CONSTRUCTION: A CULTURE FOR CONCERN?

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Abstract: A Health and Safety Executive (HSE) study into 100 accidents found that poor safety culture was a key factor in over half of incidents reviewed. A culture can be defined as beliefs of society, represented through words and actions, ideas of what is held as important and expectations of acceptable behaviour. Clients arguably instil a culture of speed by placing great emphasis on completion of projects to time and cost budgets. Employers and operatives routinely promote piecework payments and transitory methods of employment; productivity is king. A predominantly male environment promotes a macho culture affecting certain behaviours including risk taking, bravado and high levels of physical exertion. The World Health Organisation has stated that 'masculinity may be hazardous to health'. Safety culture is just one facet of site culture as a whole. Australian research shows there is a strong perception that culture of the construction industry can inhibit adoption of a proactive safety culture. The objective of this study is to establish and gain understanding about the areas of potential friction between site and safety culture. A literature review has been undertaken and qualitative data collected through six in-depth interviews. The population is operatives working for members of the Major Contractors Group (MCG) on large projects. In addition to the need for safety training, education is also required to bring about an understanding of the principles and creation of a belief in the system; but to educate many operatives to desired levels represents a considerable challenge. A fundamental cultural change is also required within the industry itself, and further conclusions are still under development. The study is at the early stage of a PhD.

Keywords: culture, education, health and safety, operatives.

INTRODUCTION

In Scotland the Forth Bridge was growing across the Firth of Forth and in Paris the French engineer Eiffel was erecting his Tower. Construction in the late nineteenth century was a dangerous occupation, at least 57 men lost their lives building the bridge across the Firth of Forth (Harvie 2004: 114), and recent research claims a higher figure of 98 (BBC 2006), a tragic but unsurprising statistic for the time. However, what is surprising is that not one life was lost in the construction of the Eiffel Tower (Harvie 2004: 114).

The key difference between the projects was the approach of management, although both involved steel, complex designs and working at height. Whilst Sir Benjamin Baker followed normal working practices of the time, Eiffel had other views about working conditions and safety on site. He established a subsidised canteen on the site that rose with the tower, providing healthy food for his workforce, and allowing them to rest for their lunch hour rather than tiring them with the long climb up and down

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(Harvie 2004: 114). He also attempted to improve working conditions with the provision of additional decking and sheeting to protect operatives when they were exposed to the elements (Harvie 2004: 115). Eiffel's overall attitude was clearly illustrated by his speech made during the completion ceremony for the tower, with praise for his workforce and their resolve in braving the bad weather, cold and wind. The compliment was returned by the workforce in voicing their respect for Eiffel and honour in their achievements (Harvie 2004: 123-4). Clearly, the construction site of the Eiffel Tower had an atmosphere and culture to be proud of.

In more modern times, although somewhat slow in appreciating and adopting Eiffel's attitude and principles, the UK construction industry has changed for the better. The image of construction as 'inherently' dangerous has been altered by increased investment in and awareness of safety and welfare on site, which has led to an improving safety record in the industry, most recently since 2000 (Masson 2006; Richardson 2006). However, the latest statistics of 2006/07 have caused this improvement to falter. 77 fatalities occurred on UK construction sites during this time, an increase of 17 workers from the year before and taking the safety performance statistics almost back to those recorded in 2001 (HSE 2007).

There will be a variety of causal factors behind these latest statistics, however one factor that is likely to be of importance is a 'poor safety culture' on the sites involved. A Health and Safety Executive (HSE) study into 100 accidents that had occurred on construction sites, found that 'poor safety culture' was as a key factor in over half of the incidents reviewed (HSE 2003).

Awareness of safety culture as a health and safety issue is not something new. Both the construction division of the HSE and industry have attempted to make changes, evidenced by investment in the creation and implementation of a variety of safety cultural change programmes (Spanswick 2007), 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. A 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). Safety culture has been defined as the ideas and beliefs that are shared about risk, accidents and ill health (HSE 2005). It is therefore conceivable that in attempting to change elements of safety culture, there may be conflict with elements of site culture itself. Indeed, it has been suggested in Australian research that there is a strong perception that the nature, or culture, of the construction industry itself can inhibit the adoption of a proactive safety culture (Cipolla *et al* 2006). It is therefore arguable that there may be fundamental areas of friction between site culture and the safety cultural change systems; an unavoidable clash of cultures.

LITERATURE REVIEW

Construction Site Culture

From the very conception of construction projects, there are two fundamental driving forces that filter down from clients, through the project and site management teams, to operatives carrying out work on site: they are time and money. Whilst quality makes the third side of this traditional industry 'triangle', its consequences are of a different nature than those under discussion here. Speed is of the essence, programmes are frequently tight in order to save costs and win projects, and productivity is king. Costs are also critical, value is client driven and often leads to tight profit margins and

use of inexpensive working methods in order to win work. In essence, work must be carried out as quickly and cheaply as possible. Although change has been forthcoming with the advent of partnering and other collaborative working practices, these two factors often still form the bottom line of construction projects. The workforce still considers money, in terms of cost and minimum spend, and the fact that the job has to be done no matter what, as the key drivers of any project. These two elements are therefore ingrained as fundamental beliefs within the site community, and are the keystones of construction site culture.

The very nature of the industry means a transient workforce (EOC 2006) is unavoidable. With each element of work within the projects comes a different skilled workforce, some never meet, but the majority will overlap and be working together as buildings grow, sharing the same site toilets, canteens and working space. In order to quickly reform into functional site teams as the workforce moves around projects, there are likely to be unwritten but easily recognisable behaviours and actions that enable conformity with and acceptance by the majority group on sites. These shared behaviours allow for strong bonds to be formed quickly, creating a sense of support and belonging (Bird 2003). This establishment of norms in behaviour will also create a culture that ultimately discriminates against those who seek support or action against behaviour which is viewed as in keeping with the industry's traditions (Fielden *et al* 2000).

The transient nature of the workforce therefore not only reinforces and perpetuates the site culture within the industry nationwide, but also creates a site environment so firmly fixed in its cultural beliefs that it has an inherent resistance to change (Greed 2000; Entec 2000), cultural or otherwise.

The behaviours that make up site cultural beliefs are also undoubtedly influenced by the fact that 99% of all site workers are male (EOC 2006). This has somewhat unavoidably led to the establishment of a macho culture on sites, affecting certain behaviours including risk taking, bravado and accepted levels of physical exertion. The World Health Organisation concluded that 'masculinity may be hazardous to health' (WHO 2002) when it established a clear correlation between masculinity and risk-taking, and consequently this male majority has led to a risk tolerant culture on site (McKay and Forster 2005). Unfortunately construction is an industry where taking risk can have serious and even fatal consequences.

The common practice of paying the workforce on price encourages operatives to work as fast as possible to make the most money in a day. As speed often means cutting corners and taking risks, it is often safety that is sacrificed (Spanswick 2007). Even for those not working on price, there is still the need for production. The ever looming deadline for completion of projects means there is constant pressure to meet daily and weekly targets. This pressure is often most keenly felt by site foremen, supervisors and site managers, who often turn a blind eye to unsafe practices with fingers crossed, if they achieve the necessary production (HSE 2003).

In addition to the environment of sites, the fact that most skilled operatives are trained and fully able to carry out one key area of work leads to repetition of tasks from site to site, which can lead to a culture of complacency. This will affect the operatives' approach to task specific health and safety, such as method statements, risk assessments and site specific training. The task has been undertaken a hundred times before, and it is not uncommon for operatives to sign unread method statements so the paperwork is in place in the office, with no practical bearing on safety on site.

The fact that many subcontractors' risk assessments and method statements are often generic from site to site, and often arrive with a previous main contractor's name and site address still on them also indicates that management's attitude is not that far removed from the workforce's. That different site-specific risks will need analysis and investigation does not seem important, it is the paperwork and getting signatures to the office that matters. The fact that these tools, and indeed legal requirements for site works, are not correctly prepared, not thoroughly read, and in some cases have no bearing on the actual work method used, highlights an important cultural attitude to site work and the correct evaluation and mitigation of risk.

From the above review, although not exhaustive by any means, it can be seen that site culture does have some key characteristics that distinguish it from other industries in terms of the accepted behaviours and societical norms.

Safety Culture: A Potential Clash?

To supplement the traditional method statements and risk assessments used to safely manage site work, two distinct approaches have been established within the construction industry with the aim of modifying safety culture on sites: the Safety Cultural Model (SCM) and the Behavioural Based Safety Model (BBSM). Some elements are common to both approaches, such as the need for dedicated management leadership (Loosemore *et al* 2003: 13) and workforce engagement and agreement to the programme (IOSH 2004), but other aspects are quite distinct.

The Safety Cultural Model (SCM) relies on a top-down change model to alter the norms, values and attitudes of companies as a whole, leading to desired behavioural changes out on site. The SCM change programmes attempt to create a zero-incident environment through a shared sense of responsibility and caring between management and the workforce, encouraging people to examine and express their true feelings regarding safety and commit to positive change (AGC 2006). They are not intended to replace current procedures, but are more an educational tool to be used to make safety personal rather than any enforcement of additional procedures (CIOB 2006).

These programmes ask people to take responsibility for their own safety (CIOB 2006), essential given the fragmented structure of the industry and the high levels of self-employment (Loosemore *et al* 2003: 13). However, research has shown there is often an inadequacy in giving workers the responsibility for their own safety; operatives issued with the correct PPE and dust extraction equipment for a task frequently chose not to use them, due to the discomfort of the PPE and the belief that extraction was not really necessary (Cameron and Duff 2007: 500). The latter of these can be attributed to the macho aspect of the site culture, and the belief by operatives that they were tough enough not to need extra help to breathe.

In attempts to win the 'hearts and minds' of the operatives by promoting a caring attitude on site (AGC 2006), SCM programmes attempt to encourage the desire to choose to work safely rather than compelling safe working by enforcement and policing (CIOB 2006). However, this caring approach may also conflict with the established macho site culture. Men are likely to bond with other men in competitive, emotionally detached ways, (Bird 2003), indeed the language on construction sites is legendary, with swearing, abuse and bawdy humour the norm (Jordan *et al* 2005). Therefore, when SCM programmes ask operatives to examine their true feelings with regards to health and safety, it is often the case that although taken seriously in the training environment, the ideals are lost in a ruckus of banter and jokes once back on site.

In creating a new culture on site, SCM programmes also attempt to remove barriers by eliminating the retribution, punishment and reprimand that often comes with an accident or near miss in order to encourage reporting and enable the site to have a 'truly safe environment' (AGC 2006). However this blanket approach to a no-blame culture is seen by IOSH as neither feasible or desirable. IOSH believes that some acts will inevitably deserve severe sanctions and failure to recognise this undermines the credibility of an organisation. A distinction must be made between wilful acts and accidental occurrences, and a clear establishment of boundaries made with suitable retribution if required (IOSH 2004).

In contrast to the SCM, the Behavioural Based Safety Model (BBSM) relies on influencing and modifying actual behaviours to reduce 'at risk' behaviours, thereby creating the desired safety culture from within (Dingsdag *et al* 2006). This model utilises the bottom-up change model, and can involve a variety of methods and techniques to achieve its aims using the same underlying philosophy.

The most common form of BBSM is that of Goals and Feedback (G&F). Focus is made on the few habitual behaviours which are most critical to safety and cause the most incidents (IOSH 2006: 6) and then checklists are made to allow monitoring of these behaviours. Workforce focus is then raised in these areas through campaigns and training and then behaviours are monitored in the workplace by trained personnel. Feedback of the results is then made to the workforce, goals for the next period set and the cycle repeated. Once these behaviours are modified to satisfactory levels, new behaviours are chosen and the process repeated.

The focus of BBSM G&F on behaviours has been praised for its simplicity, rather than attempt any complex change in attitudes (Wilson 2007), however this is somewhat contradictory as behaviours are a direct symptom of attitude. Should a particular work element not be the focus of the current BBSM G&F programme then the operatives are likely to revert to their usual behaviours in other work areas, driven by their unchanged attitudes.

Although BBSM G&F have been used to some benefit within the construction site environment, there are some aspects of the site culture that may hinder its successful integration. The simplistic approach may not be able to modify more than one aspect of the intricately linked behaviours found in the complex site environment and thereby be ineffective in accident reduction, there is also the possibility of unreliable observation and reporting, and the fundamental site culture drivers of time and money will also undoubtedly have some influence. Indeed, it has been established that if an unsafe act has positive consequences like getting the job done quicker and rarely causes an accident then this act is likely to continue (Saari 1994: 13). In addition, limitations have been found in the inability to modify disagreeable behaviours, such as having to wear inconvenient and uncomfortable PPE (Cameron and Duff 2007: 500), something that is a daily behavioural issue for site managers UK-wide.

Another form of BBSM is the use of Mnemonics to spark behavioural change at the very start of each work task. Included with the HSE's Worker Engagement Initiative (2002) is the Achieving Behavioural Change (ABC) programme, an education programme providing the workforce with an appreciation of the links between attitude and behaviour, and an understanding of the benefits of good safety performance. This programme also introduces the mnemonic TASK and STAARR cards, prompting the workforce to stop and think before undertaking any task to ensure it is going to be carried out safely (HSE 2002).

However, a fundamental element of this system is that at the start of both TASK and STAARR, individuals must first think and then judge the risk before they act. Putting the onus on an individual evaluation of risk reduces it to the level perceived by the individual, and if the risk is not perceived as such it will not be countered against. Even if risk is perceived, the decision to commit a violation or to act unsafely is often derived from a conscious decision which balances the perceived risks against the perceived benefits (Cooper and Cotton 2000: 482) and if the work operation has been carried out many times before with no incident, the evaluative review and risk assessment may only be carried out summarily, if at all.

Although positive effects have been reported (HSE 2002), such results cannot be seen as indicative of the industry as a whole. BBSM has been proven to work in fixed environments with a single unchanging workforce. The situation is very different to construction sites with a variety of ever changing trades and subcontractors working together. Here the site culture and its influence over the working environment will be at its strongest, and those elements in conflict with the BBSM programmes are likely to have most impact.

There are also aspects of SCM and BBSM programmes which are common to both, most significantly the necessity for workforce engagement. It would be difficult to argue against the obvious benefits of opening communication between the management and operatives on site. However, this concept of workforce engagement may not easily harmonise in a historically command driven industry and as a result many operatives on site may prefer just to do as they are told and not wish to become engaged. With the site environment resistant to change, and an unwillingness to speak out against cultural norms (Greed 2000), it would appear that although participation is requested from the workforce, site culture may not permit it.

Arguably the success of commitment to improvements in site safety culture depends heavily on the attitude of site managers, supervisors and team/gang leaders (HSE 2003; Dingsdag *et al* 2006) and the reinforcement of the chosen change programme throughout the working day. Although, as these are the very people under the most pressure to deliver the project under the site cultural constraints of time and budget, a conflict of interest is not unlikely.

METHODOLOGY

In order to enhance this examination of the characteristics of construction site and safety cultures, semi-structured in-depth interviews were carried out with six construction operatives currently working on large sites for members of the Major Contractors Group (MCG). These interviews explored personal attitudes to everyday activities on site through a safety cultural lens, drawing out attitudes towards site culture, safety programmes and any areas of conflict between the two. The sample was one of convenience, however a representative from each trade was included to provide a site wide range of perspectives, although the resulting sample was all male. Although this, coupled with the small sample size, does not allow for generalisation of the findings from a purposive sample perspective, it is arguable that as these operatives had all previously worked on other sites, their experiences and attitudes are unlikely to be uncommon in the industry as a whole.

Data were extracted from the fieldnotes taken during the interviews and coded to allow grouping of the data into themes. This data was then placed into a spreadsheet in order to extract the keywords from each answer, and to highlight the similarities

and inconsistencies within the themes. Subsequently a narrative was drawn out in order to allow the identification of patterns, themes, regularities, irregularities, contrasts and paradoxes (Coffey and Atkinson 1996).

FINDINGS; THE NARRATIVE

Health and safety training is a part of modern construction site life; all those interviewed had participated in some form of specific health and safety training, including tool box talks, daily briefings and cultural change programmes. However those who had participated in SCM programmes felt that they were good in theory but somewhat ineffective in practice. Training is seen as of little use if it is only given to a small proportion of operatives, rather than everyone on the site, making any cultural change insular to those trained and therefore ineffective for change on the site as a whole.

Focus on certain elements of the site as found within BBSM safety programmes can lead to a failure to see the bigger picture, the reliance on safety checklists and evaluating certain tasks can mean that other larger and potentially more serious issues are ignored. Requests for workforce engagement are common, however it is felt that sometimes the issues raised by operatives are not acted upon, or simply paid lip service by site management.

Opinions are also divided as to the effectiveness of the prescriptive methods of safety management used on site; the method statements and risk assessments. They are seen as a positive measure if they are well written and signed up to, and if people work to them. However, they are occasionally written by management with little or no experience of the work and as such, can prove useless. In other instances work methods are agreed and then found to be impractical as plans bears little or no relation to actual site conditions, making them impossible to follow and resulting in other methods being used to get the task completed. Management enforcement of the agreed methods is seen as necessary for them to be an effective safety tool on site.

Management attitude is seen as critical to the success of the cultural change programmes, and it is felt that there is occasionally inconsistency in the implementation of the chosen safety programme depending on the trade and work element concerned, and its relative importance in the programme of works. The stage of the project is also frequently influential; as one operative remarked '…towards the end of the job, safety goes out of the window'.

The need for constant and often accelerating production has a strong influence on the approach to work by both management and operatives. In cases where a task must be done and the equipment is unavailable to carry it out in a certain way, other bespoke methods are often found which may not wholly conform to the safety requirements. The method of payment on price or piecework is also seen as a strong influence for the operatives concerned, driving them on, even if it means cutting corners in method or taking risks.

There is awareness of the perception of risk being a factor of influence in site behaviours. It is felt that in many cases rules are bent rather than broken, and often by the more experienced operatives who believe they are still working safely as they are within their risk tolerance. Trades who frequently work at height are seen to have a higher risk tolerance than those who work on the ground, and familiarity with a task is seen to influence the risks that can be taken in its completion. The time duration of a task is also considered a factor in judging risk, for a one-off task that will only take

two minutes, there is often little thought to method, however as one operative noted '..it might only take two minutes to do, but it only takes a second to fall'. The fact that the majority of operatives are male was not felt to influence the attitude towards risk taking on site.

Safety requirements for a task are sometimes seen as an obstacle to getting the task done as efficiently as possible. Some PPE is seen as more obstructive than useful, although there is also the opinion that if a task requires specific PPE then it is necessary to carry the task out safely.

DISCUSSION AND CONCLUSIONS: A CLASH OF CULTURES?

As the plain speaking definition of culture explains, 'it's the way we do things around here' (Wilkinson and Lee Scofield 2000; HSE 2002), and the construction industry has its own special way of doing things. There are a variety of elements fundamental to site culture that have the potential to undermine or invalidate aspects of safety cultural change programmes.

Whilst the safety cultural change programmes are seen as a positive step, their practical implementation appears to be at odds with the site culture itself. A transient workforce, driven by production and cost, and still looking to management to enforce the rules are not characteristics, beliefs or expectations that sit well beside the requirements of the cultural change programmes.

For any programme to succeed, levels of safety training and education are required, which in themselves are very different procedures and arguably both as necessary as the other. For a programme to be implemented, education will lead to understanding of the principals behind it and create a belief in that programme. Training then teaches the specific behaviours and activities required for successful implementation of that system. If training is given alone it simply provides procedural requirements to be followed, with no room for individual understanding, input or creativity. Education alone omits to impart the actions required to meet the requirements of the system (Geller 1996). A combination of the two is required for successful implementation, and it is often education which has been missing on many construction sites. Indeed, there appear to still be issues with the legislative and traditionally prescriptive risk assessments and method statements. Education itself is an unfamiliar process on construction sites, and the cultural change programmes' need to educate operatives to desired levels for success represents a considerable challenge.

However, given that unsafe acts and behaviours are estimated to account for 80% of accidents (Wilson 2007; IOSH 2006: 3), it is clear that some form of cultural change is desperately needed within the industry.

Changing culture is not a new phenomenon, and is indeed attainable. For example the cultural attitude towards drink driving has dramatically changed since the 1970s when it was in some circles an accepted behaviour; in recent years it has become deplorable to the majority of society.

It must be recognised that culture changes slowly, and fundamental change requires time (IOSH 2004). Therefore, the effectiveness of implemented programmes may be unrealised (Dingsdag *et al* 2006), and there is also the possibility change slows to almost a stop. One of the most revealing aspects of research into BBSM G&F programmes on site was that whilst the goal setting and feedback showed dramatic improvement in behaviours, the addition of training to this cycle was shown not to provide any significant benefit (Cameron and Duff 2007: 500). The simplest

explanation for this behavioural change achieved without the need for training is quite straightforward: the operatives were well aware of how to behave safely; they did not need training; the knowledge and ability to behave safely was already present within the workforce; to act in that way did not fit with the site culture itself.

The ultimate solution to catalysing safety cultural change on construction sites is neither clear nor straightforward and further research is clearly required. However a possible solution to this incompatibility between site and safety culture may be to tailor these cultural change programmes further to fit with the realities of site working life. The alternative is to fundamentally change the site culture itself: to change the management of how work is organised and paid for and to change the make up and attitudes of the workforce as a whole. If this is achieved, it is likely that the influence site culture currently has on the accident and incident rate of the industry will be less evident. Subsequently a strong safety culture can then be implemented from this advanced position, utilising a cultural change programme specifically designed for construction sites, sculpted around a modified site culture.

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