

SAFETY CULTURE IN THE CONSTRUCTION INDUSTRY

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The concepts of organisational culture and safety culture are now established as potential explanations of unsafe acts and organisational failures. However, in the construction industry groups may form in different ways, for example, site or trade cultures. The aim of this research is to understand how cultures form when the essential characteristic of organisational stability is not necessarily present. This research seeks to establish at what level meaningful cultures form, specifically investigating if there is an overarching industry safety culture and subcultures within it. Semi-structured interviews were conducted with 14 industry experts. Interviewees were from different organisations, with several years experience of numerous sites in senior management roles and knowledge of what constitutes safe work behaviour. The interviews were analysed to establish key, culture related, themes. There was general agreement that cultures formed at the site level and that this was determined by site management. Perceptions of the site could influence workers' safety behaviour; with individuals changing their behaviour depending on what they think is appropriate in different work settings. There were differences of opinion on whether certain professions or trades were more or less safe. However, there was agreement that larger firms had more resources to manage health and safety effectively. It was also noted that sometimes there were differences between what sub-contractors and contractors deemed to be safe. Due to the dynamic, changeable nature of the industry, it appears that organisational cultures do not form in the traditional sense. Rather, cultures may form quickly around a specific site, indicating the important role played by site management in transmitting the organisation's safety ethos.

Keywords: health and safety, organisational culture, multilevel perspective.

INTRODUCTION

This paper focuses on the structure of safety culture(s) within the construction industry. It does not aim to explain the acculturation process of culture formation. It does, however, highlight a number of structural issues, unique to the construction industry, which appear to influence culture formation. It investigates the formation and structure of safety culture within the construction industry, and seeks to understand how culture can form in a dynamic industry where some of the essential features of culture formation are not always present.

To understand the need for this investigation it is necessary to have a conceptualisation of culture formation in the 'traditional' sense and the reasons why this may not be applicable to the construction industry. In addition, research which has attempted to explain culture(s) as a multifaceted concept will be discussed.

Although the conceptual arguments surrounding culture are important and interesting, the fundamental reason for this research is essentially a basic one - the construction industry is dangerous. In 2007/08 the UK construction industry was responsible for

72 fatalities (3.4 deaths per 100 000 workers), with these figures remaining static over the last 5 years. It also has the highest level of major injuries when compared to other industry groups (599.2 per 100 000 employees). (HSE 2009)

In this context of danger and limited impact of initiatives and legislation (Edwards and Nicholas 2002), an understanding of culture formation may provide insights which help the industry create stronger safety culture(s) and a workforce who behave more safely.

Characteristics of the Construction Industry

The construction industry is a highly complex, dynamic environment. It is competitive with contractors often winning work through competitive tender. This process is price sensitive and quality and safety often suffer as a result. Several organisations are usually involved in the construction of a project and head office and site functions are independent of each other. The management of a site is supplied by the contractor, but the rest of the workforce is typically supplied via subcontractors. Workers move from site to site and are difficult to supervise. (Rowlinson 2004)

"...construction projects tend to be constructed by a combination of firms and individuals most of whom will not have worked together before and are not likely to work together again." (Dainty, Green and Baglihole 2007: 7)

These complex working relationships have negative consequences for health and safety (Mayhew and Quinlan 1997). Due to the distance between office and site functions the power of the contractor to shape site culture may be limited. Managers have the power to shape the safety culture (Zohar 2003), therefore site managers will have a large influence over the culture of their site. A shared history is one of the characteristics associated with strong culture (Schein 2004). Therefore, although a project manager can attempt to control subcontractors on their site, the subcontractors' safety culture is also likely to have a large impact on safety behaviour.

Culture, Organisational Culture and Safety Culture

The concepts of organisational culture and safety culture have their roots in the concept of culture generally. All are difficult to define, conceptualise and specify (for long lists of definitions see Brown 1998; Rousseau 1990; and Schein 2004). However, a 'family resemblance' exists in the way researchers conceptualise them and they are often characterised as being based on shared values, understandings, belief patterns and expectations (Rousseau 1990).

The concept of safety culture has received increasing amounts of attention since the Chernobyl disaster within which poor safety culture, stemming from inadequate management practices, was established as the major causal factor (Zohar, 2003). Safety culture is often cited as essential to achieving the most effective health and safety performance within an organisation. There is a lack of consensus about safety culture conceptualisation. However, it seems sensible to refer to one of the most widely used definitions within this research process:

"The safety culture of an organisation is the product of individual and group values, attitudes, perceptions, competencies, and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation's health and safety management. Organisations with a positive safety culture are characterised by communications founded on mutual trust, by shared perceptions of the importance of safety and by confidence in the efficacy of preventive measures" (HSC 1993: 23)

Organisations can be investigated at various levels e.g. organisational, sub-unit and group. Top level managers, make and establish policies and procedures, and group level managers execute these policies in the form of safety practices. By comparing how policies are implemented by different sub-unit managers and observing how higher level management supports decisions made by sub-unit managers, employees are capable of perceiving the difference between the procedures established by top managers and their own sub-unit managers (Zohar 2003).

This notion of levels is particularly relevant within the construction industry for two reasons (1) anecdotally health and safety policies and procedures are produced in copious amounts by the construction industry, but they may not manifest in the practices of the people who work in it (2) there are a number of managers who could mediate this process and either encourage or inhibit safety behaviour. Therefore, for an organisation to have a positive safety culture a number of factors need to occur. In addition to explicit, adequate safety policies and procedures being in place, they need to be implemented and communicated successfully to employees. This will be mediated by site managers and supervisors.

Safety Cultures in the Construction Industry

There are a number of articles in the area of culture and safety culture in the construction industry which mainly focus on "its characteristics, attributes, key success factors and assessment" (Chinda and Mohamed 2007: 114). Maloney (2003) has criticised this research because it tends to assume that culture is stable. While this may be true in some industries, it is not possible within the construction industry. Construction companies consist of core professional, technical and administrative staff and groups of employees (often subcontractors) only used when needed. This stable core of staff creates an organisational culture, but site culture will be influenced by the interaction between the contractor's culture, site management and subcontractors. Therefore, the culture is dynamic and emergent and created by interaction. In his theoretical paper Maloney (2003) calls for more research in this area, because until its dynamic nature is understood it will more difficult to control construction cultures and therefore safety.

Culture Formation and Strength

For culture to form in a group there must be group stability and a shared history. Culture formation can be informal, stemming from the interactions of an unstructured group which leads to norms of behaviour, or formal, when a group leader imposes his / her "vision, goals, beliefs, values and assumptions" (Schein 2004: 16). The strength of group culture is determined by how long the group has existed for, the turnover of group members, and the emotional intensity of experiences. (Schein 2004)

The structure and modes of working within the construction industry present a problem for understanding the formation of a consistent safety culture within the construction industry. How can organisations in the construction industry develop a positive safety culture across their operations, offices and sites, when the workforce and locations of work are in a constant state of flux? Is it possible to develop homogeneous organisational safety culture in this context? Since some of the key factors needed for culture formation are not present, due to the unique characteristics of the construction industry, it is necessary to try to understand what cultures are actually present and how they form. There is already some literature in this area which may give some clues to these possible cultures.

Multiple Cultures Perspective

“...the cultural complexity perspective suggests that culture in organisational settings is much more complex, pluralistic, diverse, contradictory, or inherently paradoxical than previously assumed, conceptualised or acknowledged.” (Sackman 1997: 2)

From this perspective, individuals are members of several different cultures simultaneously. The grouping of individuals, due to common characteristics, is likely to lead to numerous organisational subcultures (Sackman 1997). Chao and Moon (2005) proposed that an individual may be a member of several cultures at once. This is their ‘cultural mosaic’ and provides a better means of understanding individuals’ behaviour. These multidimensional conceptualisations of culture, due to their ability to address the dynamic nature of culture, are more applicable to the construction industry.

Unique cultures may exist in industries and professions (Schein 2004). Spender (1989) found that different industries have unique characteristics which result in unique behaviour patterns. Fox (2007) found that there is evidence of a distinct construction industry culture; however he did not look explicitly at the UK or safety culture. Dainty *et al.* (2007) have highlighted a number of factors which equate to an industry recipe for the construction industry. They outline the unique construction industry characteristics that have implications for its culture e.g. demographics of the employees. They also make the important point that the culture of the industry is determined by this structure.

“It is clear that trite calls for the industry to ‘change its culture’ belie the nature of the concept, and the extent to which it is intertwined with the structural context within which it is enacted.” (Dainty et al. 2007: 11)

It therefore seems plausible that industries, professions, subcontractors, and sites will have specific and unique cultures. It may be, because of the transient nature of the construction industry, that it is more conducive to the development of a general industry culture. Alternatively, because of the different professional groups and subcontractors within the industry, sub-cultures may develop associated with particular trades / professions or subcontracting firms.

Due to the discrepancy between the essential characteristics needed for strong culture formation and the unique characteristics of the construction industry, it is necessary to investigate possible configurations of culture formation. This improved understanding can be used to facilitate positive safety culture formation and in turn reduce accidents.

The objective of this research is to investigate the form and structure that cultures take, specifically looking for an overarching construction industry safety culture and subcultures within it.

METHOD

Choice of Method

Semi-structured interviews were chosen based on the need to use the best tools for the job. When there is a desire to understand contextual knowledge in an undefined area qualitative methods are superior (Pidgeon and Henwood 1997: 252).

The Study

Interviewee Characteristics

Interviewees or 'experiential experts' were selected to provide insights from across the industry and were not randomly sampled. This theoretical sampling is in line with recommendations made by Lincoln and Guba (1995) who indicate that this practice increases the range of data uncovered. All had several years experience and had progressed to a senior level, ranging from site managers to company directors. Some interviewees were employed in a safety specific role within their organisation. They worked for a number of different organisations, although all were relatively large. Most were employed by contractors, although some worked for local government, clients or subcontractors. Fourteen people were interviewed and the majority were male (13).

Interview

The interviews were designed and carried out in line with recommendations for good interviewing practice (see Bryman 2004; Langdridge 2004; and Robson 1993). Semi-structured interviews were chosen because they provide clarity of purpose, while allowing some flexibility in terms of question order and structure. They also allow new or interesting responses to be discussed in more depth. The length of the interviews varied but most lasted about an hour. The majority of interviews were conducted at interviewees' workplaces and were digitally recorded. Although there was scope for deviation, the interviews tended to follow a similar format. Several topics were discussed but only the ones relevant to this paper are mentioned here. Areas covered: health and safety in the construction industry generally; meaning of 'culture' and 'safety culture'; the culture and safety culture of the construction industry; universal / industry wide safety culture; subcultures (professional / trade specific, site specific, organisation specific); and safety behaviour influences.

Coding

The data has been coded thematically. This has taken two forms (1) data was coded in terms of the research questions and key themes within literature (2) new unexpected themes were developed, somewhat in line with a grounded approach to data analysis. (Langdridge 2004)

Reliability, Validity and Generalisability

Interviews have only been conducted with a relatively small number of people and this is going to limit the ability of the findings to be applied in such a diverse industry. However, because a number of themes were found repeatedly it is possible to have more confidence in them.

Ethical considerations

Due to the sensitive nature of this subject care has been taken to make organisations and individuals anonymous. Quotes have been checked with an industry expert.

RESULTS

This section outlines the main interview findings in terms of how safety culture is structured within the construction industry. Different forms of safety culture are apparent at a number of levels – industry, sector and subculture. These different cultures appear to interact and influence behaviour in dynamic ways, with the dominant culture (one that determines behaviour) changing depending on the circumstances.

Industry Culture

Interviewees were asked about the possibility of a universal safety culture within the construction industry. A number thought that there is not one, indicating that they thought it was influenced by a number of factors e.g. size of the organisation (see below) or found it difficult to articulate. One interviewee provided evidence of an industry culture by talking about unsafe behaviour on an apparently "safe site". Because the site was not operating under normal financial pressures, and therefore did not have the usual excuses for cutting corners, the presence of unsafe behaviour demonstrated that there was a culture which was implicit to the construction industry.

"...there were safety misdemeanours...on a site where there was relatively no financial pressures at all. So, it's suggesting there is something actually in the industry itself..."

The industry generally was characterised as macho, male dominated and tough, with lack of education often highlighted as an issue.

"...there's a certain mindset of people...It's a man's environment...years ago, life was cheap, construction was a really rough life, and that's the way the culture's founded...we're talking about big, strong, strapping blokes...they were tough and they felt good about being tough, and that's still there in the background..."

Many interviewees talked about the similar attitudes, beliefs and behaviours of the general construction workforce, which could be construed as a universal industry culture. This includes an "It will never happen to me" belief, which led to risk taking. A common behaviour amongst workers is taking short-cuts, and behaving unsafely if they were not being observed and could escape sanctions. Many interviewees found this highly frustrating. The workers also often complained that they had "always done things this way" as a means of defending their behaviour.

"I believe most people will take short-cuts, even on our sites, and hope they won't get caught."

Sector Cultures

A theme that emerged, but was not specifically looked for, was sectoral culture. For example, the difference between civil engineering and building or different types of civil engineering, such as railways.

"I think with rail it is more proceduralised...you're petrified of killing passengers. Whereas in civil engineering you're more scared of killing your staff...in theory working in the rail industry should be safer."

Size of Organisation

Interviewees believe that the large construction companies or "big boys" in the industry tended to have similar safety cultures and were generally perceived favourably. Although there were exceptions, smaller organisations were seen as less safety conscious. This difference was often explained in terms of resources, with larger organisations having the ability to spend more on health and safety.

"...you've got three levels. You've got the real big boys where I think it is very, very good...a middle band where they do it because it's the law...then there is another band where they really don't give two hoots and that is my honest opinion."

Subcultures

A number of subcultures were discussed. In relation to noticeable subcultures, interviewees were asked about trades / professions, subcontractors and sites.

Contractor – Subcontractor Culture

A number of interesting phenomena were discussed in terms of subcontractors. Contractors frequently attempted to change the culture of subcontractors, who were often said to conform. Tactics include: training of subcontractors' supervisory staff on the contractor's courses; rewriting method statements; and fear of loss of work. It was often stated that subcontractors who did not conform to the safety standards of the contractor would be asked to leave and would be refused repeat business. Understandings were also developed, over time, between contractors and subcontractors who worked together frequently and reciprocal learning took place.

"...long-term subcontractors...they tend to become part of your organisation...regular subcontractors...learn from us and we learn from them..."

Other factors were mentioned which could influence this process. When a worker is employed by a subcontractor it is possible that they are more likely to be influenced by their own employer's safety culture than the contractor's. Also, although subcontractors conformed to the contractor's culture, this change may not be permanent. This relationship between subcontractors and contractors was sometimes difficult and tensions were apparent between different safety cultures, in terms of expectations and ambiguous responsibilities. Contractors were not always seen to have better safety cultures. They sometimes set bad examples and subcontractors refused to do things due to safety concerns. At times subcontractors relied on the contractor's safety culture. Staff turnover within some subcontractors could be problematic and limit the development of safety culture.

"...we will get contractors saying "Oh, you can do that without cones," or "You can do that without a road closure," ...if we don't believe that's the right thing to do we won't do it. Full stop..."

Profession / Trade Cultures

The majority of interviewees thought that it was not possible or fair to say one occupation was better or worse than another. However, a small number did single out specific trades / professions with apparently poor safety culture, mentioning factors such as skill, education and inherent danger within the job as explanatory factors.

"...I think scaffolders have this attitude that they have an almighty power...I don't think you can actually genuinely say there is a trade that is particularly bad. Scaffolders you can."

Inherent danger levels could either lead to a blasé attitude to safety or, in some circumstances, improved safety culture because the consequences of mistakes are much more severe. The findings in this area were interesting but contradictory.

"I would say some of our guys...would be a lot more safety conscious than guys in other parts [name of business] because...they know what the risks are, they have developed additional safety procedures to safeguard themselves, and they count themselves as experts..."

Site culture

The majority of interviewees thought that sites developed their own specific safety culture. This would be influenced by the contractor's culture but the primary influences were thought to be the site manager and his / her management team. Although a contractor may have a positive safety culture (in terms of policies and procedures), there is no guarantee that this will be transferred to site. Foremen / supervisors can also influence the culture of their team and mediate the influence of site culture. This means that even if there is a positive contractor and site management safety culture, this can be thwarted.

"...a lot of the national contractors, they'll have all the administration there and yet the site foreman or the site manager will walk past a trench where there's a bloke working 3 metres down...unsupported...there would be a super audit trail...but that final piece in the jigsaw..."

Many interviewees mentioned a 'gut reaction' response when going to a site for the first time - they have an intuitive response to the site, which assesses and determines the nature of the site safety culture, for good or bad. Further questioning revealed a number of factors which enabled them to make this assessment in an objective way e.g. tidiness of the site, signage, people wearing the correct PPE. Interviewees, based on their extensive experience, seem to be able to make this assessment extremely quickly, which may explain their intuitive descriptions.

"There's some sites that you go on and you just see them as an accident waiting to happen...my boss, he's fond of saying, and I agree with him...you get a feel for a job..."

Effective site safety culture management is said to be influenced by a number of factors. Creating the impression of a high level of site safety from the outset of a project is seen as important. This is created initially by management but is then sustained by visual site cues (e.g. signage, correct PPE), management visibility, and rule enforcement.

"...you start it at day one...The minute you lapse, the minute you show a weakness, people will then take more...but if you keep policing it and keep drumming it in...they will conform."

Individuals and subcontractors were thought to change their behaviour depending on whom they were working for, based on their assessment of the prevailing safety culture they were interacting with. This could be through a combination of first and ongoing impressions of the site and management of the site. Given a positive safety culture workers are more likely to behave safely, but it does not guarantee it. In circumstances where workers do not conform, sanctions were sometimes taken.

"...if you get a bricklayer or a plasterer or an electrician or whoever, who hasn't got the best safety culture and he walks through the gates and it's a good site, he will maintain it better than he would if he walked through and it looked like a dog hole. I genuinely believe that. If you set the stall out, people will treat it a lot better and that culture will go round that site..."

DISCUSSION

The objective of this research is to understand the form and structure that culture takes within the construction industry. This research has shown that safety cultures in the construction industry are dynamic, emergent and multifaceted, operating on several levels at once, both within the industry and potentially within individuals' cultural mosaic. It is apparent that there are universal attitudes and beliefs which go across the construction industry in terms of the people who do the 'hands on' work. Interviewees often highlighted characteristics of the workforce which were similar: "an accident won't happen to me" (belief); people always take short-cuts, especially if unobserved (behaviour); and "this is the way I've always done it" (attitude). Although they may change their safety behaviour under specific circumstances, this change will probably not be permanent. To some extent, it can be seen that there is a similar culture which goes across the industry in terms of the large construction companies who are generally seen as having positive safety cultures. A number of subcultures were also perceivable. Subcontractors had their own safety cultures and brought them to site. However, it is possible for contractors to shape subcontractors' culture. Sites also developed their own unique subcultures and the way that they were managed had the potential to impact significantly on the behaviour of their workers. The evidence for occupational / trade cultures was less convincing. Although some interviewees did

highlight specific trades as having a poor safety culture, the general consensus was that there was good and bad in all areas.

Some of the findings may seem contradictory - is it possible to have an industry culture and also have unique subcultures within it? According to Sackman (1997) it is feasible, and while these findings may appear at odds it is more likely that different levels of culture are influential in different circumstances.

The findings of this research support the notions of multifaceted safety cultures within the construction industry, with groups developing their own unique subcultures. As Chao and Moon (2005) suggest, it is possible for a person to be a member of several cultures at once, resulting in their own personal cultural mosaic. The work of Zohar (2003) is particularly pertinent in explaining the mediating influence of management. Although a contractor can have excellent policies and procedures, if site management and supervisors do not encourage and enforce them, they will not become enacted safety practices and safety culture will be poor.

While this research is primarily focused on safety culture, it has implications for other aspects of culture within the construction industry. If the industry wants to change, it is helpful to understand the impact that a unique method of working has on culture augmentation. In terms of theory, this research is applicable outside the construction industry. It gives support to the notion of multilevel cultures and questions the applicability of conceptualising culture in one dimension. There are implications for the improvement of safety culture. Given the number of people who commented on site culture and one's ability to assess the safety culture of a site extremely quickly, with the potential for this impression to influence behaviour, it is necessary that the importance of this site 'impression management' (Goffman 1959) is understood by site managers.

This research is limited by the number of people interviewed and their seniority within the industry. Due to the size and complexity of the industry this research cannot hope to explain all the possible permutations of culture in great depth, but only seeks to provide a general understanding. Also, although much of this research talked about the attitudes, beliefs and behaviours of the 'hands on' workers, none were actually interviewed. It is important for future research that the findings presented here are corroborated at this level within the industry.

CONCLUSIONS

This research has helped to explain some of the complexities of culture structure and formation within the construction industry, showing that the unique nature in which work is carried out in this industry results in dynamic and emergent cultures. The form, structure and relative strength of these cultures will be constantly changing depending on the influences at a given time.

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