AT FIRST SIGHT: IMPRESSIONS OF SAFETY CULTURE ON CONSTRUCTION SITES

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The construction industry has attempted to improve the safety of its workers and reduce the number of accidents and deaths within it for many years. Interventions and initiatives have tackled various aspects of risk, ranging through design, elimination, protective equipment, and behaviour. However, this industry is still characterized as dangerous with typically between 70 to 80 deaths per year. This research is an investigation into how people, working within the industry, determine if a site is safe, based on their initial reaction and how this may affect risk taking behaviour. A number of theories exist which help to explain this interpretation process and these are outlined. Semi-structured interviews were conducted with 20 industry experts and two focus groups were carried out with workers within the industry. A number of visual cues were identified repeatedly, including housekeeping, pedestrian walkways, safety signs, PPE usage and the behaviour of people already on site. Influences on behaviour were discussed and first impressions were thought to impact on risk taking behaviour. These findings have potential implications for the management of safety within the industry, establishing the importance of creating an impression of a high level of safety culture at all times.

Keywords: health and safety, organizational culture, organizational psychology.

INTRODUCTION

"Why should seemingly trivial aspects of a situation have such a clear impact on people's behaviour? Situationally induced salience can put relevant attitudes or norms in the mental foreground, making them more available as guides to action." (Fisk and Taylor 2008: 383).

This research originates from a project investigating safety culture in the construction industry (Hartley and Cheyne 2009). Within this research with managers, interviewees were asked if they noticed a difference between sites in terms of their safety culture. Interviewees talked intuitively about this assessment and, in line with a grounded approach to qualitative research, this theme was allowed to develop. This research is an extension of the previous paper and attempts to understand the process of individuals' site culture assessment and the impact that this initial interpretation has on safety behaviour.

This is a new approach to understanding safety behaviour in the construction industry. It is not critical of existing research in the field, but seeks to integrate existing theories from the social sciences in a unique way, providing a richer explanation of site culture interpretation. This new understanding may help the industry bring about changes on sites, which influence the workers to behave more safely.

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Background: industry characteristic, safety record and safety culture

Rowlinson (2004) has characterized the construction industry as complex and dynamic. This is due to the unique nature of construction work, which finds working conditions, locations, personnel and organizations involved in a project in a constant state of flux. This complexity has negative consequences for health and safety (Mayhew and Quinlan 1997). The construction industry is notoriously unsafe, having the third highest rate of fatal injuries per industry and the largest number of fatalities per industry. Although there have been improvements over the previous year (typically the construction industry kills 70-80 people per year), according to the HSE (2010, provisional figures), in 2008/09 there were 53 fatal injuries giving a rate of 2.5 deaths per 100 000 workers and 254.1 major injuries per 100 000 workers. Organizations have used a variety of techniques in an attempt to reduce the number of accidents and the development of a positive safety culture has been seen, since the Chernobyl disaster, as a means of improving safety performance. Safety culture can be defined as:

> *"...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 organizations health and safety management."* (HSC 1993: 23).

According to Schein (2004), the strength of a safety culture is determined by group stability and shared history. This appears problematic for the dynamic construction industry, within which the working population is constantly moving. Dainty, Green and Bagilhole (2007) indicate that the unique structure of the construction industry has implications for its culture. Although there have been over 20 academic papers investigating safety culture within the construction industry (Glendon 2008), they tend not to take account of its dynamic nature. This lack of research, taking into account the construction industry's complexity, has not gone unnoticed. Maloney (2003) highlighted the need for research which investigates culture formation in this dynamic context.

Multiple cultures perspectives seem more appropriate for explaining construction industry culture. Rather than seeking to establish one homogeneous culture within an organization, culture is viewed as multifaceted; forming around different groups due to things they have in common (Sackman 1997). Chao and Moon (2005) indicate that every individual has a 'cultural mosaic' and has a number of cultural tiles. Tiles may become more prominent, depending on the circumstances, and result in different behaviours. According to Schein (2004), cultures may form at various levels (e.g. industry and professional) and Zohar (2003) has found that workers are able to distinguish between different levels of climate within organizations. Hartley and Cheyne (2009) indicate that culture may form at a number of different levels within the construction industry, with cultures formed around each site being particularly influential, as individuals assess a site culture quickly and intuitively.

Schein (2004) offers a possible explanation for this. Organizational culture (including safety culture) is apparent, according to Schein (2004), on a number of levels i.e. "the degree to which the cultural phenomenon is visible to the observer". These range from the surface level of artefacts, visually apparent aspects of culture (e.g. clothing) to underlying assumptions, which are "Unconscious, taken-for-granted beliefs, perceptions, thoughts and feelings." (Schein 2004: 26). Artefacts include all the phenomena that are perceived (seen, heard, felt) when encountering a new group. These artefacts can be difficult to interpret and decipher unless one is a member of the group and has access to their values and assumptions. However, over time, the meanings of these artefacts

become clear to group members. It seems plausible, therefore, that people working in the construction industry have an understanding of cultural artefacts and are able to interpret their meaning in terms of safety culture. In line with Chao and Moon's (2005) cultural mosaic perspective, it is possible that people will change their behaviour in accordance with their interpretation. Given the potential importance of visual artefacts, it is useful to consider the development of site safety image.

Creating an image: impression management and organizational façades

The importance of organizational image creation can be highlighted through a discussion of impression management and organizational façades. Impression management has been defined as:

> *"Control and regulation of information in order to influence impression formation or the attitudes or opinions of the people on whom such behaviour is targeted…"* (Colman 2006: 369).

A review article by Bolino, Kacmar, Turnley and Gilstrap (2008) shows that impression management has typically been focussed on understanding how individuals manage the impression that others have of them in an attempt to gain favour. However this concept can also be applied at an organizational level. Organizations can do this in a number of ways depending on their aim, but there is evidence that organizations can use assertive tactics to create a specific image. It is of note that environmental settings were also influential in Goffman's (1959: 13) model of impression management, including:

> *"…the furniture, décor, physical layout and other background items that supply the scenery and stage props…"*.

This image creation is important because it has been linked with individuals' interpretations and behaviours (Gardner and Martinko 1988).

Organizational façades are symbolic fronts created with the aim of influencing others (Nystrom and Starbuck 1984). The term façade could have somewhat negative connotations, implying a false image. However, Abrahamson and Baumard (2008) indicate that organizational façades can have positive outcomes in terms of behaviour change – decision making is more influenced by the façade than what lies behind it. They indicate that organizational façades occur at different levels, including sub-groups, and that managers have a key role in creating façades.

Linking this with the notion of artefact interpretation and the assessment of safety culture by individuals is conceptually helpful. It implies that individuals determine safety priorities when they encounter a site based on their impressions and this could influence their behaviour.

Individuals' interpretation of site culture

Social cognition supports the notion that individuals are able to interpret a new situation and that this will influence their behaviour. Colman (2006: 705) defines social cognition as:

> *"The cognitive activity that accompanies and mediates social behaviour, including acquisition of information about the social environment, the organization and transformation of this information in memory, and its effects on social behaviour…"*.

Schemas are the most frequently used construct when explaining the organization of complex knowledge (Eysenck and Keane 1995). Schemas are knowledge structures

which individuals use to understand and make sense of the world. They are pre-existing frameworks onto which experiences are fitted. Schemas cover a concept's attributes and the relationship between concepts (Fisk and Taylor 2008). Scripts are similar to schemas, enabling people to interpret their environment and relate to specific situations. They involve a sequence of actions and guide behaviour (Abelson 1981).

> *"Scripts are knowledge structures that encode the stereotypical sequence of actions in everyday happenings." (Eysenck and Keane 1995: 263).*

Basically, people interpret and categorize the situations they encounter. Depending on this categorization, they will determine what behaviour is appropriate (Fisk and Taylor 2008).

This suggests that individuals are likely to have schemas relating to what safe and unsafe sites look like. Sites' safety culture will be understood with the help of individuals' pre-existing schemas and this interpretation will influence their safety behaviour through the selection of appropriate behavioural scripts.

Research Aims

The aims of this paper are to provide an insight into the creation of an impression of safety culture on construction sites; the cues that individuals use to interpret this image; and the impact of this on the behaviour of workers. The research questions are:

1. How is an image of positive safety culture created and maintained on sites?
2. What cues do people use to assess the safety culture of a site?
3. How do the impressions people have of a site influence safety behaviour?

METHOD

Choice of method

Qualitative research methods, in the form of semi-structured interviews and focus groups, are appropriate in this context because participants' conceptualized knowledge is being investigated in an undefined area. This approach allows participants the scope to bring in new and unexpected themes. (Pidgeon and Henwood 1997).

The study

Research participant characteristics
Theoretical sampling was used, with interviewees selected as 'experiential experts'. This approach is said to increase the range of data (Lincoln and Guba 1995). Interviewees ranged in seniority from supervisors through to company directors. Most were employed by contractors, others worked for local government, clients or subcontractors, and some had a safety specific role. 20 people were interviewed and the majority were men (19).

Focus groups were conducted with workers from two different sites. Both sites were run by large contractors. Within the first focus group seven workers attended, and within the second focus group 10 workers attended. The participants varied in terms of time within the industry (range 2 to 30 years, mean = 9.35 years) and skill level. All focus group participants were male.

Interview and focus group procedure
The interviews and focus groups were designed and carried out in line with recommendations for good research practice (Langdridge 2004). Most interviews and focus group discussions lasted about an hour. The majority of interviews and both focus groups were conducted at participants' workplaces and were digitally recorded. Only one

supervisor declined to be recorded, but did allow comprehensive notes to be taken. Participants were asked about their initial reactions when entering a site, how quickly they could determine if a site had positive safety culture, how or what enabled them to make this judgement and how this perception might influence safety behaviour.

Coding

A thematic / grounded approach has been used to analyse the data. Initially key themes were looked for based upon the research questions and when appropriate new and unexpected themes were allowed to emerge (Langdridge 2004).

RESULTS

This section establishes that people are able to distinguish the unique safety culture of individual sites. It discusses the speed and intuitive nature of this process and the visual cues that people use to assess safety culture when they first encounter a site. The impact of this in terms of behaviour, and establishment and maintenance of a particular culture are also outlined.

Establishing and maintaining the impression of a safe site

A number of factors were mentioned in terms of establishing and maintaining the impression of a high level of safety culture. Contractor reputation is influential:

> *"You'd…know from the reputation of who you are going to work for…you might think…they look after their blokes…the name would more or less tell you sometimes." (Worker).*

It is important to get things right from the start. Contractors should look to enhance their safety reputation, then the site should be set up to create an impression of positive safety culture (otherwise there are problems from the outset of a project).

> *"I have said all along…you start it at day one…The minute you lapse, the minute you show a weakness, people will then take more…".*

It was noted that as a job progresses and personnel change, safety culture can change with culture shifting very quickly. If this poor impression coincides with a large number of new people coming to site, this could potentially have a dramatic impact on the safety behaviour of the whole site.

> *"Most sites will have a core staff, but then people come and go – sub-contractors, suppliers, etc. if your core staff are all swinging in the same direction…that…has an influence on the drifters that come and go. Definitely."*

The management team and supervisors have a key role in establishing and maintaining this high level of culture and workers commented on the difference that a 'good' supervisor can make.

> *"…I think it is the manager. You know, you start at the top. If you don't get that commitment and approach from the man…or woman at the top, then I think it's quite hard for the rest of the staff to do what they should be doing…".*

An interesting theme emerged relating to site effectiveness. There was a perception that sites that gave the impression of a high level of safety culture also performed better in other ways. This has not been tested quantitatively but it would be

interesting to see if this façade of safety did have an impact financially. It may be helpful to demonstrate to managers the potential financial benefits of good safety.

> *"You could walk onto a site and say 'Yes, this is a tidy site. It's well run. It's well organized. Probably making money.' And you'd find curiously that I think it was a safer site."*.

Assessment of culture

Different construction sites have different safety cultures, and interviewees and focus group attendees were able to assess the importance of safety on different sites. This became apparent as people discussed the difference between sites they encountered and the reaction of subcontractors and individuals who work on multiple sites. Given enough experience, this is an assessment that anyone can make. Workers showed an ability to assess the priority of site safety and managers also believed workers would be able to do this with ease.

> *"...you could take anyone from this entire team, including all the guys on site, and we could walk onto a site. 'How do you think the health and safety is on this site?' and they'd be able to tell you."*

Gut Reaction and speed of assessment
The initial assessment of a site happens very quickly as individuals pick up on visual safety cues. When asked if they could tell the difference between safe and unsafe sites, many people started by saying you just know, showing an almost unconscious level of processing.

> *"Really quickly, yea…You make up your mind straight away." (Worker)*.

When probed further, people were able to articulate many artefacts that help to determine the priority given to safety.

First impressions: cues
Many cues are used to assess the importance of safety on a site. These include: (1) initial impressions of site artefacts, and (2) how people are treated once they get onto site.

1. Impressions of site: cultural artefacts
When approaching a site for the first time, the initial layout is noticed and gives an indication of the organizational competence of the site team. Factors such as walkways, car parking and site offices were highlighted.

> *"...the first thing that's going to hit you is, looking at the layout...has it been planned…offices well set up, segregated car parking spaces …designated walking routes…"*.

Housekeeping and factors which related to tidiness were very frequently mentioned by interviewees and workers as a means of assessing safety priority. If rubbish is visible and the site is a mess, people quickly determine that the site is less safe. Storage of materials, when arranged neatly, also implies a safer, better organized site.

> *"...If you get there and you see it looks…tidy and well disciplined, organized, invariably…I bet you'd find that those sites are predominantly safer…"*.

The condition of the site in terms of ground conditions, equipment, tools, and plant give a clue to the importance of safety. Visual displays create an impression of a safe site. It was interesting to note that the workers thought that most sites had appropriate displays now; however, the majority of these workers were currently working on high

profile projects. It may be that posters do not indicate that a site is safe, but their lack may indicate that a site is not safe.

> *"…You can tell usually as you approach the site, what it's displaying, how tidy it is. You know, it just comes at you that this is a good site…".*

The safety behaviour of others working on the site was also noticed. This included the behaviour of the workers and management. Workers committing unsafe acts as well as whether they were wearing the correct PPE was determined, as was the general conduct of senior personnel e.g. smoking where they should not be.

2. Getting onto site cues
How the process of getting onto site is managed is indicative. The site induction was frequently mentioned as influential by workers. Interestingly, the approach and effort taken in the induction seem more important than the content.

> *"…they give you a DVD and say have a look at that and I'll be back in half an hour…they are more interested in you wearing the company name on the vest and on your hat than want you understood from the DVD."*
> *(Worker).*

Once people get onto site, another influential factor is the provision and upkeep of welfare facilities, this is particularly pertinent for workers.

> *"…If you go to the welfare facilities, if they're not well kept, you can see that they don't really care about the people working on site." (Worker).*

Management visibility and reinforcing behaviour could form part of the initial first impression. This is also likely to be an ongoing factor in maintaining a positive safety culture.

> *"…There are some site managers…on a daily basis they will be out there walking around…so therefore they're better placed to manage health and safety issues."*

Influence on behaviour

Interviewees and workers were asked about the changes in behaviour on sites perceived to have a positive or poor safety culture. There was general consensus from interviewees that perceptions of sites' safety culture could change safety behaviour. However there were some differences between managers and workers about the manifestation of this.

> *"To be honest, I think you do change and you don't actually do things the same way because you've not got the same time or the same gates to go through…".*

> *"…Behaviour just rubs off on people. If you've got 20 people…who are wearing hard-hats, you wouldn't walk into that area not wearing a hard-hat or, if you did, you'd feel very uncomfortable. It's human nature to feel uncomfortable because you're different, aren't you?…So it's just infectious I suppose and that's the same with health and safety…".*

Sites perceived to have a positive safety culture
Interviewees indicated that if a site was perceived to have a high level of safety, workers would behave more safely. Workers also indicated that they would be less likely to do things their own way or bend the rules. They did indicate that they make judgement calls and did break the rules on sites they perceived to be safe (e.g. lifting

things above the recommended level of weight), but this was less prevalent than on unsafe sites.

> *"...when you go in and you see a nice clean site, see everyone well dressed up in PPE, a well organized site...you're automatically locked on thinking, well this is a professional outfit here, right I'm going to have to step up to the mark, probably subconsciously knowing you're not going to wonder round without your hard hat on. Because...you know full well that you're not going to get away with it...".*

Sites perceived to have a poor safety culture

Managers tended to believe that workers would behave less safely on sites which appeared to have low safety standards. They also thought that workers reverted back to unsafe behaviour on different sites. One manager gave a clear example of an experiment he had conducted. This quote also shows the importance of maintaining the impression of safety, because safety culture can very easily shift.

> *"...I found someone had dumped a small pile of rubbish...and I watched this for the rest of the day, and literally within four hours, that little pile of crap had turned into a bloody great big pile of crap, because...This idea, someone else has done it, I'll get away with it as well...".*

The management view contrasts with responses from workers. While workers did say that they would be more likely to do things their own way, a number of other themes were raised. Workers indicated that they would be more vigilant and careful. They may not alter their behaviour, choosing to operate in the way they had been taught on safe sites, and may even try to influence others to behave more safely. On safe sites, workers feel more comfortable reporting risks and expressing their opinion about how a task should be carried out. Conversely, on unsafe sites they would not do this.

> *"...if a site looks untidy...you will think that this is not proper health and safety, so I have to watch myself, police myself, I have to see how to do the thing right..." (worker).*

> *"If I thought something was unsafe here, I wouldn't have any qualms whatsoever about going to my foreman and saying that's not right, but if I was on another job I might not feel the same way. I'd perhaps keep my mouth shut and keep away from that hazard myself." (worker).*

If a site was perceived to be dangerous, workers indicated that they would try to leave. A couple of interviewees also indicated that they hoped workers would leave unsafe sites and find other work, although they acknowledged that this could sometimes be difficult and people did not always have that option.

> *"...if you walk into a shit hole...I'd hope that most people would turn round and say I'm not bloody working on here. Unfortunately, some people have to...and they'll be thinking...that manager there doesn't care...So you just fall into a don't care less complacent attitude..."*

> *"I'll give it a try, but if I think it's not safe... I'll go home and find another job." (worker).*

DISCUSSION AND CONCLUSIONS

The aim of this research was to add to the understanding of construction site safety culture interpretation and how this may influence safety behaviour. It has demonstrated that sites

do create an impression of safety culture, that this is quickly assessed by people coming to sites and that this assessment influences their behaviour. The façade of a positive site safety culture is created and maintained by site management and influenced by the supervisory staff. Some sites may have an advantage if their organization already has a good reputation for safety. It is easier to maintain the image of a safe site if it has been established as such from the outset of a project. Cultural shift is a constant possibility and if the safe image of a site is to be maintained, vigilance of the presence of artefacts which signal a poor safety culture is essential. Due to the speed that people assess sites, there is a need to ensure that the safety façade is maintained constantly. People initially use many visual cues (or cultural artefacts) to determine if a site is safe or unsafe (e.g. housekeeping). This is also influenced by the interactions they have getting onto site and whether an impression of caring for the safety of workers is created (e.g. through good welfare facilities). These initial impressions are said to influence behaviour; but, the findings are a little contradictory. Managers tend to believe that workers will behave more safely (or conform) on sites they believe to be safe and behave unsafely when they can get away with it. However, workers indicate that their behaviour is more nuanced. On safe sites workers agreed that they were more likely to abide by the rules and they felt more comfortable raising safety concerns. Whilst workers agree that they are more likely to do things their own way rather than abiding by the rules on unsafe sites, they are more vigilant and would also maintain safe behaviour. As one worker put it: *"You've only got one life, you know."*

These findings demonstrate that sites do create a first impression on people i.e. there is support for the notion of creating site façades (Nystrom and Starbuck 1984) and site impression management (Bolino et al. 2008). It is also apparent that individuals interpret cultural artefacts (Schein 2004). These cultural artefacts appear related to the schema (Fisk and Taylor 2008) individuals have for safe and unsafe sites, which then influence the appropriate behavioural scripts to use (Abelson 1981).

This research adds a new dimension to the process of site safety culture creation. By bringing in theory which deals with façade creation, it shows the importance of getting first impressions right. It also elucidates the process of image interpretation, through the use of artefacts, and the possible consequences for safety behaviour.

Practical applications of this research are improved health and safety practices on construction sites, leading to reduced harm to individuals and costs associated with accidents. Organizations must create a safety façade to achieve this, facilitating the establishment and maintenance of a positive safety culture.

Although this research has been successful in terms of demonstrating the processes involved in site safety culture impression management and interpretation, caution is needed. It was carried out on a relatively small sample and some of the findings are a little contradictory. It is apparent that people working within the construction industry use site artefacts to interpret the safety culture of a site. They are able to do this very quickly and this goes on to influence their behaviour. However discrepancies occur between managers beliefs about the behavioural consequences of this process and those of the workers themselves. This warrants further investigation.

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