whole, a more detailed review will now be undertaken of the research goals, to conclude whether the study as a process did achieve a satisfactory conclusion.

8.2 Research Problem

The initial research problem for this study was based on consideration of the current accident and incident statistics and occurrences as positioned within the contemporary construction safety management environment of safety management systems, rigorous safety procedures and cultural change programmes. That accidents were still occurring on sites with such management frameworks in place indicated another ‘variable in the equation’; one that has been identified through many academic studies and was acknowledged by the management systems themselves; that of people.

The research problem for this study therefore focused on people and their approach to safety within the construction site environment. It wished to explore how people respond to these safety management systems and cultural change programmes and looked to people to examine how they see safety, in terms of relevance and importance, in their everyday work on the large construction sites of the UK.

The epistemology of this study accepted that people construct their social world through interactions and discourses, and the discourses of safety on large UK construction sites have been explored, identified and unpacked through three data sources that themselves constructed safety on sites. Analysis and discussion have identified the master discourses of safety; the associations with practice in terms of the relevance and importance accorded to safety during the work itself; the associations with enforcement and engagement in terms of the safety management systems and cultural change programmes, and their approaches to safety; the associations of safety as danger, as fluid and as polarised within the site environment. These conclusions with relation to the research problem are explored in more detail within Section 8.3, with reference to the research goals of the study.

8.3 Research Goals

The aim of this study was:

To explore how safety is socially constructed within UK construction site culture.
This aim was generated from the social constructionist epistemology and subsequently informed methodology, which was also embedded within the research objectives. These proposed four elements to be considered and explored in detail in order to achieve the aim. The objectives were:

1. To examine the social constructions of safety manifest on UK construction sites.

2. To examine how UK construction site management, supervisors and operatives construct and situate safety within their working lives.

3. To examine the contextualisation of safety on UK construction sites and the socially constructed realities in which it is positioned.

4. To establish recommendations for future safety initiatives, in terms of practices and interventions for change, and ensure the potential of such practical application through industry stakeholder validation.

To examine and conclude the success or failure of the study in achieving these objectives, and therefore ultimately the research aim, each shall be examined in turn. However, consideration must first be made of the research methodology which was fundamental to the construction of the research goals. The research objectives were themselves reliant on the successful delivery of constructionist data and analysis as prescribed by the methodology for their success, and to support the overarching aim.

8.3.1 Review of the Method

This methodological review will, by necessity, be something of a circular argument; in order to conclude the methodology suitable and valid, the findings must be considered in terms of satisfaction, which will in turn validate the methods employed to generate them. Firstly a review of the methodology through its own established standards of quality has been undertaken in order to establish confidence in the process as a whole.

The methodological process, as explicated throughout this thesis would appear to have satisfactorily met the key qualitative measures of quality as set out within Section 3.7. The validity of the study, repositioned as academic rigour, has been demonstrated through clear explication of the processes undertaken. The research design development, data collection and its analysis have been reflexively explored and presented in detail, in order
to facilitate readers’ assessments of this claim to rigour. Such reflexive explication should also satisfy common criticisms of credibility; again readers are appealed to directly through this open approach to make their own assessment of ‘truth’, as well as challenging critics of selective plausibilisation through clear discussion of the processes of data collection, treatment and analysis.

However, the argument could be made that despite adherence to these measures of quality, the development of this research process was itself inherently limited, as it was the work of one researcher; the decisions and interpretations made within this process are those of an individual. Other analytical interpretations of the data were inevitably possible, as well as other opinions as to the suitability of the methodological structure itself. Although, when considered from within the social constructionist epistemology of the study, this inherent ‘limitation’ has already been acknowledged and addressed. As there can be no ‘truth’ to be discovered, all discourses and constructions are personal, therefore this thesis itself can only ever be a personal interpretation; the study is itself a social construction of the social construction of safety.

Therefore, in order to seek validity beyond these internal criteria, the study also sought resonance both with the academic community and those familiar with the phenomenon under examination within industry. Through a series of peer-reviewed papers and articles, the critique and comment of the CMR academic community was actively sought as the study progressed in order to validate the methodological development. The practitioner review, undertaken towards the completion of the study, sought feedback from industry. This review found the research methodology to be considered to be highly valid, an argument made by the participating practitioners based on the relevance and credibility of the eventual study findings. These approaches to both academia and industry formed inherent parts of the study and its development, and permit the conclusion to be made that the methodology was fit for purpose and had been successfully implemented, both through the processes explicated within this thesis and the production of outputs that have satisfied the critique of industry and CMR academia.

Whilst a successful appraisal can be made of the methodology and its implementation, reflection on the time and effort assigned to the initial components of the study and thesis itself suggests a potential limitation. Due to the nature of the study and the academic field of CMR in which it was positioned, the researcher felt it was essential for the study to reinforce its social constructionist philosophy and methodology with rigour. Whilst this has
arguably resulted in a strong and robust methodology, it could be suggested that this focus has also resulted in more tentative practical implementation due to the relative apportioning of efforts within the research process. The data collection was limited to three source types, and although these are highly prevalent and therefore relevant contributors to the constructions of safety on sites, they cannot be considered to exhaust the repository of constructive media around safety. Other potential sources were explored within the methodology section, but due to practical requirements for such data gathering and the overall scope of this study, were ultimately deemed unsuitable. Although a shift in the allocation of efforts from the preparatory to the implementation stages could have possibly widened the data collection, given more time to develop processes that could have overcome the limitations discussed within the methodology section. However, despite this potential limitation in terms of the data sample utilised within the study, the findings developed through the constant comparison method have been found to be valid through both academic and industrial review.

8.3.2 Review of the Objectives

8.3.2.1 Objective 1: To examine the social constructions of safety manifest on UK construction sites

The examination of the social constructions of safety manifest on UK construction sites, undertaken through three common elements of site life, talk, documents and signage, found several master discourses. Safety was found to be highly chimeric, constructed as un-safety or danger, in association with practice or accidents, which are the manifestation of un-safety in reality. Safety was also constructed as PPE, the artefacts of safety, which was found to be the most common and prevalent discourse of safety within the site rhetoric, suggesting that this superficial manifestation of safety is accorded far more status and prominence than more complex or potentially challenging events which could have far more serious repercussions in practice. Indeed, the complexity of safety was evidenced through the discourse of safety as practice, through which safety was constructed as inherent in the practice of work, or alternatively as entity and the construction of safety as safe practice, the latter two segregated from work with consequential repercussions in terms of the responsibility and ownership of safety. Safety was also diminished through frequent associations and amalgamations with ‘environment’ and ‘health’ which further segregated it from the daily work practices of construction. Through the interactions of people around safety, identification was made of the closely related discourses of safety as
enforcement, associated with the rules, violations and punishments of the safety management systems, and safety as engagement, seeking to impose these restrictions and gain worker involvement and responsibility through the language of the safety cultural change programmes, which also reflected the hierarchy of the sites as they sought to manage safety at the different levels of authority.

The examination of the social constructions of safety as manifest within the discourses of safety on sites found variety in the master discourses of safety, and the truths and realities in which they operated. The research suggested that safety was fluid and variable in its manifestations and functions, as constructed by the talk, signage and documents of the sites. Yet within these findings there is the potential for methodological critique; that the implementation of social constructionism, itself grounded in variability and flux, will inevitably find these same characteristics in whatever phenomena it is set to examine. The question must be asked whether these findings are a consequence of the application of constructionist theory to safety on sites, or alternatively whether the constructionist lens is actually highly relevant to safety on sites and has simply been able to illuminate its many facets within the site context. Reassurance as to the latter can be found within the peer review process, which verified the findings, establishing them as credible and found them to resonate strongly with those whose everyday work brings them into contact with the realities and truths of safety on a daily basis.

Therefore, the conclusion can be drawn that the social constructionist findings of the study are indeed relevant and do ‘tell the truths’ of safety on UK construction sites. This knowledge and understanding of safety should now infiltrate the development of safety management systems and safety cultural change programmes in order to facilitate improvements in their practices and processes. For example, efforts can now be made to reduce the emphasis of the artefacts of PPE as safety, and safety as simply the practice of safety, and a focus instead placed on the fundamental integration of safety with the work practices of the sites where it is arguably most essential. Furthermore, the understanding and acknowledgement of the two voices of safety as enforcement and engagement, and the audience reception to them both when employed individually and combined, can be utilised to develop the voice of further interventions so it is able to speak in harmony with the site environment and the workforce hierarchies. These are just two examples of potential employment within future safety management interventions; however the knowledge and understanding generated through this study should be able to inform and
contribute to the future development of a wide variety of aspects of safety management systems as employed within the large construction sites of the UK.

8.3.2.2 Objective 2: To examine how UK construction site management, supervisors and operatives construct and situate safety within their working lives

This objective focused the study towards an examination of the relevance of the research findings to the construction site people and their social interactions. For this objective, the discourses of safety as enforcement and engagement which constructed the relationships around safety were most relevant amongst the wider discourses of safety. Through these closely associated discourses, safety was situated through the hierarchical implementation of the safety rules, itself constructed through the discourse of safety as enforcement. Responsibility for safety within hierarchical management structures was manifest through the various constructions of the different participants, and alternative realities of enforcement and punishment were constructed dependent on the relative positions of individuals in management structures. Operatives and site supervision constructed a reality where safety violations and punishments were commonplace, bending the safety rules was an everyday occurrence and punishment was accepted as due, with focus on the delivery of the punishment to maintain the respect and status of those concerned. Yet higher up the hierarchical chain, where the rules were established, a shift was evident to the discourse of engagement, where safety was personalised, and corporate management omitted violations and punishments from the discourse of safety, as required by their constructed reality of co-operative working and individual worker responsibility for safety.

The research indicated that there was discernible and identifiable segregation and variation between management, supervisors and operatives in how they constructed and situated safety in their working lives, and was able to examine and articulate the variety and dissonance found within the master discourses of safety as enforcement and engagement. However, the extent of these differences within the social hierarchy of the sites and the depth of exploration was arguably not supported by a sufficiently structured methodology to develop findings beyond the initial identification and examination of these discourses. Whilst efforts have been made to develop the findings through discussions linked back to safety management practices on sites, in order to position them within a relevant context, there is felt to be scope for further development and exploration.
It can therefore be concluded that whilst this objective did initiate examination of the management hierarchy and establish the relevant master discourses of safety within this context, it arguably did not explore this phenomenon to its full potential. The scope of the study was felt to be a limiting factor, and the data collection processes was not sufficiently tailored to specifically explore these hierarchically associated discourses. The study methodology was developed to permit initial explorations to be made around the social constructions of safety on sites, rather than facilitate a more focused approach exploring safety within the management hierarchy. However despite these limitations, it is suggested that these findings have actually brought this objective to a satisfactory conclusion, under the overarching exploratory aim of the study. The research has indicated that there are prominent discourses of safety which are very closely associated with the management hierarchy, and has examined some of the more prominent representations. A more structured methodology, with specific focus on the data collection process, could facilitate exploration of this particular phenomenon in more detail and further develop the findings suggested by this research. Indeed, this proposal is further outlined within the Recommendations found within Section 9.

8.3.2.3 Objective 3: To examine the contextualisation of safety on UK construction sites and the socially constructed realities in which it is positioned

The master discourses of safety as identified and explored through the research were also examined to inform the realities they constructed and operated in. This approach revealed consistency with the contextual descriptions suggested by the literature; sites are places of change, fundamentally driven by the pressures of production. Safety was either sacrificed for production, or production sacrificed for safety through the prominent conflict found within the discourse of safety as practice. The relative prioritisation of safety within these relationships was dictated by context and the hierarchical management position of those concerned, and was consequently subject to variation and change, with variable influence on the reality in which it was positioned.

Again here it could be suggested that this objective was restricted by the scope of the study and the methodological focus on the overall aim. However, contrary to the potential limitations of objective two, the strong correlation between the findings and the practical realities of the sites as found within the literature has indicated that the structure of the methodology was indeed appropriate for this particular focus of examination.
When examined against the aim of the study, this Objective has contributed to the exploration of safety on sites; the most prominent realities constructed around safety have been examined, and do indeed provide illumination of the context in which the findings of the two previous objectives can be positioned. These findings should now add to the existing literature of the realities of the construction site as related to safety. Their generation through an alternative and unique methodology to CMR should also enable triangulation with the positivist approaches that have led to the same findings and conclusions. This knowledge and understanding should also be disseminated to practitioners, to enable future safety management systems and cultural change programmes to be developed with these contextual concerns at their forefronts, and to directly challenge them within workplaces. That these findings support common thinking within academia, as evidenced within the literature, would suggest that sites still operate within a highly production driven reality, which should be of concern to those seeking to successfully implement safety management.

8.3.2.4 Objective 4: To establish recommendations for future safety initiatives, in terms of practices and interventions for change, and ensure the potential of such practical application through industry stakeholder validation

This objective will be delivered within the next section, however a preliminary step has been made through the industry review, in which various practical recommendations were drawn from the findings and presented to industry. All but one of the six presented recommendations for interventions were readily accepted by the practitioners, and were described as highly valid and indeed relevant to their field of operations. Their practical application was evident through the development of the ideas suggested within the interventions by the practitioners themselves and their agreement that the proposed areas of focus could indeed be implemented on sites. The only area of discussion was around the site signage, and this recommendation has been developed accordingly within Section 9. Whilst this industry review was naturally limited by the opinions of only two industry practitioners, these were of specific relevance to the study due to their employment by main contractors of a size equivalent to those within the study sample. Given the scope of the study, this scale of review was considered acceptable to ‘pilot’ the recommendations prior to their final development. It can therefore be suggested that this objective has been achieved; the study was able to develop findings that were relevant to industry, and indeed
able to suggest alternative practices and interventions for change that were felt to be relevant and practical by industry practitioners.

This study has also contributed to future recommendations through the provision of knowledge and understanding for industry and safety professionals to employ in their own development of new practices and interventions for change on sites. The findings have produced insights around safety, the management of safety and the contextual realities in which safety must operate, all of which can be disseminated to inform, influence and support future innovations in site safety management.

8.3.3 Review of the Aim

Throughout this examination of the objectives, reference has been made to the research aim: ‘to explore how safety is socially constructed within UK construction site culture’. The objectives have each contributed to the aim from the perspectives of safety, people and the realities in which they operate, in order to support the exploration of how safety is socially constructed on UK sites through the master discourses of safety to be found there. These various constructions are also embedded and indeed contributory to the UK construction site culture, constructing and positioning safety within this arena. Despite the limitations noted for the objectives within their own area of focus, when combined it can be asserted that they have indeed enabled the overall study aim to be achieved.

Academic peer review through papers and articles has been ongoing through the study development and has been further supported by industry review, which have validated the findings and conclusions suggested by the study in terms of their creditability and authenticity. It is therefore suggested that this study has been successful in its aim to explore how safety is socially constructed within UK construction site culture.

8.4 Contribution to Knowledge

As discussed within the introduction to this study, contribution to knowledge was sought within two distinct arenas; academia and industry. Within academia, the study was, as far as the researcher could establish, unique in its methodological approach. Within the field of CMR, although social constructionist research has been employed, such studies are rare and none has previously explored safety as its phenomenon of focus. Within the research of the social sciences, the researcher could locate just one study which sourced data from the construction industry, and this was examining gender issues (Baxter and Wallace 2009).
This study has been undertaken by a researcher whose background is firmly in CMR, and indeed can be traced back to the construction site itself, yet it is hoped that this research is equally of interest to the social sciences, in terms of the application of social constructionist methodology to this highly specific environment. Therefore, it is suggested that this study has made a contribution to knowledge through the unique application of method to subject and subject to method.

It is hoped that this study will add to the small but growing nucleus of work within CMR that does not feel obligated to the positivistic roots of the discipline, and will be able to methodologically support further cross-disciplinary studies examining not only safety but also other social and personal aspects of the construction industry.

Through the application of the constructionist lens, the study has also demonstrated the potential for this methodological approach to reveal and illuminate alternative approaches for practical interventions for industry. That the study was able to produce findings and recommendations that have been validated by industry can only support a claim for contribution to knowledge. Generalisation of these findings to the industry on a wider scale can also be suggested, as two informed readers, in the shape of the industry practitioners, have assessed the transferability and fittingness of the study findings and not found them wanting.

Indeed, rather than further segregating academia and industry by the application of less familiar research techniques, themselves derided by some in CMR, it could be argued that this study has drawn them closer together. The presentation of relevant and valid findings and the potential benefits that could be gained from further development into practical measures for safety improvements, has suggested the applicability of this approach to the social aspects of the industry. This study has demonstrated the unique insight provided by the use of a constructionist research method, very different to the ‘traditional’ measuring and counting research more frequently employed. This new approach and its alternative findings could assist the industry in achieving the step-change it is seeking with regard to safety on sites. As one of the industry practitioners commented ‘if you keep doing the same thing, you get the same results’, and this study has indeed suggested alternative areas of focus to support the industry’s battle to further improve safety on its sites.

Overall, it is suggested that this study has made a contribution to knowledge for both academia and industry. It has been able to demonstrate the benefits of a cross-disciplinary
approach and the employment of a constructionist methodology in the examination of safety both in the practical and theoretical environments. This study has undertaken an exploration of how safety was socially constructed within UK construction site culture, through the analysis of various data been able to present findings, which have found to be relevant and valid within the construction site context. That these findings are already assisting practitioners in developing their own thinking around safety management on sites is, to reflect for a moment in the vernacular, bloody fantastic!
9.0  Recommendations

9.1  Introduction  
9.2  Recommendations for Further Academic Research  
9.3  Industry Recommendations for Interventions
9.1 Introduction
As discussed with regard to contribution to knowledge, it was hoped that the study would have relevance to both academia and industry and consequently this is reflected in the recommendations made here. Two strands of recommendations have therefore been developed under these two distinct areas of interest; for academia and for industry.

9.2 Recommendations for Further Academic Research
Two recommendations are made here. This study has hopefully set a social constructionist approach to safety on sites in motion and laid the methodological groundwork for further research to be undertaken. Indeed the first recommendation made by this study is to further develop the findings and conclusions made herein. The social construction of safety on sites has been found to be highly illuminating with reference to industry practices and will be able to support further developments and interventions to assist industry in further improving safety on sites.

Therefore the first recommendation made is that this avenue of exploration be continued, through alternative data sources or mediums, to gain further understanding. For example, the use of naturally occurring data would provide a key insight into how safety is constructed by people away from a formal context and how it is positioned within daily work practices whilst they are being undertaken.

The second recommendation is developed from the conclusions of objective two, which established that there is indeed significant variety in the constructions of safety in particular context between those of corporate management, site management, and supervisor and operative levels on sites. This merits further research in order to establish the various realities in which each hierarchical level is operating within with reference to safety, and potential areas of conflict and dissonance that may result. A study with research goals specifically focused on exploring this phenomenon within the context of safety on sites arguably has the potential to produce fruitful findings. Such insight could further assist practitioners in the development of focused safety training and education programmes for the different levels of management on sites, specifically addressing the variations within the constructions of safety between them. It could also potentially bring further illumination to the juxtaposition of safety as a hindrance to work practice, and work
practice as a hindrance to safety, developed from the management pressures of time and money.

Building on the research design already established for this study, research focused on the exploration of the hierarchy of safety could seek the aim:

To explore the social constructions of safety within the hierarchical context of the UK construction sites

And look to examine the contextual positioning of safety within the hierarchies of the site people, seeking areas of dissonance and commonality amongst them. Such a study could develop further the master discourses of safety as enforcement and engagement and explore other possible discourses within the hierarchy of safety. Methodologically, consideration would be necessary to determine the most appropriate data sources for analysis, and indeed how to capture these relative hierarchies within the data itself.

Both of these recommendations are drawn from the conclusions of this study, which has established this method of enquiry as relevant and valid in the exploration of safety within the construction site environment.

9.3 Industry Recommendations for Interventions

These recommendations were first developed from the findings prior to the industry review. The discussions with the industry practitioners confirmed their interest in these recommendations, as either practical steps to be implemented as proposed, or as ideas on which their own safety processes and programmes should seek to develop further. The one area of debate surrounded recommendation five which was more prescriptive in its first incarnation. This has been developed to a recommendation that suggests intervention should be made in keeping within a company’s own safety processes and standards.

These recommendations are therefore proposed as interventions to assist large contractors in the UK to reappraise and develop their own safety management systems. They are presented to assist safety and construction professionals in the production and development of practical safety interventions within existing safety management frameworks and safety cultural change programmes, and developed to harmonise with existing safety practices and processes.
1. Safety requires clear definition of its role within the site environment. At present there is no consistent understanding of what safety is on construction sites. This variation has led to the development of many different ideas around safety and therefore many different attitudes and practices in association with safety throughout the site based workforce. A clear definition of safety is required and must be disseminated to all on sites. However, this definition must be practical in its application to the typical site environment, and allow for change and flexibility in the place of its implementation. This will also ensure that safety is fully integrated within work practices and tasks, rather than positioned as an extra to normal work activities.

2. Safety should be separated out from commonly used amalgamations, such as HS&E, which should not be used on sites. Such bundles not only reduce the impact of each element, but also position the component elements as one amalgamation, providing a convenient categorisation which people use to separate them all from the work itself. The current developments which incorporate Quality or CSR within these amalgamations will further dilute the meaning and impact of safety, and further disassociate it from the work itself, as it can be grouped with other elements that are not necessarily of immediate concern to the task in hand.

3. Safety must be bound up with work practice, beyond the practice of safety itself. Team or task briefings must incorporate safety into practice and everyday work tasks, rather than positioning it as an add-on to the activity. This can be developed through the talk around activities, led by foreman and supervisors, to bring the discussion of work and the discussion of safety together as one inseparable practice. This will require specific education and the development of communication skills and a change in attitude towards the inclusion of safety in practice.

4. Safety violations must be accepted as everyday occurrence in order to ultimately eliminate them. Formal disciplinary processes and a zero tolerance approach will be required in order to create a shift in current thinking, although development of a definition of safety (recommendation 1) will assist management to remove the concept of ‘a bit unsafe’. At present there is evidence of violations and indeed enforcement of rules that challenge these violations on sites, but there is very little management support in terms of punishments for such actions. This may have
developed from the no-blame culture around safety, yet in some instances violations are now considered to be commonplace and punishment is concerned with how the violator is spoken to, rather than any actual consequences for their potentially deliberate violation.

5. Safety signage was frequently informally constructed by the site supervisors, and was therefore highly inconsistent in the information provided or its engagement with readers. A standardisation of signage with predetermined requirements to be completed for each instance should be considered in order to ensure all relevant information was provided to encourage compliance. In many instances the reasons why safety measures are in place are not clear, and conversely safety measures are demanded yet are not justified. This was found to be very common within access signage which does not explain why people should use the walking routes – they are not titled as ‘safe’ – yet compliance is assumed without reason. This area should be considered in order to better communicate through signs, as redundant and old signage is also a common feature which reduces the impact and relevance of safety signage as a whole.

6. Fundamental site practices of productivity and speed are seen as a conflict to the development of safety in practice. This is a concern for corporate management and requires consideration right up the management chain. Decisions regarding tender practices, payment systems and work programmes must consider safety as it will develop on the site itself, long after these decisions are made. Evidence of the impact of these decisions can be found in the talk at the site level, and provides justification for the common safety violations due to time and money. In order to develop a safe site, these factors need to be considered and addressed in context to eliminate their influence on un-safety.

As noted, these six recommendations for interventions are made with the intention of developing and improving existing safety management systems of large UK contractors.
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## Appendices

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Appendix A
Site visit information sheet
Study Information Sheet

Safety Study

My name is Fred Sherratt. I am a researcher and lecturer working at the University of Bolton. I am undertaking a research project as part of my studies at the University, and the project is also supported by the Chartered Institute of Building (CIOB).

The project I am working on is exploring safety on construction sites. The study is trying to find out what and how people think about safety on construction sites. It is trying to find out what the best ways to talk about safety are, opinions on the safety training used, and how best to create a truly safe environment.

The study is therefore gathering data around how we talk and write about safety on sites. This includes talking to people on many different construction sites, including operatives, supervisors and managers, to get their views and opinions, and also gathering documentary data. This documentary data would likely include site inductions, safety cards, safety posters, safety signage etc. Your site has been chosen as you have indicated you might be willing to help.

I used to work myself as a site supervisor for a large construction company, and have over 13 years experience of working in the industry. I hold a supervisory CSCS card and am SSSTS qualified.

What does the research involve?

If you agree to allow your site to take part, you will be asked to permit an accompanied site tour at your convenience. During the tour, photographs will be taken of all the safety signage present on the site and within the welfare facilities. **Photography will not be undertaken of any people working on the site**, only site safety signage will be photographed.

You will also be asked to provide copies (either hard copy or electronic) of your site induction and other safety documentation such as near miss cards, visitors induction forms etc. These documents are to be in the **uncompleted** state – the study is not seeking completed documents.

Do we have to take part?
No taking part is voluntary. If you don’t want to take part you do not have to give a reason and no pressure will be put on you to try to change your mind. You can also stop the tour at any time.

If I agree to take part, what happens to the data you gather?

All the information you give me will be confidential and used for the purposes of this study only. The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner. The information will not be used in a way which will enable the site or company to be identified individually, this will always remain anonymous.

If, after the visit, you want any more information about the study, please contact me at The University of Bolton on 01204 903848 or at f.sherratt@bolton.ac.uk.

Thank you very much for your help!
Site Consent Form

Safety Study

I have been issued with and read and understood the Study Information Form for the Safety Study being carried out by Fred Sherratt.

I understand that participation is voluntary and I can stop the tour at any time without having to give a reason, and I am not under any obligation to participate.

I give my consent to participate in this study and allow photographs to be taken digitally and documents (either hard copy or electronic) to be removed from site.

I give my consent for sections or elements of the data gathered from this visit to be presented anonymously within the study.

Name: ..................................................................................................................

Position: ............................................................................................................

Signed: ...............................................................................................................

Date: ..................................................................................................................

Visit Ref (Researcher to complete): .............................................................
Appendix B

Data collection protocol check-sheet
## Data Collection Protocol Checksheet

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Site: ____________________________ Date: ____________________________
Appendix C
Participant information sheet
Participant Information Sheet

Safety Study

My name is Fred Sherratt. I am a researcher and lecturer working at the University of Bolton. I am undertaking a research project as part of my studies at the University, and the project is also supported by the Chartered Institute of Building (CIOB).

The project I am working on is exploring safety on construction sites. The study is trying to find out what and how people think about safety on construction sites. It is trying to find out what the best ways to talk about safety are, opinions on the safety training used, and how best to create a truly safe environment. I am talking to many people on many different construction sites, including operatives, supervisors and managers, to get their views and opinions. You have not been chosen for any particular reason, other than you have indicated you might be willing to help.

I used to work myself as a site supervisor for a large construction company, and have over 13 years experience of working in the industry.

What will I have to do if I take part?

If you agree to talk part, I will ask you some questions. There aren’t any right or wrong answers, I just want to hear about your opinions. This should take around ten minutes at the longest. Please note that some of the questions will ask you personally what you feel about safety on sites.

Do I have to take part?

No taking part is voluntary. If you don’t want to take part you do not have to give a reason and no pressure will be put on you to try to change your mind. You can also stop the discussion at any time.

If I agree to take part, what happens to what I say?

All the information you give me will be confidential and used for the purposes of this study only. The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner. The information will not be used in a way which will enable you to be identified individually, you will always remain anonymous.
What you say will not be reported back to your supervisors, managers or anyone in your company.

What do I do now?

Think about the information on this sheet and ask me if you are not sure about anything. If you agree to take part please sign the attached consent form. This will not be used to identify you, it will be filed separately from all other information.

If, after the discussion, you want any more information about the study, please contact me at The University of Bolton on 01204 903848 or at f.sherratt@bolton.ac.uk.

Thank you very much for your help!
Participant Consent Form

Safety Study

I have been issued with and read and understood the Participant Information Form for the Safety Study being carried out by Fred Sherratt.

I understand that my participation is voluntary and I can stop the discussion at any time without having to give a reason, and I am not under any obligation to participate.

I give my consent to participate in this study and allow our discussion to be recorded digitally.

I give my consent for sections of what I say to be transcribed and presented anonymously within the study.

Name:.............................................................................................................

Signed:.............................................................................................................

Date:................................................................................................................

Discussion Ref (Researcher to complete):..............................................
Appendix D

Data collection record
## Data Collection Record

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<td>18/09/2009</td>
<td>Sign</td>
<td>Photograph</td>
<td>Block C &amp; D Team</td>
<td>Entrance Walkway inside site</td>
<td>A4 paper, laminated, office made, on plywood backing</td>
</tr>
<tr>
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<td>11</td>
<td>AS08</td>
<td>18/09/2009</td>
<td>Poster</td>
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<td>Is this acceptable?</td>
<td>Entrance Walkway inside site</td>
<td>Laminated professional poster</td>
</tr>
<tr>
<td>12</td>
<td>AS09</td>
<td>18/09/2009</td>
<td>Poster</td>
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<td>Relationship as the foundation of accomplishment</td>
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<td>13</td>
<td>AS10</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Access/Power on information</td>
<td>Entrance Walkway inside site</td>
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<td>14</td>
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<td>Considerate Constructors Scheme</td>
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<td>AS12</td>
<td>18/09/2009</td>
<td>Sign</td>
<td>Photograph</td>
<td>This gate must be closed and secured when not in use</td>
<td>Site Access Gate, open, unmanned</td>
<td>A3 paper, laminated, office made</td>
</tr>
<tr>
<td>16</td>
<td>AS13</td>
<td>18/09/2009</td>
<td>Sign</td>
<td>Photograph</td>
<td>Caution do not enter demolition in progress</td>
<td>Adj Block B, on herras, obsolete</td>
<td>A3 paper, laminated, office made</td>
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<tr>
<td>17</td>
<td>AS14</td>
<td>18/09/2009</td>
<td>Sign</td>
<td>Photograph</td>
<td>Do not remove these barriers</td>
<td>Block B, GF, tied to yellow crash barrier</td>
<td>A4 paper, laminated, office made</td>
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<td>18/09/2009</td>
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<td>Walkway crossing in centre of site</td>
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<td>18/09/2009</td>
<td>Sign</td>
<td>Photograph</td>
<td>Entry signboard to Block C - various signs</td>
<td>Block C Entrance</td>
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<td>18/09/2009</td>
<td>Sign</td>
<td>Photograph</td>
<td>PPE Warning</td>
<td>Block C Signboard</td>
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<td>No Urinating in the Core Areas</td>
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<td>Do not move barriers</td>
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<td>Sign</td>
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<td>Entry signboard to Block D - various signs</td>
<td>Block D Entrance</td>
<td>Various - see image</td>
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298
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<td>Sign, Photograph</td>
<td>PPE must be worn at all times</td>
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<td>Client/Management/Visitor Safety &amp; Environmental Site Rules</td>
<td>Site Offices</td>
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<td>Safety Committee Meeting Feedback</td>
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<td>DS02</td>
<td>19/07/11</td>
<td>Poster</td>
<td>Look after yourself and your family this summer</td>
<td>Canteen</td>
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<td>47</td>
<td>DS03</td>
<td>19/07/11</td>
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<td>Respect Safety</td>
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<td>48</td>
<td>DS04</td>
<td>19/07/11</td>
<td>Poster</td>
<td>Are you too laid back about safety/are you living dangerously?</td>
<td>Back of Disabled WC toilet door</td>
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<td>DS05</td>
<td>19/07/11</td>
<td>Sign</td>
<td>Good Health and Safety is a habit not a request</td>
<td>Safety Noticeboard, site office corridor</td>
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<td>DD07</td>
<td>19/07/11</td>
<td>Poster</td>
<td>Safety Alert - safe slinging</td>
<td>Safety Noticeboard, site office corridor</td>
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<td>Photograph</td>
<td>Workforce consultation launch - setting the standard</td>
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<td>52</td>
<td>DS08</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Safety Man - accident data</td>
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<td>DS09</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Filling in a near hit card</td>
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<tr>
<td>54</td>
<td>DS10</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Near Hits to Date, Falls from height</td>
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<td>55</td>
<td>DS11</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Risks of the Day</td>
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<td>56</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Sun safety for everyone</td>
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<td>DS13</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Are you a site supervisor training information</td>
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<td>DS14</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Safety hotline/near hit information</td>
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<tr>
<td>59</td>
<td>DS15</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>PPE does not need to be worn, smoking area</td>
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<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
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<td>61</td>
<td>DS17</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Mobile phones must not be used past this point</td>
</tr>
<tr>
<td>62</td>
<td>DS18</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Substructure/Superstructure Huddle board</td>
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<tr>
<td>63</td>
<td>DS19</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Weekly plan/daily update sign</td>
</tr>
<tr>
<td>N.</td>
<td>DS</td>
<td>Date</td>
<td>Type</td>
<td>Description</td>
<td>Location</td>
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<tr>
<td>64</td>
<td>DS20</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>HSE 10 steps poster</td>
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<tr>
<td>65</td>
<td>DS21</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Please respect these toilet facilities</td>
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<tr>
<td>66</td>
<td>DS22</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>First Aid Kit Located in the Stores</td>
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<td>DS23</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Danger deep excavation on crash barrier, groundworks walkway</td>
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<tr>
<td>68</td>
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<td>19/07/2011</td>
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<td>Danger deep excavation on crash barrier, groundworks walkway</td>
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<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Eye wash please don’t abuse it on eyewash in store cabin on site</td>
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<td>70</td>
<td>DS26</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Completion Dates On scaffold above walkway into building</td>
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<td>71</td>
<td>DS27</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Diverted routes and emergency exit route On scaffold above walkway</td>
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<td>72</td>
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<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Mobile phones to be used in designated areas only On scaffold adjacent to walkway</td>
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<td>73</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Mobile phones may not be used in this area On wall in building</td>
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<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Caution scaffolders working ahead Above doorway in building</td>
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<td>19/07/2011</td>
<td>Sign</td>
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<td>Fire hose/fire host reel Fire cupboard</td>
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<td>Sign</td>
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<td>Sign</td>
<td>Photograph - Mobile phones may not be used in this area</td>
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<td>External walkway to building</td>
<td>Various - see image</td>
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<td>Sign</td>
<td>Photograph - Site code of considerate practice</td>
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<td>Sign</td>
<td>Photograph - Construction exclusion zone keep out</td>
<td>Tree protection zone, on fence around tree</td>
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<td>Photograph - Completion Dates</td>
<td>On scaffold adjacent to walkway</td>
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<td>Photograph - Mobile phones may not be used in this area</td>
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<td>Entrance to site</td>
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<td>Hoist run off</td>
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<td>No Passengers Goods Hoist Only</td>
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<td>Photograph</td>
<td>Push to open/close</td>
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<td>Sign</td>
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<td>Mobile phone zone</td>
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<td>Scaffold erection information</td>
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<td>Sign</td>
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<td>Follow temporary route</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Hearing exclusion zone</td>
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<td>100</td>
<td>DS56</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
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</tr>
<tr>
<td>101</td>
<td>DS57</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>CSCS Card information</td>
</tr>
<tr>
<td>102</td>
<td>DS58</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Minimum PPE required vest/hand protection</td>
</tr>
<tr>
<td>103</td>
<td>DS59</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Minimum PPE required hat/safety boots</td>
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<td>DS60</td>
<td>19/07/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Various - see image</td>
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<tr>
<td>DC01</td>
<td>03/08/2011</td>
<td>Audio File</td>
<td>Conversation with a subcontractors' site foreman</td>
<td>Induction Room</td>
<td>8min 38sec duration</td>
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<tr>
<td>DC02</td>
<td>03/08/2011</td>
<td>Audio File</td>
<td>Conversation with a subcontractors' site operative</td>
<td>Induction Room</td>
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<td>ED01</td>
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<td>Powerpoint presentation</td>
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<td>Sign</td>
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<td>Entrance walkway to site</td>
<td>Plasticised professionally made sign</td>
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<td>ES05</td>
<td>02/08/2011</td>
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<td>Entrance walkway to site</td>
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<td>Photograph</td>
<td>Entrance walkway to site</td>
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<td>Photograph</td>
<td>Entrance walkway to site</td>
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<tr>
<td>ES08</td>
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<td>Date</td>
<td>Type</td>
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<td>118</td>
<td>ES09</td>
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<td>Health Safety &amp; Environment Information</td>
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<td>HSE Notice board, entrance walkway to site</td>
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<td>119</td>
<td>ES10</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Pedestrian Route</td>
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<td>Above walkway onto site</td>
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<td>120</td>
<td>ES11</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Fire and Emergency Plan</td>
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<td>Fire Point adjacent walkway inside site</td>
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<td>121</td>
<td>ES12</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Site notice board - various information</td>
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<td>Adjacent to walkway inside site</td>
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<tr>
<td>122</td>
<td>ES13</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>DAB Board</td>
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<td>Site notice board</td>
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<tr>
<td>123</td>
<td>ES14</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Site Layout Map</td>
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<tr>
<td>124</td>
<td>ES15</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Access to site via gymnasium</td>
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<td>Closed walking route</td>
</tr>
<tr>
<td>125</td>
<td>ES16</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Warning heavy plant movement in this area</td>
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<td>Adjacent to scaffolded walking route</td>
</tr>
<tr>
<td>126</td>
<td>ES17</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>The person responsible for this electrical installation is XX</td>
</tr>
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<td></td>
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<td>Temporary electric box</td>
</tr>
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<td>127</td>
<td>ES18</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Caution site traffic, look both ways</td>
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<td>Crash barrier (not in use as walkway)</td>
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<tr>
<td>128</td>
<td>ES19</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Pedestrian route</td>
</tr>
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<td></td>
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<td></td>
<td>Closed walkway inside building</td>
</tr>
<tr>
<td>129</td>
<td>ES20</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Fire point</td>
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<td>Inside gym, not accessible via walking route</td>
</tr>
<tr>
<td>130</td>
<td>ES21</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Follow for access</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Above doorway in building (blocked)</td>
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<tr>
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<tr>
<td>131</td>
<td>ES22</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph This machine is on hire to XX</td>
<td>on cherry picker, GF of building</td>
</tr>
<tr>
<td>132</td>
<td>ES23</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Mobile phone zone/no smoking/access route/bribery information</td>
<td>On wall in building</td>
</tr>
<tr>
<td>133</td>
<td>ES24</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Access to all zones</td>
<td>On column in building (defunct)</td>
</tr>
<tr>
<td>134</td>
<td>ES25</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Caution trolley scabblers operating in this area</td>
<td>On wall in building</td>
</tr>
<tr>
<td>135</td>
<td>ES26</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Fire point</td>
<td>Ground Floor</td>
</tr>
<tr>
<td>136</td>
<td>ES27</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Access to all zones</td>
<td>On column in building (defunct &amp; obscured)</td>
</tr>
<tr>
<td>137</td>
<td>ES28</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Pedestrian walkway please follow</td>
<td>On wall in building</td>
</tr>
<tr>
<td>138</td>
<td>ES29</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Follow for access to staircore 2</td>
<td>On wall in building</td>
</tr>
<tr>
<td>139</td>
<td>ES30</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Fire exit running man above doorway (p/bd construction) L1</td>
<td>Staircase wall</td>
</tr>
<tr>
<td>140</td>
<td>ES31</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Follow for access to zone 3 and 4 upper floors</td>
<td>Staircase wall</td>
</tr>
<tr>
<td>141</td>
<td>ES32</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Follow for access</td>
<td>Staircase wall</td>
</tr>
<tr>
<td>142</td>
<td>ES33</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Staircore 4 access to upper ground only</td>
<td>Staircase wall</td>
</tr>
<tr>
<td>143</td>
<td>ES34</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Mobile phone zone</td>
<td>Corridor wall</td>
</tr>
<tr>
<td>#</td>
<td>Code</td>
<td>Date</td>
<td>Type</td>
<td>Description</td>
<td>Additional Information</td>
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<tr>
<td>144</td>
<td>ES35</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Fire exit running man corridor, propped on floor</td>
<td>Plasticised professionally made sign</td>
</tr>
<tr>
<td>145</td>
<td>ES36</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>No access plywood blocking access</td>
<td>marker pen on ply</td>
</tr>
<tr>
<td>146</td>
<td>ES37</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Pedestrian walkway please follow staircase wall</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>147</td>
<td>ES38</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Exclusion zone no entry crash barrier across doorway L1 atrium</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>148</td>
<td>ES39</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>L1 drawing (types of internal plasterboard wall) on L1 notice board</td>
<td>A0 annotated printout, laminated</td>
</tr>
<tr>
<td>149</td>
<td>ES40</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>L1 noticeboard Purpose built L1 noticeboard</td>
<td>Various - see image</td>
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<tr>
<td>150</td>
<td>ES41</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>No MEWPs allowed in this storage area crash barrier L1 (defunct)</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>151</td>
<td>ES42</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Access route to steel fabrication yard crash barrier L1 (defunct)</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>152</td>
<td>ES43</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>No MEWPs allowed in this storage area crash barrier L1 (defunct)</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>153</td>
<td>ES44</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Fire exit running man On wall in building</td>
<td>plasticised professionally made sign</td>
</tr>
<tr>
<td>154</td>
<td>ES45</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Danger hole below plywood hole cover L1 spray through stencil onto plywood</td>
<td></td>
</tr>
<tr>
<td>155</td>
<td>ES46</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Fire point Level 1</td>
<td>Various - see image</td>
</tr>
<tr>
<td>156</td>
<td>ES47</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Follow for access On wall in building</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>157</td>
<td>ES48</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Fire point Level 1</td>
<td>Various - see image</td>
</tr>
<tr>
<td>158</td>
<td>ES49</td>
<td>02/08/2011</td>
<td>Sign, Photograph</td>
<td>Roof access only HAKI stair to roof</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>Date</td>
<td>Type</td>
<td>Description</td>
<td>Location</td>
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<tr>
<td>159</td>
<td>ES50</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Zones 6 &amp; 7 on wall in exposed atrium, segregated area</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>160</td>
<td>ES51</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Access route to steel fabrication yard/staircore 1 on wall</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>161</td>
<td>ES52</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Pedestrian walkway please follow/floor loadings on edge protection of slab L1</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>162</td>
<td>ES53</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Pedestrian walkway please follow/fire exit/column QA check on column L2</td>
<td>Various - see image</td>
</tr>
<tr>
<td>163</td>
<td>ES54</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Caution hot works/mobile plant/danger HAKI stair to roof</td>
<td>A3 paper, laminated, office made</td>
</tr>
<tr>
<td>164</td>
<td>ES55</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Caution hot works/mobile plant Ladder access to roof</td>
<td>A3 paper, laminated, office made</td>
</tr>
<tr>
<td>165</td>
<td>ES56</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph All works on the roof require a permit to work roof access</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>166</td>
<td>ES57</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Pedestrian route/access to zone 5 all levels on column L2</td>
<td>Various - see image</td>
</tr>
<tr>
<td>167</td>
<td>ES58</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Pedestrian walkway please follow on crash barrier, L1</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>168</td>
<td>ES59</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph No MEWPs allowed in this storage area on crash barrier, L1</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>169</td>
<td>ES60</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Danger hole below on plywood hole cover L1 spray through stencil onto plywood</td>
<td>A4 paper, laminated, office made</td>
</tr>
<tr>
<td>170</td>
<td>ES61</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph Danger deep excavation on crash barrier, external groundworks</td>
<td>A3 paper, laminated, office made</td>
</tr>
<tr>
<td>ID</td>
<td>Code</td>
<td>Date</td>
<td>Type</td>
<td>Image</td>
<td>Description</td>
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<tr>
<td>171</td>
<td>ES62</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Danger deep excavation on crash barrier, external groundworks</td>
</tr>
<tr>
<td>172</td>
<td>ES63</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Exclusion zone no entry crash barrier across doorway GF atrium</td>
</tr>
<tr>
<td>173</td>
<td>ES64</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Tower crane information/Mobile phone Zone on tower crane ply surround GF</td>
</tr>
<tr>
<td>174</td>
<td>ES65</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Pedestrian walkway please follow GF corridor inside building</td>
</tr>
<tr>
<td>175</td>
<td>ES66</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Do not remove props GF sports hall</td>
</tr>
<tr>
<td>176</td>
<td>ES67</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Pedestrian route External walkway to building (defunct)</td>
</tr>
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<td>177</td>
<td>ES68</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Health Safety &amp; Environment Information Car Park hoarding</td>
</tr>
<tr>
<td>178</td>
<td>ES69</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Our safety performance walkway to car park outside site</td>
</tr>
<tr>
<td>179</td>
<td>ES70</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Site entrance information outside of site gates</td>
</tr>
<tr>
<td>180</td>
<td>ES71</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Site entrance information outside of site gates</td>
</tr>
<tr>
<td>181</td>
<td>ES72</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Site gates outside of site gates</td>
</tr>
<tr>
<td>182</td>
<td>ES73</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
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</tr>
<tr>
<td>183</td>
<td>ES74</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Project Information outside of site gates</td>
</tr>
<tr>
<td></td>
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<tr>
<td>184</td>
<td>ES75</td>
<td>02/08/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Considerate Constructors Scheme outside of site gates plasticised professionally made sign</td>
</tr>
<tr>
<td>185</td>
<td>EC01</td>
<td>02/08/2011</td>
<td>Conversation</td>
<td>Audio File</td>
<td>Conversation with a main contractor's site operative Small meeting room 7min 41sec duration</td>
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<tr>
<td>186</td>
<td>EC02</td>
<td>02/08/2011</td>
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<td>Audio File</td>
<td>Conversation with a main contractor's site operative Small meeting room 6min 01sec duration</td>
</tr>
<tr>
<td>187</td>
<td>EC03</td>
<td>02/08/2011</td>
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<td>Audio File</td>
<td>Conversation with a subcontractor's site foreman Small meeting room 7min 52sec duration</td>
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<tr>
<td>188</td>
<td>FD01</td>
<td>16/09/2011</td>
<td>Document</td>
<td>Hardcopy</td>
<td>Zero Harm by 2012 Leaflet site office A4 paper, site printed formal document, folded into leaflet</td>
</tr>
<tr>
<td>189</td>
<td>FD02</td>
<td>16/09/2011</td>
<td>Document</td>
<td>Hardcopy</td>
<td>Golden Rules card site office A6 card, professionally printed</td>
</tr>
<tr>
<td>190</td>
<td>FD03</td>
<td>16/09/2011</td>
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<td>Photograph</td>
<td>Site safety notice board Induction room Various - see image</td>
</tr>
<tr>
<td>193</td>
<td>FS02</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Site safety notice board Induction room Various - see image</td>
</tr>
<tr>
<td>194</td>
<td>FS03</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
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</tr>
<tr>
<td>195</td>
<td>FS04</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Site safety notice board Induction room Various - see image</td>
</tr>
<tr>
<td>196</td>
<td>FS05</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Zero harm action plan (detail) site safety notice board, induction room A3 paper, site printed formal document</td>
</tr>
<tr>
<td>197</td>
<td>FS06</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Health and safety policy (detail) site safety notice board, induction room A4 paper, site printed formal document</td>
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<td>198</td>
<td>FS07</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Traffic management plan (detail) site safety notice board, induction room A3 paper, site printed</td>
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<tr>
<td>No.</td>
<td>Code</td>
<td>Date</td>
<td>Type</td>
<td>Image</td>
<td>Description</td>
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<td>199</td>
<td>FS08</td>
<td>16/09/11</td>
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<td>Construction site safety awards reception noticeboard</td>
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<tr>
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<td>FS10</td>
<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
<td>Safety notice board reception noticeboard</td>
</tr>
<tr>
<td>202</td>
<td>FS11</td>
<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
<td>Zero harm action board on walkway entrance to site</td>
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<tr>
<td>203</td>
<td>FS12</td>
<td>16/09/11</td>
<td>Poster</td>
<td>Photograph</td>
<td>Infection - often it starts from a scratch</td>
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<tr>
<td>204</td>
<td>FS13</td>
<td>16/09/11</td>
<td>Poster</td>
<td>Photograph</td>
<td>Why risk a bad back</td>
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<tr>
<td>205</td>
<td>FS14</td>
<td>16/09/11</td>
<td>Poster</td>
<td>Photograph</td>
<td>Can you handle it</td>
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<td>206</td>
<td>FS15</td>
<td>16/09/11</td>
<td>Sign</td>
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<td>207</td>
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<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
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<tr>
<td>208</td>
<td>FS17</td>
<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
<td>Safety News</td>
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<tr>
<td>209</td>
<td>FS18</td>
<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
<td>Make safety personal</td>
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<tr>
<td>210</td>
<td>FS19</td>
<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
<td>Be Safe</td>
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<tr>
<td>211</td>
<td>FS20</td>
<td>16/09/11</td>
<td>Sign</td>
<td>Photograph</td>
<td>Pedestrians + arrow</td>
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<td>FS21</td>
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<td>Sign</td>
<td>Photograph</td>
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<td>FS22</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Glass cleaning station</td>
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<td>214</td>
<td>FS23</td>
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<td>Sign</td>
<td>Photograph</td>
<td>High noise levels</td>
</tr>
<tr>
<td>No.</td>
<td>Code</td>
<td>Date</td>
<td>Type</td>
<td>Image</td>
<td>Description</td>
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<td>215</td>
<td>FS24</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>XX Sports Hall edge protection on side of precast stairs GF-1</td>
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<tr>
<td>216</td>
<td>FS25</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>No entry authorised personnel only edge protection L1 slab (defunct)</td>
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<td>217</td>
<td>FS26</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Property of metaldeck road barrier L1</td>
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<td>218</td>
<td>FS27</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Danger men working overhead wedged in metal decking at conc pour zone</td>
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<td>219</td>
<td>FS28</td>
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<td>Sign</td>
<td>Photograph</td>
<td>High noise levels edge protection on site of precast stairs L1-2</td>
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<td>Sign</td>
<td>Photograph</td>
<td>Ear protectors must be worn in this area on steel column L2</td>
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<td>221</td>
<td>FS30</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>No entry authorised personnel only roof access</td>
</tr>
<tr>
<td>222</td>
<td>FS31</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>High noise levels roof access</td>
</tr>
<tr>
<td>223</td>
<td>FS32</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Ear protectors must be worn in this area rooflight steel, roof level</td>
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<tr>
<td>224</td>
<td>FS33</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>XX Block C Grids 17 B-12 Edge protection on roof level</td>
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<td>225</td>
<td>FS34</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Clunk click wear a full body harness Cherry picker</td>
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<tr>
<td>226</td>
<td>FS35</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>Pedestrians + arrow GF walking route</td>
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<tr>
<td>227</td>
<td>FS36</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph</td>
<td>You are now entering a XX controlled work area Crash barrier, groundworks</td>
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<tr>
<td>No.</td>
<td>File</td>
<td>Date</td>
<td>Type</td>
<td>Description</td>
<td>Location</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
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<tr>
<td>228</td>
<td>FS37</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph Pedestrians + arrow</td>
<td>Site walkway</td>
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<tr>
<td>229</td>
<td>FS38</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph Make safety personal</td>
<td>Side of cabins, walking route from site</td>
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<tr>
<td>230</td>
<td>FS39</td>
<td>16/09/2011</td>
<td>Sign</td>
<td>Photograph Safety alerts</td>
<td>Office corridor</td>
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<tr>
<td>231</td>
<td>FC01</td>
<td>16/09/2011</td>
<td>Conversation</td>
<td>Audio File Conversation with a main contractor's site operative</td>
<td>Induction room</td>
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<tr>
<td>232</td>
<td>FC02</td>
<td>16/09/2011</td>
<td>Conversation</td>
<td>Audio File Conversation with a main contractor's site foreman</td>
<td>Induction room</td>
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<tr>
<td>233</td>
<td>FC03</td>
<td>16/09/2011</td>
<td>Conversation</td>
<td>Audio File Conversation with a main contractor's site manager</td>
<td>Induction room</td>
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</table>
Appendix E

Research ethics checklist (RE1)
RESEARCH ETHICS CHECKLIST

This checklist should be completed for every research project which involves human participants. It is used to identify whether a full application for ethics approval needs to be submitted.

Before completing this form, please refer to the University Code of Practice on Ethical Standards for Research Involving Human Participants. The principal investigator and, where the principal investigator is a student, the supervisor, is responsible for exercising appropriate professional judgment in this review.

This checklist must be completed before potential participants are approached to take part in any research.

Section I: Applicant Details

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>1. Name of Researcher (applicant):</td>
<td>Felicity (Fred) Sherratt</td>
</tr>
<tr>
<td>2. Status (please click to select):</td>
<td>Postgraduate Research Student</td>
</tr>
<tr>
<td>3. Email Address:</td>
<td><a href="mailto:fsherratt@bolton.ac.uk">fsherratt@bolton.ac.uk</a></td>
</tr>
<tr>
<td>4a. Contact Address:</td>
<td>xxxxxxxx</td>
</tr>
<tr>
<td>4b. Telephone Number:</td>
<td>07977 921863</td>
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Section II: Project Details

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<table>
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<tr>
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<tbody>
<tr>
<td>5. Project Title:</td>
<td>Constructing Safety on Sites: an Exploration of the Social Construction of Safety on Large UK Construction Sites</td>
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Section III: For Students Only:

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<tr>
<td>6. Course title and module name and number where appropriate:</td>
<td>PhD via MPhil</td>
</tr>
<tr>
<td>Department:</td>
<td>Built Environment &amp; Engineering</td>
</tr>
<tr>
<td>7. Supervisor's or module leader's name:</td>
<td>Dr Peter Farrell</td>
</tr>
<tr>
<td>8. Email address:</td>
<td><a href="mailto:P.Farrell@Bolton.ac.uk">P.Farrell@Bolton.ac.uk</a></td>
</tr>
<tr>
<td>9. Telephone extension::</td>
<td>3426</td>
</tr>
</tbody>
</table>

Declaration by Researcher (Please tick the appropriate boxes)

- I have read the University’s Code of Practice
- The topic merits further research
- I have the skills to carry out the research
- The participant information sheet, if needed, is appropriate
- The procedures for recruitment and obtaining informed consent, if needed, are appropriate
- The research is exempt from further ethics review according to current University guidelines

Comments from Researcher, and/or from Supervisor if Researcher is Undergraduate or Taught Postgraduate student:
Section IV: Research Checklist

Please answer each question by ticking the appropriate box:

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Will the study involve participants who are particularly vulnerable or who may be unable to give informed consent (e.g. children, people with learning disabilities, emotional difficulties, problems with understanding and/or communication; your own students)?</td>
<td>☐️</td>
<td>☒</td>
</tr>
<tr>
<td>2. Will the study require the co-operation of a gatekeeper for initial access to the groups or individuals to be recruited (e.g. students at school, members of self-help group, residents of nursing homes)?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>3. Will deception be necessary, i.e. will participants take part without knowing the true purpose of the study or without their knowledge/consent at the time (e.g. covert observation of people in non-public places)?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>4. Will the study involve discussion of topics which the participants may find sensitive (e.g. sexual activity, own drug use)?</td>
<td>☐️</td>
<td>☒</td>
</tr>
<tr>
<td>5. Will drugs, placebos or other substances (e.g. food substances, alcohol, nicotine, vitamins) be administered to or ingested by participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?</td>
<td>☐️</td>
<td>☒</td>
</tr>
<tr>
<td>6. Will blood or tissue samples be obtained from participants?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>7. Will pain or more than mild discomfort be likely to result from the study?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>8. Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?</td>
<td>☐️</td>
<td>☒</td>
</tr>
<tr>
<td>9. Will the study involve prolonged or repetitive testing?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>10. Will financial inducements (other than reasonable expenses and compensation for time) be offered to participants?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>11. Will participants’ right to withdraw from the study at any time be withheld or not made explicit?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>12. Will participants’ anonymity be compromised or their right to anonymity be withheld or information they give be identifiable as theirs?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>13. Might permission for the study need to be sought from the researcher’s or from participants’ employer?</td>
<td>☒</td>
<td>☐️</td>
</tr>
<tr>
<td>14. Will the study involve recruitment of patients or staff through the NHS?</td>
<td>☒</td>
<td>☐️</td>
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</table>

If ALL items in the Declaration are ticked AND if you have answered NO to ALL questions in Section IV, send the completed and signed Form RE1 to your Departmental Research Ethics Officer for information. You may proceed with the research but should follow any subsequent guidance or requests from the Departmental Research Ethics Officer or your supervisor where appropriate. Undergraduate and taught postgraduate students should retain a copy of this form and submit it with their research report or dissertation (bound in at the beginning). MPhil/PhD students should submit a copy to the Board of Studies for Research Degrees with their application for Registration (R1). Work which is submitted without the appropriate ethics form will be returned unassessed.

If ANY of the items in the Declaration are not ticked AND/OR if you have answered YES to ANY of the questions in Section IV, you will need to describe more fully in Section V of the form below how you plan to deal with the ethical issues raised by your research. This does not mean that you cannot do the research, only that your proposal will need to be approved by the Departmental Research Ethics Officer or Departmental Research Ethics Committee or Sub-committee. When submitting the form as described in the above paragraph you should substitute the original Section V with the version authorized by the Departmental Research Ethics officer.

If you answered YES to question 14, you will also have to submit an application to the appropriate external health authority ethics committee, after you have received approval from the Departmental Research Ethics Officer/Committee and, where appropriate, the University Research Ethics Committee.
Section V: Addressing Ethical Problems

If you have answered YES to any of questions 1-12 please complete below and submit the form to your Departmental Research Ethics Officer.

Project Title
Constructing Safety on Sites: an Exploration of the Social Construction of Safety on Large UK Construction Sites

Principal Investigator/Researcher/Student
Felicity (Fred) Sherratt

Supervisor
Peter Farrell

Summary of issues and action to be taken to address the ethics problem(s)
Questions 2 and 13 have been ticked as yes.

The study will involve access to construction sites within the NW of the UK for three data collection processes: photographs of site signage within the site environment (no people to be included), collection of documents from the site offices and conversations with people who work on the sites.

Therefore, permission for access and the data collection will be necessary from the main contractors operating the sites. This will be sought from the site Project Manager by the use of a study information sheet which will clearly set out the aims and objectives of the study, as well as confirm anonymity of the site and all data gathered. Sites will be identified through the researcher’s own personal network within the construction industry and approached for their participation on an individual basis.

Conversations are proposed with individuals on the sites, however these individuals will also be provided with an information sheet to explain the study and their anonymity within it. These participants will be identified by the gatekeepers or the researcher and will be willing to participate in the study. They are free to refuse to participate and can stop their participation at any time. Approval for their participation will need to be sought due to the practicalities of taking time from work to participate. Participation will be for a maximum of 15 minutes.

Please note that it is your responsibility to follow the University’s Code of Practice on Ethical Standards and any relevant academic or professional guidelines in the conduct of your study. This includes providing appropriate information sheets and consent forms, and ensuring confidentiality in the storage and use of data. Any significant change to the design or conduct of the research should be notified to the Departmental Research Ethics Officer and may require a new application for ethics approval.

Signed: ____________________________ Principal Investigator/Researcher

Approved: __________________________ Supervisor or module leader
(where appropriate)

Date: _____________________________
Appendix F
Conference paper
Construction Site Culture: Seeking the Optimum Methods for an Ethnography

Fred Rawlinson, Laing O’Rourke, frawlinson@laingorourke.com

Peter Farrell, University of Bolton, P.Farrell@Bolton.ac.uk

Abstract

Research into culture is a growing area in the field of construction research. Industry culture, organisational culture, professional culture and project culture, amongst others, have all been examined. However it may be argued that little research has focused on the culture, or subculture, of the construction site itself. Research at grass roots level has the potential to illuminate and inform issues higher up the management chain, not least those underlying health and safety on construction sites. As part of an ongoing PhD study, a multiple case study ethnography is proposed of North West UK construction sites and this paper seeks to examine the optimum methods for undertaking this research. A literature review established suitable methods and an underlying methodology for the research. A pilot study was undertaken utilising the toolkit of methods, specifically recording the findings of each particular method and the ease of use within the construction site environment. This pilot study experience was then built into a narrative, incorporating analysis of the effectiveness of each of the methods and their performance in this particular field of study. It was found that the methods suggested by the literature review were appropriate for use on construction sites, and a further method that was not predicted to be compatible was actually found to be so through practical implementation. The methods chosen for inclusion in the toolkit for the future study include observation, fieldnotes, images and informal interviews.

Keywords: construction site, culture, ethnography, research methodology, qualitative research.
Introduction

Research into the culture of the construction industry is a relatively new and growing area. The CIB Task Force TG-23 ‘Culture in Construction’ was established in 1997 with the initial aim of researching two key aspects; (i) to identify and define concepts of culture in the international construction industry and carry out research into their manifestations and effects, (ii) to develop appropriate methodologies, potentially adopted from other fields, for the study of culture in construction (Seymour and Fellows 2002). Research has subsequently developed from a variety of cultural perspectives, investigating such aspects as industry culture, professional culture, organisational culture and project culture (Kumaraswamy et al 2002).

This paper, and the PhD study from which it is drawn, is concerned with one particular area of culture within the industry; the construction site culture itself (Rawlinson and Farrell 2008). Culture concerns the ideas, values, attitudes, beliefs and ways of thinking of a distinct group of people (Seymour and Fellows 2002; Inglis 2005) and these underlying factors are profoundly implicated in motivating how people act and behave (Inglis 2005). On construction sites, arguably the most important manifestation of this behaviour is found in the health and safety.

Within the literature, focus on this area has often been gathered under the construct of ‘safety culture’. Various safety cultural change programmes have been borne of this ‘safety culture’ focused research (Spanswick 2007), and have been implemented with varying degrees of success. However, whilst safety culture can indeed be seen as a distinct entity, it must be appreciated that it also forms just one facet of construction site culture as a whole. The construction site culture will inevitably inform and shape safety culture, and it has been suggested in Australian research that the culture of the construction industry can actually inhibit the adoption of a proactive safety culture (Cipolla et al 2006).

The PhD study is an investigation into how the construction site culture itself is a causal factor in health and safety incidents, and how this culture can potentially be modified to remove its influence. It has been suggested from previous research that an examination of site culture would indeed have the potential to inform management initiatives for the suppression or nurturing of specific aspects to allow for the creation of a new proactive and positive culture (Kumaraswamy et al 2002; Inglis 2005; Fellows 2008).
It is hoped that through an ethnography of the construction site environment, the construction site culture can be revealed, and this will inform the production of a framework of initiatives for change. If fundamental change can be made to construction site culture to positively influence health and safety on site, or make the existing culture more receptive to the safety cultural change programmes already in existence, then hopefully improvements can be made in this critical aspect of industry. This paper seeks to determine the optimum methods for undertaking this ethnography within the construction site environment.

Literature Review

Blue Collar Aristocrats: Where Are You Now?

Despite the growth of cultural investigations within construction research, there has been relatively little research carried out investigating the construction site culture from a holistic point of view (Rooke and Seymour 2002; Loosemore 2003; Biggs et al 2005; Dainty 2008). When this research is examined from the point of view of method, it can be seen that there has been a strong reliance on the use of interviews and subsequently informed questionnaires, a method derived from Hofstede et al (1990) (see for example Choudry & Fang 2008; Smallwood and Deacon 2008; Ankrah et al 2008). However, as a cultural research tool, questionnaires are often criticised by other disciplines due to their inherent limitations (Toomela 2003). The use of observation as a method is relatively rare (Rooke and Seymour 2002; Chan and Kaka 2007) and is often limited by restricted access to the field and a reliance on presented data rather than found (Webb et al 1966). Multi-method approaches are occasionally employed, however despite utilising alternative qualitative methods at the commencement of the study, this is often again leading towards a final questionnaire to provide statistical support to the argument (Serpell and Rodriguez 2002).

Modern ethnographies are few and far between (Davey and London 2005), and none could be located that examined the UK construction site culture. The archives do hold a handful of treasures: Applebaum’s (1981) time as a site manager and engineer as told in Royal Blue, Cherry’s (1974) story of a teacher turned ironworker in 60s and 70s America in On High Steel and the academic LeMasters’s (1975) accounts of the years he spent drinking with construction men, his Blue Collar Aristocrats; however these are all of a certain time and another country.
Overall, it can be see that whilst specific aspects of construction site culture have been investigated, the research techniques used appear somewhat limited by the constraints of the construction management discipline in terms of the underlying ontology and epistemology (Dainty 2008). A holistic view, such as an ethnography, may at present be elusive due to incompatibility with the accepted research methodologies. However, beyond the sphere of construction research, culture has been studied extensively within other fields and for a considerable length of time (Inglis et al 2007). It is therefore from these more experienced disciplines within the social sciences that this paper looks to establish a research position and further investigate the optimum methods for an ethnography of construction site culture.

**On Firm Foundations: Methodology**

It is necessary to define the methodology that informs the use of any method (Payne and Payne 2004), not least to ensure that they are able to work in harmony with each other (Hughes and Sharrock 1990).

It is the habit of construction management researchers to seek out statistics and science through questionnaires, scales, constructs and models, in order to answer their questions (Biggs et al 2005). This is driven by the objective ontology and positivist epistemology that underlie much of the construction research field (Dainty 2008).

However this common acceptance of a positivist foundation has restricted the use of alternative methods to explore the construction environment. Indeed calls have been made for alternative approaches, from an interpretivist epistemology (Sutrisna 2009), in order to provide insights and enrich the understanding of those who work in construction (Dainty 2008). To gain an understanding of human behaviour and the culture of construction sites, an inductive and qualitative approach is required in order to establish the complex intricacies of the existing environment (Cresswell 1998; Sutrisna 2009), rather than simply tick the ‘mucky’ and ‘macho’ boxes on a deductive, quantitative questionnaire (Jordan et al 2005).

For the purposes of this paper, a broad foundation of constructive interpretivism is accepted, in order to inform and gather the methods together. This foundation will also inform the overarching method of ethnography; rather than seeking a scientific explanation as to ‘who are site operatives?’, the ethnography seeks to interpret and form theoretical
understandings of phenomena on their own terms, through the eyes of everyday participants (Seale 2004; Payne and Payne 2004).

**Becoming One of the Tribe: The Ethnography**

The concept of culture is central to ethnographical work (Davey and London 2005). In an ethnographic study, researchers are immersed in the everyday life of the environment to be studied (Walsh 2004; Inglis 2005; Henn et al 2006), seeing the world from that point of view. This allows the collection of information about relationships, beliefs and values of the community (Angrosino 2007); the culture to be found there.

This information can be collected in a variety of ways (Rooke and Seymour 2002; Angrosino 2007) but the most common approach is that of participant observation over a prolonged period of time (Cresswell 1998; Walsh 2004; Inglis 2005; Henn et al 2006). With this approach, researchers participate in daily life and are able to record and probe activities to examine the underlying motivations and common understandings (Payne and Payne 2004). Additional methods commonly used to supplement participant observation include interviews, analysis of documents (Gillham 2000) and other methods of artefact analysis (Lee 2000). A combination of methods helps to give a more valid and holistic picture of the society than only one method would provide, adding rigour to the investigation (Henn et al 2006; Fellows 2008).

However ethnography as a method is not without criticism. Whilst it provides depth and insight that would be hard to obtain by other routes, it is often criticised for lacking structure and system (Henn et al 2006) and also for the potential for researcher bias (Fellows 2008) as a result of ‘going native’. Indeed, the debate surrounding ‘going native’ (Cresswell 1998; Geertz 2000; Silverman 2001; Tijhuis 2001) is of great significance to this particular PhD study. The lead researcher is employed as a full-time construction manager on construction sites, and so has arguably already ‘gone native’. However, this is tempered by the fact that although the lead researcher is a construction manager, she is also a woman; an outsider within the construction site environment. The position is one of a ‘marginal native’ (Walsh 2004; Henn et al 2006).

Geertz (2000) feels in order to undertake an ethnography, things must be seen from the native’s point of view, therefore some form of psychological closeness with the subjects is a necessity. However this is countered with the argument that in becoming too enmeshed in
the community, the objectivity of researchers and the research and analysis is lost (Cresswell 1998; Tijhuis 2001). Indeed Geertz adds that whilst closeness is required to grasp concepts, distance is required to analyse and examine them (2000); a balance between the objective collection of data with subjective insights from within the community (Angrosino 2007).

However, it is arguable that the researcher’s unique position can enable this fine line to be walked; it can facilitate rather than hinder. Whilst understanding the language and perspectives of the construction site, as is necessary to establish rapport (Taylor and Bogdan 1998; Payne and Payne 2004), a distance still remains between the researcher and the environment and community to be studied. The issue of gatekeeper obstruction (Silverman 2001) is also easily overcome and there is no need for reliance on presented rather than naturally occurring found data (Webb et al 1966). There is also some academic support for research undertaken by people who are members of the culture they study (Angrosino 2007). They are able to distinguish the truth more quickly and confirm or test the realism behind actions and behaviours within the environment.

What’s in the Toolkit?: The Potential Methods

Ethnography can use a variety of methods to gather information and a mixed method approach will be adopted for this study. However the familiar construction management qualitative research methods may not be suitable. The use of interviews arguably creates an artificial situation (Henn et al 2006; Tzortzopoulous 2008) in which people are asked to put into words things they rarely reflect upon (Inglis 2005). Sensitive topics, such as health and safety, can raise issues with self-implication (Lee 2000) and alongside interviewer bias, this can result in the informants creating a false impression of themselves and their beliefs (Payne and Payne 2004). Questionnaires and surveys, whilst useful for providing a superficial picture (Fellows 2008) are also criticised for their use in cultural research. By definition the questionnaire limits what can be known to the questions contained within it (Toomela 2003), and by its form, is likely to provide answers in the form of rationalisations, aspirations or cognitions, rather than reveal the true underlying culture (Guldenmund 2007).

For an ethnography seeking to establish construction site culture, these methods can be considered too intrusive, the act of eliciting data in this way is very likely to affect the responses gained (Lee 2000). Therefore data must be gathered without intruding into the
lives of the people being studied, and ensuring that the naturally occurring processes are not disturbed (Payne and Payne 2004); unobtrusive methods are required (Webb et al 1966). There is also the potential for the Hawthorne Effect (Kumar 2005) to manifest if people are aware they are being researched and natural behaviours may change, therefore this study will involve covert observation. The British Psychological Society Ethical Principles for conducting Research with Human Participants (BPS 2008) will be adhered to, in that no false information is to be imparted to those under observation or any intentional deception made; the participants involved are not being treated in any different way or being exposed to any situation outside of their normal scope of work. The agreement of management of every site within the sample will be sought and anonymity of all participants will be maintained throughout the study.

The traditionally employed method for ethnographic research is that of participant observation (Payne and Payne 2004); put simply, the researcher interacts with the people being studied and makes observations in the course of these exchanges (Kellehear 1993). An observation protocol (Cresswell 1998; Tzortzopoulous 2008) should be established prior to fieldwork to ensure observations are attentive, receptive and facilitative (Kellehear 1993) and do not simply focus on conspicuous and highly visible behaviours (Lee 2000). The current employment of the researcher will facilitate the use of participant observation as a method in several ways; the researcher is already established as a participant within the site environment and will therefore be easily able to interact neutrally within it; the immediate recording of fieldnotes is also possible (Kellehear 1993; Payne and Payne 2004; Silverman 2005) as a clipboard, paper and a pen are the usual accessories of the construction manager; and a long duration in the field is easily achieve, thereby allowing rigorous cross-comparison of data (Alasuutari 1996).

Observation can also be used to examine a variety of artefacts found within the site environments and the interaction of site operatives within them. For example, inductions, signs, information sheets, health and safety plans and meeting minutes (Alasuutari 1996; Gillham 2000) can all be examined through narratology (Kellehear 1993), content analysis (Payne and Payne 2004) or discourse analysis (Henn et al 2006). Still images (photography) can be used to supplement this data gathering to help illustrate the site environment, signage provision and content (Hermer and Hunt 1996), evidence of physical traces (Webb et al 1996), graffiti (Lee 2000) etc. Although images of people cannot be taken or used without their consent (Payne and Payne 2004), there is still the potential for rich data to be
obtained, and recording the data through images enhances the credibility of the study by allowing cross-checking by others to support or challenge the findings (Kellehear 1993).

The Pilot Study

In order to examine the applicability and ease of use of the above methods within the construction site environments, a cross-sectional pilot study was proposed (Yin 2003). The site chosen was not one on which the researcher was currently working, in order to ascertain the applicability of the methods within an unfamiliar environment. It was a £150m development consisting of five large mixed use blocks, with structural and envelope works ongoing, but nearing completion. The visit had been agreed with site management and permission had been given for free movement about the site.

A full list of all the potential methods was established from the literature review (Henn et al 2006) and the intention was to locate these occurring naturally within the site environment. It was accepted that due to the nature of the pilot study, true participant observation was unachievable, but interaction with the site operatives would be sought where possible. A rucksack was prepared containing a clipboard, paper, pens and a digital camera for use on the site. Full fieldnotes (Kellehear 1993; Payne and Payne 2004; Silverman 2005) were taken, recording both the use of the method as well as the data discovered from it. These fieldnotes will be transcribed and analysed away from this paper and the data used within the main PhD study. The findings of the pilot study are displayed as a narrative of the day, with the focus on the methods used.

Findings: A Day on Site as a Construction Researcher

I arrived at the offices opposite site just before the induction began at 8:00am. I was wearing my usual site clothes; boots, jeans, my old high-visibility body-warmer, glasses and gloves and my hard hat covered in site stickers, and with a faded ‘egghead’ written on one side, courtesy of my last apprentice joiner.

I attended the site induction with one other operative in a dedicated induction room, containing tables and chairs facing the rear wall onto which was projected the induction material. A company DVD was followed by a site specific DVD, and we were also given a site information leaflet and safety booklet to keep. Note taking was attempted during the DVDs, however the speed and volume of content made this difficult to undertake.
comprehensively. In addition taking notes in a room with others made me feel conspicuous and I would probably not even have attempted it if more people had been present. However I was able to obtain copies of these artefacts (Gillham 2000; Lee 2000) by asking site management, which were reviewed later at leisure. Attendance and participation in the induction was still important, as observation of my co-inductee revealed his response to the process as a whole; in this instance texting and staring at the table were noted.

Once the induction was complete, I was then directed to the site entrance and issued with a pass for that day. I was then free to walk around the site. The use of observation enabled both general and detailed impressions to be recorded. From a general tour of the site, several operatives could be seen to be not complying with Personal Protective Equipment (PPE) requirements. On a more detailed level I then questioned an operative further on this matter, utilising participant observation in the role of a site manager as suggested by Payne and Payne (2004). I was able to ascertain his explanation for this; he had just been on ‘brew’ and forgot to put them back on.

Due to the size of the site, I was also able to frequently interact with people by asking directions, with the explanation that I was ‘new on site’. This was a useful tool to start conversation with, and also proved very revealing in itself. In one instance I was guided by an operative through an open side door into a block and told ‘...don’t tell anyone I did’. The route was not an official walkway, and passed under a ‘cherry picker’ that was not in use at the time, but as the operative told me ‘...they’ll be back after brew, so you’ll have to go up there to get out’. I felt this particular interaction indicated that I was fully accepted on the site, being able to ‘tell’ meant the operative saw me as one of ‘us’ rather than one of ‘them’, the advantages of being, at least, a marginal ‘native’ (Geertz 2000).

Fieldnotes were made after all participant observation events, out of sight of the operatives that had been interacted with, following the guidelines of Kellehear (1993) and Silverman (2005). This followed an interaction early in the visit with an operative I have known for some time who was not wearing his PPE. I asked him why and then jotted a fieldnote of his joking response (he is an ‘anti-establishment kind of guy’) whilst we were still talking. This note taking made him nervous as it seemed to make the conversation ‘...official’, however I was able to reassure him and continue with the discussion. This interaction illustrated the ease with which the Hawthorn Effect as described by Kumar (2005) can become relevant; the operative did not want his original response to be
recorded if the interaction was ‘official’. It was not difficult to interact with operatives and a blurred line was found between general chat amongst participants in the site environment and a very informal interview structure. It was possible to ask relevant and specific questions in the guise of banter (‘what’s it like on here?’) and then record these discussions in the fieldnotes taken immediately after the event.

Photography (images) was found to be the most useful tool for recording a wide variety of data. I was able to record signage (wording and condition) in this way, noting the position of the signs in the project within the fieldnotes. Graffiti was also best recorded as an image, again with the position recorded within the fieldnotes. I was also able to record physical traces with images; this was most commonly seen in locations where safety barriers had been moved and not replaced, or where the ongoing development of the site had just overtaken the access management strategy. As predicted by Webb et al (1966), this data was highly illustrative – ‘do not move these barriers!’ signs cable-tied to barriers that had been clearly moved, informs not only on the site environment but also management methods used to implement control and the operatives’ response to this.

I was able to spend four hours in total on site, making constant notes on my clipboard and taking photographs when required. I was not questioned as to what I was doing at any time by site operatives, even when I was interacting with them directly. I was not met with any hostility or suspicion; people were keen to talk and at one point I was struggling to keep an operative out of the photograph I was taking of his access tower, so keen was he to smile and give me a thumbs-up for the record.

**Discussion and Conclusions**

Building on the firm foundations established in the literature review, the pilot study has illustrated not only the potential of the methods chosen for an ethnography of the construction site, but also the potential of their implementation by the lead author. Having the ‘right’ appearance, and operating with confidence and comfort within the site environment clearly influenced the high level of acceptance from the site operatives and is likely to enhance the depth of the study overall. The freedom that the lead author will be able to achieve within the site environment will also prove beneficial, enabling the study to go beyond presented data and supervised visits.
The methods themselves proved easily applicable, and all proved appropriate for inclusion within the toolkit. The ability to use images for a wide variety of data sources is not only convenient, but will also enhance the robustness of the study, enabling peer review of the data and the subsequent analysis, interpretation and theory drawn from it. The fieldnotes protocol has been informed and modified by this pilot study and an observation protocol can now be established, also informed by the on-site experience. That informal interview can be included within the toolkit will also benefit the study, providing another method to seek data. The toolkit can now be applied as appropriate within the full PhD study, although it will be constantly under review, and modified appropriately if necessary. The success of the pilot study and the ability to effectively implement a wide variety of methods from the toolkit has made a positive step towards the production of a credible and robust ethnography, upon which an informed framework for cultural change within UK construction sites can be established.

References


Appendix G
Conference paper
A CONSTRUCTIONIST EXAMINATION OF CONSTRUCTION SITE CULTURE: REVIEW OF A PILOT STUDY

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Recent developments in the UK construction industry have led to behavioural and cultural safety programmes becoming a key tool in the prevention of health and safety incidents on construction sites for major contractors. However, the synchronicity of these programmes with the established UK construction site culture can be challenged, and indeed the success of these change programmes has yet to be proven. An on-going PhD study to investigate how safety is placed and embedded within the culture of UK construction sites, including a review of the impact of these cultural change programmes, has recently completed a pilot study. The pilot used photography and unstructured interviews to produce a rich variety of data, which could be examined from a social constructionist epistemological stance using discourse analysis. This analysis suggested that there were areas of potential conflict with the dominant construction site culture and the behavioural and cultural change programmes, as well as friction between the form and direction of the discourses used within the programmes and those found to be more prevalent on sites. Evaluation of the pilot study suggested the methods employed had the potential to productively address the issues surrounding site safety culture.

Keywords: culture, social constructionism, discourses, safety, pilot study.

INTRODUCTION

Working on UK construction sites is frequently perceived to be a dangerous activity (Chan and Connolly 2006). This perception is justifiably grounded in the high level of industry accidents and fatalities; construction is currently the third most dangerous occupation in the UK (HSE 2010).

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Fortunately, within industry and associated schools of academia this statistic is writ large, and constant effort is employed to change it. A large body of continuing academic research seeks to examine the underlying causes of these accidents (Donaghy 2009; Manu et al 2010), alongside industry initiatives including increased training and education of the workforce in health and safety (Laing O'Rourke 2010, Balfour Beatty 2010, Bovis Lendlease 2010). Behavioural and cultural safety training programmes are a regular feature of site life under main contractors in the UK (Rawlinson and Farrell 2010a); however their success has still to be determined. Despite positive reports about implementation, there is a lack of direct evidence of change (HSE 2008). Indeed, concerns have been raised regarding the compatibility of these cultural change programmes with the existing culture on sites (Rawlinson and Farrell 2008), which may limit effectiveness.

The main objective of this paper is to review the pilot of a study which aims to examine how safety is placed and embedded within the culture of UK construction sites, including an investigation of the impact of the behavioural and cultural change programmes as they have been employed in site environments. The study has been undertaken from a position of social constructionism (Gergen 1999; Gergen and Gergen 2003; Burr 2003); this is examined in detail within the methodology section.

The definition of 'culture' used in this study concerns the ideas and ways of thinking of a distinct group of people (Inglis 2005; Seymour and Fellows 2002). This pared down definition has no scope for attitudes, beliefs or behaviours, examination of which would conflict with the social constructionist approach. It also ensures focus remains on the people themselves and their social practices as they are constructed within the contexts found in everyday construction site life (Potter and Wetherell 1994).

CONTEXT OF THE STUDY

There is continuing debate within the field of social constructionism and its leading method of discourse analysis as to the involvement of 'context' to a study (Wetherell and Potter 1992). Arguments surround the relevance of the context to the raw data, and to what extent the context is actually consequential to the interactions being studied (Potter and Hepburn 2008). For this study and its pilot, some contextualisation will be made to inform those not cognisant of the UK construction industry; however care must be taken that this context is not simply employed to create an "...off-stage story which frames and situates the participants' discourse" (Potter and Hepburn 2005).
The sites are the final focus of the project based UK construction industry, places where many organisations come together, often with competing objectives, to meet the demands of clients and their teams, who frequently impose tight timescales and even tighter budgets (Loosemore et al 2003). Unsurprisingly, this creates a high-pressure environment, where productivity and progress are vital and speed is of the essence (HSE 2003). The workforce is also driven in productivity by the frequent use of 'pricework', equating the day's output to the day's pay (Spanswick 2007). The overwhelming male majority on sites has been described as creating a 'macho' culture (Jordan et al 2004) in the transient workforce, who are of an independent and autonomous nature (Applebaum 1981).

In terms of health and safety, often examined as 'safety culture', site safety has been found to be driven by main contractors and their site teams, and heavily reliant on the approach made by foremen and supervisors (Rawlinson and Farrell 2008; Hartley and Cheyne 2009). Behaviour of the workforce is seen as a key factor in safety on site, and it has been established that construction operatives are often prepared to take safety risks simply to get the job done, for money, for production, or just to keep their employment secure (Choudhry and Fang 2008). Root causes of site accidents have indeed been found in behaviour (Abdelhamid and Everett 2000) as well as other construction project features such as design complexity and the level of subcontracting (Manu et al 2010).

These developments in safety research led UK industry to look to sophisticated programmes to manage health and safety at a site level. Behavioural Safety Programmes (BSP) focus on specific unsafe behaviours and attempt to reduce them, whilst Cultural Safety Programmes (CSP) aim to change the culture of a company as a whole which then leads to the desired behavioural changes on sites. The concept of both these approaches has been taken up in Balfour Beatty’s Zero Harm campaign, an example of a combined safety programme; in ‘identifying and planning out hazards’, and establishing ‘behavioural protocols...to eliminate fatal risks’ the programme looks to the BSP aspects of safety management, but in ‘making safety personal’ the fundamentals of the CSP are also apparent (Balfour Beatty 2010). Examples of the CSP can be seen in the Laing O’Rourke and Bovis Lend Lease cultural change model of ‘Incident and Injury Free (IIF)’. As Laing O’Rourke states, ‘IIF represents a step-change in attitudes to safety...underlining the personal responsibility we each have to ourselves and each other’ (Laing O’Rourke 2010), a philosophy echoed by Bovis Lend Lease, stating that IIF requires ‘...individuals to take a
personal stand...with a mindset intolerant of any injury or incident...’ (Bovis Lend Lease 2010).

The context for this study is therefore a hectic, pressured and occasionally dangerous environment. Through the safety change programmes, attempts to improve these environments has focused either on modification of specific hazardous workforce behaviours, or on a larger cultural change of the workforce as a whole, rather than any structural change to the fundamental processes of the construction site systems which may also influence health and safety (Rawlinson and Farrell 2008).

**METHODOLOGY**

**Towards Social Constructionism**

The traditional construction management research approach, made from a positivist epistemology, has led to a body of knowledge that is highly aware of what actually occurs on construction sites (Dainty 2008). The visible, objective characteristics of site life have been examined in detail; for example the transience of the workforce (Bird 2003) and the male domination (Jordan et al 2004). In terms of studying people, this is arguably very limiting (Dainty et al 1997).

Whilst a paradigm shift from the quantitative to the qualitative has been identified (Fellows 2010), it can still be argued that there is evidence of underlying ossification of the epistemology of construction management research. When subjective, social phenomena such as safety on sites, are examined, whilst an initial interpretive, qualitative foray is made through interviews, this data is often immediately taken back into the quantitative positivist arena to construct questionnaires to provide the main study data (see for example Ankrah et al 2008). This practice continues despite the fact that questionnaires are frequently criticised for their use in social research, due to their inherent limitations (Inglis 2005). Therefore, this study sought alternatives, in terms of the methods and epistemological positions found within other academic fields employed in the study of people.

The most commonly accepted perspective for social research within the disciplines of the social sciences is that of social cognition (Fetterman 2010), which employs various concepts, such as heuristics, theories and paradoxes, to explain human behaviours (Hardman 2009). However, this approach has been criticised for focus on the individual (Augustinos et al 2006), and concern raised over the unquestioning acceptance that what
people say is also precisely what they think (Fetterman 2010), despite potential issues of self-implication (Lee 2000) or the Hawthorne effect (Kumar 2005).

Building on these concerns of the use of language and its use in social context, the alternative discipline of social constructionism was established (Augoustinos et al 2006). Social constructionism sees the world as socially constructed by the people within it through systems and practices, and for various reasons such as convenience or self-interest (Crowther and Green 2006). This challenges the concept that knowledge is a direct perception of reality; if the only realities are those which are constructed by individuals or societies in specific contexts (Gergen 1999), they are therefore in constant flux; there can be no such thing as an objective reality or fact (Burr 2003). This has implications for truth and validity, and indeed social constructionism seeks only to establish whether discourses 'tell the truth' in terms of a particular social group, rather than any objective reality (Gergen 1999).

These shifting realities are constructed by language in the form of discourses, which includes talk and text, visual communications (Kress and van Leeuwen 2006) or indeed any situation involving interaction (Potter and Wetherell 1994). Discourse is seen as the universal form of social action and practice, it is something active and functional in itself (Potter and Wetherell 1994; Burr 2003), and stresses the variability in what people say to reflect changes in context or function (Augoustinos et al 2006).

**Methodological Repercussions**

Acceptance of this position clearly has implications for methodological rigour as it is commonly accepted and defined within construction management research. Several key elements which are traditionally considered as measures of academic rigour cannot be applied and therefore alternatives or modifications must be sought.

In terms of reliability, it has been established that knowledge under social constructionism is relative only to the perception of the researcher (Taylor 2001). The involvement of the researcher as an active participant in the research (Potter and Hepburn 2005), means that future replication of the study in the traditional sense is not possible (Wetherell et al 2010). However, a protocol for the gathering of data and subsequent rigorous discourse analysis will highlight patterns that can be labelled as significant and persistent (Taylor 2001), and it has been argued that such patterns can indeed be identified and traced by others, given similar contexts and acceptance of the theories and prior assumptions that informed the
initial researcher (Wetherell et al 2010). In this study, heightened ethnographic insight (Wetherell and Potter 1992) was provided by a researcher experienced in working construction, and a reflexive approach made towards the data (Dainty 2008).

The truth, as examined traditionally through the validity of a study, cannot be ‘found’ under social constructionism as there are no objective facts to be sought (Gergen 1999), and the objective construct of ‘validity’ is arguably inappropriate (Burr 2003). However attention must be paid to challenges of anecdotalism (Silverman 2001), which can be addressed through an open and explicit process of data gathering and subsequent analysis. It is also argued that to some extent validation is in-built to the discourse analysis process, as working with naturalistic data means the research stays as close as possible to the phenomena under investigation (Wiggins and Potter 2007). In seeking insight and knowledge of specific phenomena and situations, rather than objective truths (Burr 2003), social constructionism does not lay claim to ‘universal truths’; generalisation is therefore impossible.

However, given these repercussions of using social constructionism within the field of construction management research, the question which then becomes significant is ‘so what?’ What can be taken from this research approach if there is no truth, no generalisation, indeed no firm reality? As an established approach within the social sciences, discourse analysis is often employed in research to seek recommendations for different practices and initiatives to produce change (Taylor 2001), precisely the goal of the wider study. The limited sample and focus on specific phenomena in such detail allows intensive analysis to occur (Wetherell et al 2010). In examining in fine grain detail what is displayed in talk and action (Potter 2007) alternative perspectives can be sought that may have been obfuscated by another approach. Alternatively, and indeed integral to social constructionism, readers can follow the process illustrated here and judge themselves if the fruits of this study appear useful. Indeed, does this paper, a discourse itself, tell the truth of construction site safety?

**Method and Sample**

The rationale and justification behind the methods employed for the data gathering for this study were themselves previously piloted, and have been examined in detail elsewhere (Rawlinson and Farrell 2010b). These methods included photography, document gathering and unstructured recorded interviews. For the purposes of this paper, a very small amount of data from that gathered has been examined; two transcribed unstructured interviews of
approximately ten and seven minutes' duration and five individual photographs of safety signage taken on one site.

This small sample is not uncommon within discourse analysis (Potter and Wetherell 1994), and has been selected in order to allow a clear demonstration of the analysis involved in the intensive discourse analysis process (Wetherell et al 2010) within the spatial confines of this paper. As noted above, presentation of the analysis in this extensive form also allows readers to pass judgement themselves as to the coherence, richness of detail, fruitfulness and clarity of explication (Taylor 2001).

**Process of Analysis**

The interview data was transcribed utilising the Jefferson system (2004), used as standard within this field, and a coding process was undertaken of both these transcripts and the site signs to ensure inclusion of all relevant instances (Potter and Wetherell 1994). Discourse analysis was then undertaken through many systematic passes of the data, seeking patterns (Taylor 2001) of function, construction and variation (Potter et al 2007). Focus was placed on examination of how the discourses were constructed, how they constructed the social contexts in which they occurred, and how they related to interaction and action (Wiggins and Potter 2007). This process was undertaken repeatedly, with these areas of focus in mind, but also with care to avoid common potential pitfalls; to ensure a rigorous method of analysis rather than a mere descriptive approach towards the data (Antaki et al 2007).

The summary presented below highlights the most complete patterns found within the data, with reference to the underlying social constructionist theory of the study in terms of the nature of language and interaction in society (Taylor 2001).

**FINDINGS: ANALYSIS & DISCUSSION**

Initial examination of the five photographs of site safety signage led to identification of a clear difference between two types of sign in operation; 'home-made' on A4 paper, printed and laminated on an office machine, and 'professional' printed signs in full colour and fully plasticised. A distinction between these two types was also found in the function of the discourses the signs carried; the three 'home-made' signs carried warnings and threats, whilst the two 'professional' signs carried safety statistics and encouragement to participate in the safety management of the site.
The discourse of the 'home-made' signs put in place by site management, addressed safety shortcomings; the moving of walkway barriers within blocks that are "...their (sic) for your safety and protection..."; the provision of a dated deadline for compliance with a list of four detailed safety breaches, including a lack of "Standard PPE" and the need to inform workers that "urinating in the core area's (sic)" would mean that "if caught you will loose (sic) your job". All these 'home-made' discourses were bound up in addressing previous action by others and establishing future control; the need to construct and display such discourses by the site management clearly indicates past non-compliance with site rules. That the discourses contain threats of having to "re-sit the induction process" and "disciplinary procedures" implies a need to reinforce this control. Although within the discourse there is also the acceptance that for retribution to occur, the perpetrator must be "caught" or "...anyone found to be...", an indicator of the practical level of control management have over the site space. A shared structure of the discourses on two of the 'home-made' signs was the physical length and detail; the information could have been far more concise. This implied that both addressed an on-going battle on which there had been much previous discussion, which resulted in the need for this convoluted discourse of requirements and punishments. The signs themselves assume that there need be no special effort to communicate clearly with their readership, and approach the human subjectivity of their readers in straightforward terms of punishment avoidance.

The discourses of the professional signs performed a different function. One sign simply presented statistics of fatalities in the industry and asked "is this acceptable?"; the function here to prompt thought by the workforce, although effectiveness in constructing active interaction through this passive medium could prove limited. This sign assumes a 'super-rational' identity of the reader, that they will know from abstract statistics that safety issues are important, and the salience and availability of this information in this de-contextualised form will be enough to change the safety behaviour of the readership.

The second sign also encouraged interaction with the workforce, and with possibly more success through employing the offer of a "reward" of "£100" for completing "Hazard/Near Miss Cards" on site. This sign takes the view that the readership is best represented by the standard model of 'rational economic agent' presumed by classical economics, and promises financial reward for the reporting of threats to site safety.

The two informal interviews were held with site supervisors, one employed by a main contractor and one by a subcontractor, to discuss their views on the safety cultural change
programme in place on the site on which they worked; in this case IIF. The following areas of commonality or dissonance were established.

Both interviewees constructed their opinion of IIF in a positive way, but with immediate qualification. Whilst both were keen to state the programme is "good", this initial praise could merely be performing the function of self-alignment with what would be considered the social norm; the ultimate aim of IIF is to reduce accidents on sites and it would be hard to challenge such a philosophy directly. Immediate qualification is then applied to this positive discourse, either through the contractor's stated dislike of the "touchy feely" or the subcontractor's more general "to an extent"; neither party felt the programme was ideal. Whilst qualification on the part of the contractor was specifically constructed to focus on a key issue, the more general criticism from the subcontractor was located within three separate discourse structures. It was repeatedly employed as a discourse with which to contrast subsequently constructed realities of site life; "good to an extent... (but people)... know what they can do and what they can get away with...".

When these realities of site life are examined in more detail, the two interviewees have commonality in their illustration of the contractor/subcontractor schism, albeit through differing discourses. The contractor creates a reality where there is constant battle with subcontractors for co-operation, not just in terms of safety but also programme compliance; and this conflict is drawn upon as the fundamental problem with the construction process in several subsequent themes. In contrast, the subcontractor constructs a reality where taking a few small risks can mean benefitting your company in terms of speed and profit, and keeping your job. These discourses around risk taking were all delivered without reference to self; instead reference was made to a more generic "people", thereby avoiding self-implication. This dichotomy clearly illustrates both sides of the construction site coin and the alternative versions of the reality within which both parties are interacting.

Both interviewees also constructed a clear segregation between IIF and safety as a whole. IIF was not automatically employed within the discourses to replace safety and safety was seen as more encompassing and more important. The subcontractor also created a contrast between theory and practice within discourses on IIF, a dislike of the "verbal" and a keenness for the physical; "getting your hands dirty" established a fundamental conflict with the form of the discourses employed within IIF, which operate through verbal and visual training methods only.
When the data is considered as a whole, it can be seen that the common social practices in operation on UK construction sites are not necessarily compliant with those constructed by the discourses found within the safety programmes, in this instance, IIF. IIF creates a reality built on self-motivating discourses where people "choose to work safely"; but this does not fit easily with the common discourse of site life where risk taking forms part of the accepted version of events. Both IIF and the professional signs also assume a different readership, a super-rational identity, rather than the straightforward punishment-avoidance identity addressed in the home-made signs, which again is discordant with a risk tolerant environment. That the home-made signs also contain highly command-driven discourses is also an indication of possible disharmony with the self-motivating approach of IIF.

However consistency was found between the discourses of the interviews and that of the 'home-made' signs themselves. These are founded on the same constructed reality; one where people do not always behave correctly and base their behaviour in part on the probability of getting caught. This reveals harmonisation in the constructed social practices of the site, and an acceptance and understanding between those working on the site and those directly managing it on a day-to-day basis, something that does not seem as good a fit with the discourses constructed around, and by, IIF.

It is also arguable that certain discourses may themselves be influencing and perpetuating certain behaviours by their very construction; by establishing a reality where compliance with site rules is not necessarily the norm, encouragement to break the rules and not get "caught" might actually become a challenge in itself.

CONCLUSIONS: REVIEW OF THE PILOT
The methodology employed for this study renders any conclusions specific only to the situations and associated contexts surrounding the data examined; no claim is made for generalisation, or scientific objectivity. The methods of collection produced ecologically valid data which was highly suited and indeed receptive to the discourse analysis applied. It can also be argued that the findings and discussion have provided useful insight into the phenomena under examination, despite the very small data sample employed. In terms of the success of the pilot study, it is therefore suggested that this approach has been demonstrated as appropriate to productively address the issues surrounding UK site safety culture.
Social constructionism and discourse analysis have illuminated various aspects of construction site life and how 'safety' itself is constructed within this context; highlighted by the dichotomy of discourses employed in the constructs of site reality. The ability of social constructionism and discourse analysis to examine the discourses surrounding the training programmes and to reveal dissonance in the constructions of those concerned clearly requires closer examination, and the training material itself is now to be included in the data for the main study to ensure a holistic discourse analysis can be undertaken.

The main study will now continue to build on the research undertaken within this pilot, in order to provide a holistic view of how safety is constructed within the ideas and ways of thinking by the people on UK construction sites.

REFERENCES


Appendix H

Industry review document
Construction Site Safety: Industry Review Document

Introduction

This document summarises the findings of a five year PhD study exploring safety on UK construction sites operated by main contractors in the North West of England. The ultimate aim of the study was to produce practical recommendations around safety on sites, through an improved understanding of what safety itself actually is within the site environment.

Method and Approach of the Study

The study took an unconventional path in its research design. Using Social Constructionism as its fundamental philosophy, the study examined safety within a world which is constructed by people as they socially interact within it, and is therefore always changing and developing as people go about their daily lives.

By applying this approach to safety on construction sites, an understanding of what safety is and how it is used by people in their working lives could be developed. Rather than trying to measure safety, this approach enabled the researcher to explore safety as it is seen by the supervisors and operatives of the sites. In order to do this, the study examined safety within the site environment through written documents, site safety signage, and informal conversations.

Key Findings

There was no agreement on ‘what is safety on sites?’ ‘Safety’ was found to be highly ambiguous. Despite the formal use of definitions associating safety with no accidents, this definition was not translated through all aspects of site life. Safety was instead found to be most common in one of two forms: either as an abstract entity or as part of practice.

Safety as an entity was something which people positioned outside of their everyday tasks, something additional or extra, which they ‘paid attention to’ or ‘needed to make sure of’ alongside their work.
Safety as practice was itself made up of two separate forms. Either people positioned and integrated safety within their daily work tasks, as part of normal construction work, or they shifted it outside of these tasks, and created the practice of safety through specific activities that were safety based, rather than an inherent part of their daily work. This was further reinforced by the common positioning of safety in amalgamations, such as ‘HS&E’, which further shifted it away from practice itself.

This segregation of safety from construction work practice was seen as an area of conflict. Safety was positioned as a problem, with a negative effect on work practice, which slowed or complicated work. Although conversely, work practice was also seen as having a negative effect on safety, because speed and productivity were themselves a problem when trying to bring safety into everyday tasks.

The construction site reality in which people are working was also found to influence safety. Sites are very changeable, and consequently safety was seen as equally changeable, with needs around safety developing as the site changed. The use of concrete definitions such as safe/unsafe, or the ability to measure safety in terms of accidents, did not match this flexibility.

Both operatives and supervisors agree that management of safety on sites is important and safety is seen as personal to the individual, although responsibility for safety is still positioned within a clear management hierarchy. Engagement and involvement around safety by the whole workforce is sought by corporate management, however informal communications at the site level are still predominantly concerned with safety violations, enforcement and punishments.

Safety violations are seen and even accepted as everyday occurrences. Violations are rarely considered to be serious, despite the potential consequences, and are often developed through traditional main contractor/subcontractor debates or related to production.

**Recommendations for Interventions**

1. Safety itself requires clear definition of its role within the site environment. However, this definition must be practical in its application to the site itself, and allow for change and flexibility in the place of its implementation. This will also ensure integration within work practice rather than its development outside of work activities.
2. Safety should be separated out from commonly used amalgamations, such as HS&E, which should not be used. Bundles not only reduce the impact of each element, but also position the component elements as one amalgamation, providing a convenient categorisation which people use to separate them all from the work itself.

3. Safety must be bound up with work practice, beyond the practice of safety itself. Team or task briefings must incorporate safety into practice rather than positioning it as an add-on to the activity. This can be developed through the talk around activities, led by the foreman and supervisors, to bring the discussion of work and the discussion of safety together as one inseparable practice. This will require specific education and the development of communication skills.

4. Safety violations must be accepted as everyday occurrence in order to ultimately eliminate them. Formal disciplinary processes and a zero tolerance approach will be required in order to create a shift in current thinking, although development of a definition of safety (recommendation 1) will assist the management to remove the concept of ‘a bit unsafe’.

5. Safety signage was frequently informally constructed by the site supervisors, and was therefore highly inconsistent in the information provided or its engagement with the reader. A standard blank sign with predetermined requirements to be completed for each instance would ensure all relevant information was provided to encourage compliance.

6. Fundamental site practices of productivity and speed are seen as a conflict to the development of safety in practice. This is a concern for corporate management. Decisions regarding tender practices, payment systems and work programmes must consider safety as it will develop on the site itself, long after these decisions are made.

Discussion

In order to validate these findings with industry, a meeting has been sought with yourself as an industry practitioner in this field. This meeting will welcome your comments and opinions on the study and its findings, including its relevance to industry and the potential for these findings to be implemented in practice.
Appendix J

Industry review participation sheet
Industry Review Participation Sheet

Construction Site Safety Project

My name is Fred Sherratt. I am a researcher and lecturer working at the University of Bolton. I am undertaking a research project as part of my studies at the University, and the project is also supported by the Chartered Institute of Building (CIOB).

As you are aware, your company has previously supported this project by permitting access to your site(s) to allow collection of the primary data. This data has now been analysed and findings and recommendations drawn from this analysis. A summary of the project and these findings and recommendations has been previously issued to yourself for review.

You have been chosen to provide industry comment on the project and its findings because of your position and role within a participating company, working within the field of safety management.

What will I have to do if I take part?

If you agree to participate, I will ask you some questions. These questions will be seeking your opinions on the study and your views of the relevance of the findings to industry and the practicalities of implementing the recommendations.

Do I have to take part?

No taking part is voluntary. If you don’t want to take part you do not have to give a reason and no pressure will be put on you to try to change your mind. You can also stop the discussion at any time.

If I agree to take part, what happens to what I say?

The discussion will be recorded and I will use the data to construct a summary document recording your views and opinions. This document will then be sent to yourself for confirmation and approval that it is a true representation of your views and opinions; you are able to make any changes at this time. The final approved document will then be incorporated within the thesis of the project, to provide industry validation and comment on the project itself.
You and your company will remain confidential within the thesis, and will only be identified as a safety manager and a large construction contractor operating within the North West of England respectively.

The data will be collected and stored in accordance with the Data Protection Act 1998 and will be disposed of in a secure manner.

**What do I do now?**

Think about the information on this sheet and ask me if you are not sure about anything. If you agree to take part please sign the attached consent form. This will not be used to identify you, it will be filed separately from all other information and forms part of the University’s ethics procedures.

If, after the discussion, you want any more information about the study, please contact me at The University of Bolton on 01204 903848 or at f.sherratt@bolton.ac.uk.
Industry Review Participation Consent Form

Construction Site Safety Study

I have been issued with and read and understood the Industry Review Participation Sheet for the Construction Site Safety Study being carried out by Fred Sherratt.

I understand that my participation is voluntary and I can stop the discussion at any time without having to give a reason, and I am not under any obligation to participate.

I give my consent to participate in this study and allow our discussion to be recorded digitally.

I give my consent for what I say to be transcribed and presented as a summary, subject to my final approval.

Name:...........................................................................................................

Signed:........................................................................................................

Position:.....................................................................................................

Company:....................................................................................................

Date:............................................................................................................

Discussion Ref (Researcher to complete):.....................................................
Appendix K

Industry review feedback documents
The following document records the main views and comments of the industry practitioner on the Construction Site Safety Industry Review Document.

Method of Research

The method of data collection within this study, actually gathered from live sites through observation and meeting people in the workplace, has produced good findings. Walking round and talking to people on a one to one basis is probably the only way people will lower their guard and talk about their perceptions and beliefs around safety, and so this approach was spot on. Getting an individual’s points of view allows them to be a little bit more forthcoming than if you sit them in a formal situation, and having a conversation about safety rather than an inspection type process. More formal approaches mean the barriers come up, and people think they’re going to be in trouble for something they have or haven’t done.

The Findings

There was certainly a correlation between the findings and my own personal experiences of safety on sites.

The biggest thing identified in the study was how people understand what safety actually is, and the potential for a lack of clarity. In my position and in the company’s position we have a belief that we understand what it is, but I think the biggest thing that we get wrong is that we don’t communicate this, and simply expect people to understand what we expect them to do. People come to work on sites from a highly varied workforce, and have often worked for many different contractors and so have different experiences and understandings. I think this finding clarified and developed something that we had been thinking and talking about here within the company.

As a company we’re guilty ourselves of bolting safety on to things, so this finding was also very illuminating, the study has hit the nail on the head with where we are in terms of how
safety was managed on our sites. We have our project delivery process which is one element and safety is another separate element. We’re going through an exercise now to try to embed our safety processes into our project delivery so they become an integral part of doing the job, rather than an addition to the work itself. This was a key observation for us.

The findings around safety and conflict also illustrated a truth of the sites around safety and practice. There are a lot of negative associations with safety, and a lot of safety interventions are themselves skewed to the negative. We have tried to address that in our safety management on sites, highlighting on site where people are doing something well. But we still tend to err on the side of safety management through the channel of breaking the rules, even calling them rules and violations, and when you speak to someone on site it’s likely because they’re doing something wrong. We do need to break that mould, and I am aware that other companies in industry are already doing this.

There is a difference on sites about how people in senior management roles talk about safety in terms of ideals, but that is juxtaposed with the reality of the construction site. On site there are the pressures of production and the mind-set that the work has got to be done, and people cut corners to get there, that’s still a reality. For many people who come to work on our sites, their main motivation is earning money, and the safety element of the work is again separated from the practice, even though it is of benefit to them as it keeps them safe. Management does tend to live in the ivory tower, and there are senior people who will judge things on statistics alone, although the reality on site it isn’t like that. There’s also a gap between middle management and supervision, where again management hold perceptions of the supervisors, and understand what we want from them in terms of health and safety leadership, but we never actually ask them what they believe their responsibilities to be, we just expect them to know. Which again ties back to the first point and the lack of clarity around what exactly is safety?

**The Recommendations**

There are several very interesting recommendations made by the study, in addition to those already discussed through the findings.

The second recommendation, which advises the segregation of commonly bundled terms, has recently been implemented here. Under recent changes, our new H+S director
implemented a change from the previous responsibilities of SH&E to just H&S within his first month, because it does water it down, we passed the environmental aspect to a clearly defined team and were able to focus again on just health and safety. Previously, there had been talk of making the environmental and safety inspection as one unit, but again this just waters it down and it becomes very vague about who owns what. Whether the company takes it further I’m not sure but from my perspective that particular recommendation is spot on.

The recommendation to bind up safety in work practice is again highly relevant to industry. We still separate the safety elements of tasks out of the process as a whole, and this is something we definitely need to reverse to improve our safety on sites. We are looking to embed safety into how we do our work in every task.

Also, the need to accept that there will be safety violations on site, and we need to challenge that mentality within our workforce. Again, that is a highly relevant aspect to safety management and will help direct our efforts.

The recommendation around signage was also one highlighted by my Director, that on site there is a common practice of creating safety signs that are so vague and impersonal, where they’re just signed ‘the management’, that their effectiveness is reduced.

All of the recommendations are insightful, and relevant to safety on sites, especially those addressing safety in practice, violations and the final recommendation around the fundamental way we undertake our work. There is a conflict between doing it safely and getting it done, and I think people still miss the fact that good safety is good business. If you get your site tidy, everyone knows what they’re doing, with the right equipment and everyone can get to where they need to work, it will also improve your productivity at the end of the day.

**Summary Comments**

The findings and recommendations of the study as presented have to some extent crystallised our thoughts on safety, and ring very true in their relevance to safety management on our sites.

This document has already been discussed within our senior management team, to support our arguments in terms of pushing forward an alternative and more behavioural approach
to safety to support our existing systems and procedures, so it has already had an impact here. We are currently starting the development of new safety processes within the company and this study has really given us some clarity in terms of addressing safety on our sites.

The study paints a true and valid picture of where safety is on sites, and I can clearly see its relevance in terms of the current industry environment and how development into the recommendations could help make practical changes on sites.

The fact that the researcher has experience in the industry has given the research an almost unique viewpoint on how to approach it, which has removed some of the potential pitfalls in examining safety on sites, and rather added realism to the overall study.

**Going Forward**

We are keen to see more detailed findings and recommendations from the study to use within our company. A further topic that is important to us is communication around safety, getting the message from the top directors down to the man on site, and how to maintain consistency in that. This is something we are exploring now within the company and will be able to draw on this study to support that venture.
Industry Review Feedback Document

13-01-12

The following document records the main views and comments of the industry practitioner on the Construction Site Safety Industry Review Document

Method of Research

Most research around safety is behaviourist, but this study has highlighted a strong alternative approach that can be used in safety research. It appears to be a relevant way of examining safety on sites, evidenced by the fact that several of the findings here we were already aware of within the company, and the study has reinforced our own thinking as well as indicating that this method is a valid way of examining safety on sites.

It’s a way that should be explored more, because of the different perspective. Safety management on site has followed the same path for years and years and we’ve got to where we are, but to get that next cultural shift you’ve got to do something different. It’s got to be different, so if there’s another way of thinking and exploring it and looking at it, then I’m all up for it. If you keep doing something in the same way then you just get the same results and this study has already sparked ideas of how we can do things differently.

The Findings

What jumped out at me here is the lack of a clear definition of what safety is, as well as the amalgamations like HSE, which might be taking emphasis away from safety. These comments have already sparked my thinking in terms of developing the way we talk about safety, instead of saying safe/unsafe should we be using right/wrong as the terminology?. This would be a different way of communicating our requirements as a company. You’re either following your safe system of work and its right, or you’re not and it’s wrong, forget about safe/unsafe – just right or wrong. Our company is developing processes now to get to zero accidents, and to do that you’ve got to do something different, and these findings have started that thought process in one potential direction.
I agree that people do see safety as something extra to their work, possibly because of all the documentation that goes with it; because it’s an extra form to fill in, and people also see it as just covering their arse. We’re trying to take away a lot of the paperwork now within our processes, to reduce that burden and people then may not see that as an extra.

I also agree that safety should be bound up in practice – a safe job leads to right first time, it enhances productivity if it’s done properly, because you are planning the work – it all blends in. We recently had a discussion around quality, that quality should be an integral part of safety because right first time you are reducing the risk and doing it more productively.

From my experience, there is definitely a correlation between these findings from the study and the realities of the construction site environment.

The Recommendations

The study has illuminated some very interesting elements around safety, and I think that maybe safety should be rebranded to ‘right or wrong’. The study has developed my own thinking along these lines through several of the findings and discussion presented here. The use of the ‘right way’ and the ‘wrong way’ would take the actual implementation of safety away and separate and segregate it from the documentation side, making it inherent in practice.

I was surprised at the recommendation that HS&E should not be used together, and it does get worse - you can get HSQE now, and CR too! But although I agree with the thinking behind it, it’s not something that’s jumped out at me before, we’ve not previously thought that putting it all together does actually cause that or could have a negative impact, so that’s an interesting recommendation.

The other recommendations did resonate to me as true, I completely agree with findings such as No 3, that safety must be bound up in practice, and we have been trying to develop our supervisors through training, including their communication skills. A previous study I was involved has identified that we don’t develop or support our supervisors, and just because a guy is a great sparky or chippie or whatever, doesn’t mean to say he’s a great leader. We tend to give people a special hat and say right, you’re a supervisor, primarily because they’ve been good at driving a job and getting something done and we don’t support them. That one definitely rings true.
Violations are a reality in our industry and various factors drive those violations, these are something we address in several ways on our sites, we have a behavioural programme that supports our drive to change the mind set of the people who work on our projects, and this programme is communicated through training, signage and engagement. we also have a disciplinary tool which can be invoked when violation of site rules are made.

The message from our company leaders is that if it’s not right then don’t do it, and that message is really coming out strong, but to channel that message from them down to the guy at the bottom, that’s quite a route it’s got to travel and unless that’s reinforced all the time at every single tier, it’s going to get diluted by the time it gets down there. The message from the directors is if it’s not right, you do not do it, and that’s the message that’s got to be communicated to the guys on site. There’s a mind shift needed – everybody knows it’s the right thing to do, but you get people thinking if I do stop this, will I get backed up? For example if a delivery comes to site and you’re desperate to get that offloaded and erected today, but it’s not really a safe load and you can’t really unload it very safely, do I send it back? And it’s like, well, if I do that, will management back me up or will I be penalised for doing so? When you get people freely making those decisions and seeing that as acceptable, then that’s a big cultural shift and I think that’s what most organisations are looking for now, they know it’s the right place to be but it’s getting the reinforcement and everybody singing off the same hymn-sheet.

I wasn’t one hundred per cent sure of the signage recommendation, but further discussion did illuminate the reasoning and data behind this which cleared up my queries. However, I don’t think you’ve ever going to get a sign that is the be all and end all for every single person, and its only part of the suite of tools through which we actually inform people. The signage should always be supported by briefings. We also have colour coding for walking routes, but it doesn’t always follow the same colour from site to site, it’s not always uniform. There is also the potential that people are apprehensive to use the word ‘safe’ within the terminology in case somebody trips over. But adding the word safe in to things like ‘designated safe access’ and ‘designated safe walking routes’, would then generates peoples’ thinking that it is the safe way and that any other way is not the safe way. We do try to drive a consistent approach on site, our sites in one area should be the same as those in another area in terms of induction, signage, the approach to safety. It’s a valid point, and there are issues with the written word for actual communication, I’ve seen it in emails, but you’ve got to work towards getting that standard approach, there’s no one answer.
The final recommendation is also relevant. The age old problem of the perception that you cannot do it safely as well as fast does raise its head continually in the workforce. We continually demonstrate on some projects that you can safely deliver a quality project ahead of programme. This requires a consistent standard with a consistent workforce and these factors must play a part in how the project is established, run and how the procurement of subcontractors is managed.

Summary Comments

I would say the study findings represent what the conditions in industry actually are. They are also very valid; there are areas highlighted by the study which we are trying to combat now in our safety management programme and this study, coming in from a different approach, has verified and reinforced our own thinking in these areas.

I think the study is very relevant and I think it reinforces other studies that I’ve also been involved in around safety on sites.

Going Forward

I would be very interested to see more detailed findings of the study and am looking to explore the rebranding of safety from safe/unsafe as identified as potentially problematic in this study, to a right and wrong approach.