

Ethnography

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Catching them at it An ethnography of rule violation

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ABSTRACT ■ Based on an ethnographic study within the road maintenance sector, this article explores the occurrence of rule violations in industrial settings subject to a high level of regulation, and is specifically concerned with operatives' risk perceptions in relation to health and safety rules and with management strategies for their successful mitigation. The study contrasts two different, but related, types of risk. First, it considers those aspects of health and safety where the limits of 'best practice' working are insufficient to eliminate or control major sources of risk, and second, it looks at risks the known outcomes of which are underestimated as a result of being delayed or indeterminate. The article considers the sources of rule violation, such as operatives' sense of self-efficacy; the need for heedfulness as well as compliance; and the dangers of risk displacement and the creation of a 'second-order' focus.

KEY WORDS ■ rule violation, invisible risks, uncontrollable risks, risk displacement, heedfulness, second-order focus

This article draws on data from an ethnographic study of the field operations of the road construction and maintenance division of a leading UK-based infrastructure, building and business services company. In the UK and overseas, it has over 40,000 employees, an order book worth over £9bn, and describes itself as 'working in areas vital to society'. As such, it is involved in designing, building, and maintaining new environments for

business and leisure – including health, education, commercial, government and defence – as well as supporting the road and rail transport networks. Notwithstanding this extensive remit, the labour process involves largely mundane technology set in fragmented working environments. Individual operatives may be using pneumatic drills, grass strimmers or petrol-driven compactors rather than operating large-scale systems, and may be part of small gangs working in dispersed locations. Even in relatively large scale construction projects, the equipment used – cranes, pile drivers, mechanical diggers, etc. – is relatively unsophisticated. The risks involved in its operations often have distal consequences – for example, the delayed onset of health problems as a result of exposure to noise or vibration – and failures in safety result in frequent, minor risk outcomes rather than one-off disasters. Cumulative fatalities for the industry are nonetheless high, making the issue of rule violation and the intentions behind it an important one.

The closely related themes of risk perception and rule violation acted as ‘sensitizing concepts’ (Blumer, 1969) for the early stages of my study and, in particular, as topic headings for a collection of interviews conducted within the study organization at the outset of the project. These interviews, involving senior and middle managers and supervisory staff, were facilitated by introductions from a senior project sponsor within the organization. The organization itself saw its emphasis on safety as a unique selling point in tendering for new business, and its ability to publicize its involvement with a major research project in this area as contributing to this safety conscious image. As part of the interview phase, the interviewees were asked to grant access to others within the specific contracts on which they worked, in order to construct a programme of fieldwork, which was then undertaken. This included participation in safety training, observation of a wide range of on-site activities, attendance at safety-related meetings (for example, at a number of multi-level, multi-disciplinary Safety Action Group meetings), and informal discussions with site operatives. The latter took place both in one-to-one situations (for example, whilst observing them at their work or driving with them in their vehicles) and in small groups, usually when operatives were eating their lunch in the site mess rooms. A range of organizational and sector-related documents were also studied and analysed.

Given the high risk, highly regulated study context, it was inevitable that there were some limitations placed on fieldwork. A full safety induction had to be attended (and a test passed) for each site where fieldwork was to be conducted. In areas where the speed/volume of traffic (e.g. on motorways) or other environmental risks (e.g. on major construction sites) were seen as making this necessary, the researcher was accompanied by a safety officer or supervisor at all times, and the periods of observation were consequently

limited. On a number of maintenance contracts, however, it was possible to accompany, for example, patching gangs, as they went about their normal work. Whenever on site it was necessary for the researcher to comply with regulatory requirements in terms of wearing personal protective equipment (PPE), at the same time as not appearing as a 'spy' for management, with the agenda of prompting compliance by others. Hence although there were no issues in relation to the willingness to grant access, the practicalities of doing so will, necessarily, have had some impact on the data which the study was able to collect. The resultant insights into the behaviour and sense-making of members of the setting thus fall short of the achievement of 'vulgar competence' (Garfinkel, 1967), which a totally unrestricted ethnography might hope to obtain.

Operatives' perceptions of the researcher (a well-educated, middle-class woman, with the potential to report back to management) may also have impacted on both the naturalness of their behaviour and the opinions they expressed in conversation. The fact that, for example, I was referred to amongst them as a 'young lady' (despite being 45 and not especially lady-like!) and that they apologized when they swore in front of me, marked me out as an audience to their activities rather than as a potential participant. Conversely, it is possible that some incidents related by operatives resulted from the various practices used to build rapport with them (empathizing with complaints about management, not being offended by their bad language or sexual banter, etc.), with the specific aim of encouraging them to disclose examples of rule violation which pure observation may not have produced, or which may not have been recognized for what they were. At the same time, there may have been a perceived need, by both managers and operatives in the setting, for 'telling the code' (Wieder, 1974): that is, demonstrating to themselves and others (including the researcher) that they understand the (informal) protocols of the setting by saying what is expected of them in the context of that setting, rather than what they actually feel or believe. These shortcomings are an inevitable hazard of the partially restricted fieldwork access which the study setting permitted, and must be taken into account in the interpretation of the data thus obtained. As a methodological note, where the grammar of site operatives was poor, this has been retained in data extracts and quotations to ensure authenticity.

Ethnography, work and rule violation

The cultural baggage we as ethnographers necessarily bring along to the field includes theoretical dispositions. According to Edles (2002), the possibility of a truly 'naturalistic', theory-blind ethnography is put in doubt by a whole raft of critical perspectives:

Thus far we have seen that ‘naturalist’ ethnography is pointedly ‘descriptive’ and ‘atheoretical.’ The goal is to ‘abandon’ preconceived ideas, simply observe a natural situation or environment, and ‘report’ whatever is going on. However, as we have also seen, postcolonialists, postmodernists, and feminists have all challenged the alleged ‘atheoretical’ attitude of the ethnographer. These analysts have all pointed out that regardless of their intent, ethnographers necessarily write from a specific subjective (and thus quasi-theoretical) position. (Edles, 2002: 157)

This does not, however, require the total abandonment of realism, nor does it make every ethnographic study a necessarily ‘critical’ one. The status of the social researcher as a member of the social world they study need not preclude the retention of a degree of ‘anthropological strangeness’ any more than it presupposes a critical agenda. In the context of this debate, the present study may be said to be a naturalistic ethnography, seeking as it does to understand and describe people’s behaviour in natural settings, and the meanings those behaviours have for those within the setting. Its naturalism is not so naïve, however, as to claim – or even wish – to be entirely atheoretical or free from pre-conceived ideas: both initial ‘sensitizing concepts’ and subsequent theorizing are adopted and valued for their role as a sense-making device, an ‘ethno-method’ (Garfinkel, 1967) for constructing meaning rather than a positivist instrument of abstraction.

Workplace ethnographies have been a strong theme within the literature in recent years. Often focusing on knowledge work (e.g. Bechky, 2006) or work involving the routine use of technology (Orr, 2006; Suchman, 1993), such ethnographies focus on the day-to-day practices through which the work actually gets done (Orr, 1998) as distinct from the management discourses through which it is often portrayed in the organizational literature. As such, they aim to recapture the ‘missing what’ of earlier sociological studies of work, in which ‘it seemed that the content . . . has mysteriously vanished in the course of the investigation’ and ‘the details of the work practices . . . are glossed over’ (Button, 1993: 15). Whilst a significant strand of the studies of work literature, including most of those mentioned above, belongs to the ethnomethodological tradition, there is also a broader stream of work in the field as exemplified by, for example, the work of Hodson (2004) and Tope et al. (2005).

Perhaps the seminal work in the field with regard to rules is Wieder’s (1974) study of the ‘convict code’, providing as it does a rich understanding of what constitutes a rule and how we know what it means for us amidst the many vicissitudes of daily life. This study of life in a halfway house for reformed convicts graphically illustrates the necessary under-determination of rules, and the consequent importance of ‘knowing how to go on’ (Wittgenstein, 1958) as a means of demonstrating understanding of the

rules in any given situation. Lucy Suchman's (1987) work on 'plans and situated actions' may be said to expound more broadly on a similar theme. Focusing on rule violation rather than rule following, Vaughan (2004) detailed in her 'historical ethnography' of the Challenger disaster how the 'normalization of deviance', whereby routine rule violations become an accepted part of organizational practice, can accumulate to result in disproportionately negative outcomes.

Vaughan (1999: 271) draws a distinction between mistake, misconduct and disaster as 'three types of routine nonconformity with adverse outcomes' and Parker et al. (1995) identify absent-minded lapses, errors (in the form of misjudgements and failures of observation), and deliberate violations as three distinct sources of deviation from safe driving practice. Both classifications make the point that not all deviations from rules occur intentionally, and that only those which do constitute violations. Lawton (1998) provides a classification of types of rule violation, under the headings of erroneous, exceptional, situational and routine, arising from lack of understanding/experience, unusual circumstances calling for unusual responses, a desire to keep the job moving in adverse conditions, and regularly taken short-cuts respectively. She also suggests that the underlying causes of rule violation may be attributed to attitudes/motivation of individual workers, situational factors which either support or hinder rule following, and effectiveness and knowledge of the rules. Hudson et al. (1998) provide an alternative, though similar, violation typology of Expectation (that rules will have to be bent to get the job done), Powerfulness (in having the ability/experience to do the job without following procedures), Seeing the Opportunities (for short cuts or doing things 'better'), and Inadequate Work Planning (leading to problem solving 'on the fly'). This focuses more on people's motivations for rule violations than on the situations in which they occur, and can be seen as combining the classifications and causes put forward by Lawton.

Working from a consideration of the mental models held by operatives and managers, Prussia et al. (2003: 145) derive a socio-technical model for predicting safe working behaviour in which they identify 'cavalier attitude toward safety behaviour' and 'safety efficacy' as the key person-related variables. These can, perhaps, be seen as opposite sides of the same coin in that the former relates to an employee's belief in their ability to get away with ignoring safety procedures without incurring accident or injury, while the latter refers to self-perceived confidence in their ability to work safely. As such, they offer a refinement of Hudson et al.'s (1998) Powerfulness motive.

The literature relating to the audit culture (Strathern, 2000) which is often perceived as existing in highly regulated settings, and the issues of trust and privacy which thus arise, are an important part of the context in

which rule violations are to be understood. The perception of not being trusted to do a good job or to work safely without being constantly checked up on is well documented (Dirks and Ferrin, 2001; Power, 1997) and can be expected to generate a range of ‘gambits of compliance’ (Bittner, 1965), through which workers are seen to be:

extending to the rule the respect of compliance, while finding in the rule the means for doing whatever need be done. (Bittner, 1965: 251)

Although Bittner took ‘whatever need be done’ to refer to the objectives of the organization in the face of external regulation, the concept can just as readily be applied to the perspective of the workers within the organization responding to rules imposed by management. Implicit in the notion of a ‘gambit of compliance’ is a reciprocal practice by management of turning a blind eye: the box has been ticked to say the rule has been complied with and no-one looks too closely to see if the day-to-day practices equate to what is thus being claimed.

Hale et al. (2003) make the point that generalized rules imposed at an organizational level can often result in enforced violation in order to get the job done, and link this to the notion of constant heedfulness as a substitute for detailed rules drawn from High Reliability Organization (HRO) thinking (e.g. Roberts, 1990). In a similar vein, Reason et al. (1998: 297) conclude that an organization’s ‘compendium of safe operating procedures will never be wholly comprehensive nor universally applicable’, and that an extended use of social and self-control measures is required to ‘compensate for the inevitable limitations of prescriptive procedures’ (1998: 289). This viewpoint can be seen as a discussion within the context of the safety cultures literature or the debate between High Reliability Theory (La Porte, 1981) and Normal Accident Theory (Perrow, 1981). The HRO/NAT debate has been conducted largely in relation to settings (such as nuclear power plants) which amply display the characteristics of interactive complexity and tight coupling typical of Perrow’s (1981) first formulation of the theory that technological systems with these characteristics were subject to the advent of unpreventable and inevitable accidents, which should thus be considered as Normal events. Although La Porte’s (1981) contrasting High Reliability Theory contested the inevitability of such accidents, it retained the assumptions of interactive complexity and tight coupling, which have also been present through much of the subsequent debate.

During the course of the research I was exposed to a wide range of health and safety hazards which had been the subject of risk assessment procedures, and for which mitigating measures – either through the wearing of personal protective equipment (PPE) or through the application of written method statements for safe working – were in place. These included risks relating to the environment in which work was carried out, the tools

and equipment used by operatives, the physical activities undertaken (such as lifting), and the safety of members of the public as well as those working in the industry. A protracted process existed for the assessment of risk and the determination of how safe working was to be prescribed. Formal risk assessment and method statement documents were prepared, at a generic level of abstraction, by head office engineers. Site foremen conducted informal, localized risk assessments to determine the applicability of these documents to the specific conditions and environment within which work was to be conducted at a contract level. Discrepancies between the two might require interpretation or amendment of the working procedure – either as an immediate measure to get the job done, or as a formal procedure to eventually amend or supplement the method statement – or the provision of additional safety equipment, such as stop/go lights to protect an area of poor visibility. Operatives also routinely made their own assessments of the risks associated with a particular task, and made decisions affecting the safety of themselves and others as a result. They could, for example, refuse to undertake an allocated task if they felt it was unsafe, and request additional risk mitigation measures be adopted.

The term ‘rule violation’ may conjure up visions of deliberate sabotage, malicious damage or wilful disobedience: in the vast majority of cases, however, the reality observed during the study was far more mundane. A so-called ‘violation’ could be a habitual short-cut to a familiar procedure, a lax interpretation of a rule on the basis of perceived self-efficacy or experience, or a genuine attempt to get the job done in adverse circumstances (for example, in the absence of the proper equipment). As noted by Hale et al. (2003), these violations – which (drawing on Lawton, 1998) they classified as routine and situational respectively – were concerned with mismatches between rules and reality. The following extracts, both relating to the requirement for electricians to work in pairs, illustrate the mundane nature of these well-intentioned forms of rule violation:

[The previous contractor] had an operation that would allow for single-man working. [The company] came straight in and said: ‘No, no, we don’t find that safe’ ... Now, say for instance the bloke’s got to ... needs to go to the toilet. So he nips off. And the other chap keeps working. Does he stop and not go on with what he’s working on or doesn’t he? Just to finish the job while he’s gone to the toilet. So it’s as basic and as routine as that. (Daniel, Construction Manager)

I suspect what they do is, reality would say that with two guys there, one will probably sit in the vehicle and read the paper and one will go up in the basket and occasionally the other one might say, ‘Are you ok?’ The position he should be in is at the bottom making sure that the public’s safe, his fellow worker’s safe, and that’s about all of it. (Derek, Health and Safety Advisor)

Such routine short-cutting or laxness has long been recognized in industrial settings, with industrial action by union members in the form of a 'work to rule' being testament to both operative and management recognition that such is the case. The current study seeks to locate such mundane rule violations in the context of the operatives' perceptions of the risks they incur, to which such violations are a response.

Types of risk

Though they did not use the term, the highly regulated environment gave rise to a perception of audit culture (Power, 1997; Strathern, 2000) by operatives. Where there are rules there will, almost inevitably, be rule violation, and this in turn has implications for management in terms of achieving a balance between rule following and heedfulness (Weick and Roberts, 1993). The study identifies two different but related types of risk with different consequences for rule violation. First is where the limits of 'best practice' working are insufficient to eliminate or control major sources of risk, for example, unpredictable acts by members of the public leading to vehicle intrusions into motorway maintenance sites. These may be viewed as 'uncontrollable' risks, the effects of which can only be mitigated by the constant heedfulness of operatives. Second are risks which may be inadequately assessed in the sense that their known outcomes are underestimated as a result of being delayed or indeterminate, such as the risk of developing vibration white finger – a debilitating and painful condition – as a result of excessive exposure to hand-arm vibration whilst using industrial tools over a prolonged period of time. This latter risk may be described as 'invisible' in that the risk and its outcomes are not obviously and immediately linked in the minds of operatives (as would be the case, for example, in receiving a head injury as the result of not wearing a hard hat). These two types of risk were considered both from the perspective of operatives who were subject to them and in relation to their management or mitigation.

In terms of the perception of risk by industry operatives, these two broad categories were of particular interest in relation to the acceptance of and adherence to mitigating measures. 'Invisible risks', whilst being appropriately assessed and their mitigation documented at an organizational level, were often underestimated or viewed as insignificant by operatives due to the apparently loose linkage between the risk and its outcomes. The effects of noise and vibration from plant and equipment were an obvious example here, with the problems associated with conveying this risk to operatives expressed by one manager as follows:

[The aim] is to educate the men that they put certain things on to protect themselves, and particularly with the ear defenders. The problem is that – with goggles, something gets in your eye, you’ll know of it, and you’ll have gaping wounds and you’ll wear your goggles then. Ok, that’s instant. What isn’t instant is hearing defections. So if you’re constantly jack-hammering you never know what the defection to your ear is until you’re deaf and then it’s too late. (Daniel, Construction Manager)

Similarly, asking operatives about the risks of hand arm vibration (HAV) was regularly met with a variation on ‘well, I’ve been doing this job for 20 years and I haven’t had any problems with it’. Whilst everyone seemed to know someone who had suffered from vibration white finger through excessive exposure to vibration, this was insufficient to make the risk appear ‘real’ in relation to their own conduct. Hence operatives using pneumatic drills were observed not wearing the anti-vibration gloves supplied by the employer, keeping only an approximate record (i.e. by making an estimate at the end of the day) of their cumulative usage of vibrating equipment, and continuing to use vibrating equipment when they had exceeded the legal daily exposure limits.

‘Uncontrollable’ risks – those which resulted from unpredictable events beyond the control of ‘best practice’ safety procedures – would appear to be equally elusive, at the same time as being inherent in the study setting. Hence:

... in the industry we work in, that road out there, we don’t know what’s happening. We had a case the other week, guys laid out the lane closure on the motorway – perfectly laid out to the Chapter 8 [regulations], to the specification of HSE and everything – man came along the road, driving, had a heart attack, went through the cones and killed two people. Now how on earth, in the world can you legislate for that? (Matt, Site Agent)

This type of risk appeared to be accepted without comment by industry operatives: to be seen as an intrinsic part of the work and thus largely taken for granted. Questions about such risks were likely to be met with a shrug of acceptance, and little further comment. So, for example, operatives were observed running across three lanes of live motorway to place road works signs in the central reservation, or strimming grass verges with only a row of cones between them and three lanes of high-speed traffic, as routine tasks, despite the obvious risks involved. As one of the health and safety officers within the organization said, commenting on their well-publicized safety motto:

The message of ‘if it ain’t safe, don’t do it’ is – I’m talking as a safety professional – it is the right message to send out. But in practice, you take

the environment these guys work in – crossing a high speed road to put a sign out – it ain't safe, so why do we do it? (Derek, Health and Safety Advisor)

Uncontrollable risks: heedfulness or a second-order focus

The insufficiency of rule compliance in combating the kind of uncontrollable risks discussed above, and the consequent need for constant heedfulness by operatives, emerged as a double-edged sword for both management and operatives. For the latter, rule following without heedfulness may be irresponsible and potentially dangerous, but at the same time, not complying with a rule – even when there appears to be a good reason for doing so – was potentially a disciplinary offence. For the former, rule writing which is abstracted from the realities of the rule application setting runs the risk of creating 'forced violations' – that is, where operatives believe they have no choice but to break a rule in order to address specific local working conditions, or just to get the job done – and thus being wholly or partially ineffective in mitigating the underlying risks. In addition, the apparent condoning of this type of rule violation, which was perceived by operatives as routinely occurring, served to dilute the strong safety message which management attempted to convey.

Notwithstanding these difficulties, the data provided numerous examples of operatives being heedful, either in respect of their own safety or in relation to a co-worker. As in the following field note extract such heedfulness often formed a routine aspect of safe working practices:

Drive with George and Norman to site of first 'work order' – 3 potholes to be filled on a bend in a busy A-road, near a railway bridge. They park the truck at the side of the road, and put hazard warning lights on. Get out of truck and put on high-viz jackets. Put out road works and road narrows signs: no room to cone round vehicle, hence hazard warning lights. George uses Stihl saw to cut pothole into a neat square for patching – wears ear defenders to protect against noise. Norman is keeping an eye on the traffic while George is working in the middle of the road – directs cars to slow down, waves them through when there is no traffic coming in the other direction, grabs George's arm and indicates he should move out of the way when a lorry needs to come past. George can't hear vehicles coming because of the saw and the ear defenders.

More generally, at an individual level, operatives were observed to 'look out for each other' in matters of safety, and to routinely call each other's attention to perceived hazards. This might involve reminding each other to wear a required item of PPE, pointing out a trip hazard, or offering to

two-man-lift a heavy item of equipment with a co-worker. In such instances, the operative's actions appeared to be prompted by constant attention to the environment and risks within which they were working, rather than by a conscious intention to comply with a rule. If asked, they would often describe their behaviour as just being 'common sense' in the light of the environment in which they worked.

An institutionalized example of heedfulness was the required practice of having a banksman take charge of the manoeuvring of vehicles and lifting gear on busy construction sites: his role was to ensure that sufficient clearance existed between the moving vehicle and any obstacles, including people needing to move about the site. The colour of his hard hat clearly marked him out as the person directing operations, and everyone on the gang looked to him for signals indicating when and where they could safely move. The complexity of the operations being undertaken meant that this active heedfulness and coordination of movement was a necessary addition to the known rules about site safety.

The importance of heedfulness as a source of safety was emphasized by the recognition that routine, and the failure to recognize when that routine is broken, can be a significant source of risk:

... we've got permanent night crews on here and ... it helps to get used to the way people work. To know that that guy – he's going to do that and you know he's going to do that, because he always does that, so I don't have to think about that part of the operation. You might glance to check, but that's ... it's done and you don't even think, you don't even recognize you're doing it. The only problem is when somebody who you rely on in that crew is off and somebody alien – or somebody new – comes into the crew, you don't know ... or that's when things get missed. 'Well, I thought you did that.' 'No, I thought you did that.' 'Yeah, but Harry always does that.' But Harry's not here. Erm, so I'm of the thinking that I like to rotate crews, so that everybody gets an awareness that it's not just down to the one person to be responsible for that, everybody's responsible for it to be done like that. And the only way that you can do that is to keep crews rotating and, if you like, keep them on their toes. (Martin, Foreman)

This reliance on routine may be seen as a special case of a more generalized second-order focus whereby emphasis is placed on rule compliance to the exclusion of actual safety. More generally, inherent in the reliance on personal protective equipment and rule compliance as sources of safety is the danger that operatives will develop a concern with being seen to be compliant rather than with whether compliance will be generative of safety. This preoccupation with rule-following to the potential detriment of attention paid to actual safety appears, in part, to be a function of the fairly directive style of safety education adopted by the organization under study:

What [the company] have done is said, ‘no, these are our rules: you adhere to them’ and they’ve put a fright ... fear in the back of their [operatives’] minds. And that’s the difference, that’s what I don’t like – I want the lads to be relaxed at work, because when you’re relaxed, you’re more conscious, you’re more aware. All you’re worried about now is, have I put the signs out right, is my lorry clean, is my plant looked after ... The guy who’s out at the sharp end working in the most dangerous environment is now more worried about his signs being clean and upright and that, and not concentrating on the traffic and stuff. (Matt, Site Agent)

This perception of a rule-driven approach to safety is a common theme within the data, an important corollary of which is the disconnect between rules and the reasoning behind them. As seen above, operatives remember the rules, but not the explanation of why it may be important to comply with them. This disconnect may be linked to the abstracted and generalized manner in which risk assessments and the writing of method statements are conducted. The resultant danger is clear from the following extract from an interview with the working foreman of a road maintenance depot:

the more you’re made to wear the PPE, the more you tend to shut off, your senses shut down because you become reliant on that PPE – ‘oh, I’ve got these glasses on, so therefore I don’t need to think about what I’m ... where I put my head. I’ve got a hard hat on, so I don’t need to worry about knocking it on anything.’ Erm, the more you put on, the less you ... the less you become reliant on your senses, which is obviously, you’re reducing your awareness levels then. And it’s not the type of environment you want to do that, you know, you need to be aware at all times. (Martin, Foreman)

The difficulty of devising comprehensive safety policies and procedures without the end-product being unworkable or counter-productive is clearly recognized within the organization, at least by those advising on health and safety issues:

... complicated management systems, will ultimately kill people, it won’t save people because people become so frightened to step outside that what they do is they don’t do it for fear of getting told off or for getting disciplined or whatever, and ultimately they end up getting killed or seriously injured, because they’re worried about something else instead of the actual consequences. (Derek, Health and Safety Advisor)

What appears to be less well recognized, or perhaps tacitly ignored, is the related issue of ‘gambits of compliance’ (Bittner, 1965) whereby individuals superficially appear to be obeying the rules, but are actually finding ways

of making the rules suit their own way of working. So, for example, drivers leaving a depot would move as if fastening their seat belts as they approached the exit (in compliance with the sign by the security check point) but wouldn't really put them on. Similarly, operatives were observed using post hoc estimates of vibration exposure times on their daily timesheets, thus enabling them to finish allocated jobs which would otherwise have to be left incomplete; and management were seen to turn a blind eye to this practice rather than enforce a strict compliance with the rules, which would have required a rescheduling of the unfinished work or the need to reorganize how patching gangs were rostered in order to comply with the vibration exposure limits. In another example, it was recognized that a policy designed to promote safe working practices could be subverted by those wishing to avoid performing certain tasks:

And people don't take responsibility for their own actions now, because we have a saying, we say – and this is actually how it is – 'if it ain't safe' – like that – 'if it ain't safe, don't do it'. And so what people do now is, they're using it, saying 'I'm not really comfortable with that, I'm not really happy with that, I'm not doing it.' And if they're not happy, we haven't really got a leg to stand on because how can I say what is safe for that person, or not. (Shona, HR)

In many cases, the condoning of rule violations by management resulted in a perception by operatives of double standards and/or mercenary motives. So, for example, one operative spoke of the company as being solely focused on making a profit, and saw this as only being achieved via corner cutting by workers; another saw health and safety rules as being an attempt at 'arse covering' by the organization – that is, covering themselves in the event that an accident occurred and an employee tried to claim compensation – rather than as stemming from a genuine concern for operatives' safety. In some cases, however, management 'turning a blind eye' was viewed quite benignly, even when adverse consequences ensued. So, for example, one working foreman, who developed white finger syndrome through over-exposure to hand arm vibration whilst bringing a tree-clearing contract back on target, said:

I wasn't unaware of the situation [in relation to HAV], but obviously I had ... there was an unspoken pressure for me to actually achieve these targets. There was never anybody came and said, 'oh, I need you to do x amount of hours on the saw'. But they all said, 'oh, aren't you doing well, you're catching up'. So ... knowing that there was only one chain saw operative on the site, so in their ignorance, I suppose, they were kind of guilty to the fact that ... they kind of knew that there was only one saw going on ... erm, but ...

Researcher: They were just sort of turning a blind eye?

Yeah, I mean, to do . . . to do the work that we were turning out you'd have needed a coach load of saw operatives . . . the numbers, the numbers just didn't add up. Now I'm not bitter to the . . . to the company . . . because obviously I knew the hours that I should be exposing myself, but I was driven by wanting to keep my guys motivated and keep them working and keep the programme moving on. We've since got, I mean, I've since pushed for a lot more trained operatives to spread the work load. (Martin, Foreman)

This attitude was in line with the general sense of self-efficacy and personal responsibility, discussed below, which was frequently observed to be characteristic of operatives in relation to safety.

Invisible risks: self-efficacy and the dangers of risk displacement

Although operatives were aware of the legal requirement (for example, under the Health and Safety at Work Act, 1974) for their employer to take all practicable measures to provide them with a safe working environment, and had varying opinions as to how this was delivered in practice, in general operatives displayed a strong sense of self-reliance in relation to safety. This is evident in some of the examples of heedfulness given above, but is more pronounced in the attitude towards cutting corners and conscious rule violation which was frequently observed. Hence the requirement for electricians to operate in two-man gangs was viewed as unnecessary by experienced electricians, who routinely circumvented this requirement with the lax practices already described. Other examples witnessed included operatives working at height without the protection of a guard rail or safety harness, as prescribed by the method statement for the machinery or task in question. When asked why they worked in this way, the answer would usually be along the lines of 'I was only up there for a few minutes', as if their speed in accomplishing the task somehow lessened the risk.

The sense of self-efficacy – the belief that their skills and experience made it superfluous for them to follow the letter of the law in terms of method statements and safe working practices – was thus evidenced by the belief that 'it won't happen to me' which underpinned such routine violations. With this mindset, the operatives then made their own risk assessments and worked accordingly, sometimes with the consequence that rules were broken. As the following comments by a working foreman – that is, one who goes out 'on the tools' as well as undertaking supervisory and management duties – illustrate, the sense of self-efficacy is usually combined with a genuine motivation to get the job done, and it is this combination of perceived ability and task motivation which results in rules being ignored:

I mean, I sent this guy who – Phil – who’s gone out to do this job today, he’s on a chain saw – he doesn’t do anything that he’s . . . everything he does is by choice, so if he chooses to go over the time, that’s because he’s chosen to do that, and he’ll justify it in his own way, I suppose. Even though he knows the rules, he’ll say, ‘well, the job needed doing and I wanted to get it done and I felt happy to do it.’ Well, you can’t force a guy physically not to do it, you know. They know the rules, they know the legislation, but at the same time they want to get it . . . they want to get the job done. They’re not forced to get the job done, they’re not forced by any means. (Martin, Foreman)

This type of behaviour is particularly problematic with invisible risks, where the distal nature of the consequences makes it easy for operatives to hold to their own views of the degree of risk they are taking. Management counter-arguments, based on the likelihood of adverse consequences resulting for any given individual, do not appear to be sufficiently ‘immediate’ or ‘real’ to be convincing.

In addition to the problems arising from misplaced perceptions of self-efficacy, it was well recognized – by both management and operatives – that mitigating one risk might actually raise others. In the case of invisible risks, the distal nature of possible adverse consequences make the assessment of competing risks and the relative merits of their mitigating measures, and hence the determination of what really constitutes safe working, more difficult than is the case for more directly observable outcomes. So, for example, the wearing of ear defenders to combat exposure to noise has the effect of reducing the wearer’s awareness of the outside environment, thus increasing the risk of, for example, not being aware of an out-of-control vehicle until it was too late. In this way, the level of risk might be displaced, but not actually mitigated. In the following example, in testing for the presence of sub-surface services rather than trusting the plans provided by the utility companies, operatives increase their exposure to noise and vibration through increased use of hand-held equipment:

You get plans from the MEB . . . the electricity board, from the gas, from the water . . . you get the plans – they mean nothing. And they tell you, don’t trust the plans. It might show down that side of the road a full gas main; we’re digging here [indicates other side of the road], alright. Now these track detectors don’t pick everything up, and when they do pick something up it doesn’t tell you what it is, it just tells you there’s something there. So what do the HSE say? ‘Dig with caution.’ You’ve got a JCB there, how can you dig with caution? So what the lads have to do is dig a trial hole, and by . . . they dig by hand. And if it’s concrete, what do they use? A hydraulic breaker. So you deal with one risk and you create another one. (Matt, Site Agent)

Other instances of this type of problem stemmed from the blanket application of rules, irrespective of the relative risks being encountered. So, for example, laying tarmac on a motorway involves only limited risk of head injury through falling equipment, etc., but the compulsory wearing of hard hats in this setting was seen as raising the risks associated with placing traffic management signs on a busy carriageway:

If you say, on all the assets you wear hard hats and then you expect a traffic management operative to run across three lanes of motorway with a hard hat on, trying to bounce his hat and carrying the sign at the same time then you're being ridiculous.

Researcher: And the hard hat comes off and he ends up running across the motorway trying to rescue his hat?

You've got it. (Daniel, Construction Manager)

Interestingly, the requirement to wear hard hats on all sites has now been superseded by a series of localized 'dispensations' (including in the situation referred to by the above speaker), but the fact that this example is still frequently referred to by operatives participating in the study gives some indication both of the inertia inherent in the complex risk assessment/rule writing system within the organization and of the retentiveness of operatives' perceptions in relation to safety issues which concern them.

The issues of risk displacement, and those of balancing rule compliance with heedfulness, are summarized in the following extract from an interview with a senior health and safety advisor. Also implicit in this extract is the difficulty of enforcing safe practices in relation to 'invisible' risks such as noise:

On a motorway, of course you start needing kit [to combat the noise], so you've got to be very, very close to the sort of strict rules and making sure it's mandatory. But one of the fundamental requirements in this industry is that you keep your wits about you. Because you're working in a lot of noise.

Researcher: So if you've got ear defenders on, it's reducing what you can hear?

Yeah, it's increasing the risk. (Derek, Health and Safety Advisor)

The gap between rules and reality

The combined challenge of uncontrollable and invisible risks graphically illustrates the tensions which arise over rule compliance and violation.

Mitigating uncontrollable risks requires a combination of compliance with prescribed rules – for example, the correct placement of adequate traffic management signs and cones to ensure site visibility – and operative heedfulness. Being aware of the surrounding environment and making judgements about the risks it may present are important means of avoiding the effects of those risks which cannot be eliminated. However, in recognizing that such heedfulness may call forth instances of non-compliance with organizational rules, management are tacitly accepting the dilution of their largely rule-driven safety message. In contrast, mitigating invisible risks may require the suspension of one's own judgement in favour of compliance with prescribed organizational rules, such as wearing the required personal protective equipment. In this instance, a sense of self-efficacy – of feeling that one can work safely without following the rules or that the possible effects of this type of risk simply 'won't happen to me' – needs to be overridden by trust in the efficacy and applicability of organizationally devised rules and practices. The apparent gap between rules and reality – an almost inevitable result of the abstraction of rule writing from rule application – and communication difficulties associated with bridging that gap, can seriously undermine that trust, with negative consequences for compliance. Where both types of risk occur together, the inevitable – and perhaps unanswerable – question arises of how the operative is to know which mode of safety-related behaviour, compliance or heedful non-compliance, is in the best interests of themselves and others in any given situation.

One possible answer is to formulate the issues being faced by the sector in terms of HRO thinking. What exists in the road maintenance sector is a fragmented setting (gangs working in widely spread geographical locations; diverse public/private sector clients; and a range of employee/sub-contractor affiliations) and mundane technology (grass trimmers, pneumatic drills, compacting machines, power saws). Both these characteristics are the polar opposites of the traditional 'tightly coupled, interactively complex' settings for most HRO research, yet the need for high reliability remains. Enculturation into high reliability thinking – whereby heedfulness, mutual checking and initiative are seen as more effective than simple rule following – is made more difficult by the fragmentation of the setting, but is not impossible. The contracts with the lowest accident frequency rates were those where many of the principles of high reliability thinking had been applied to produce a strong and pervasive safety culture. In these locations, the organizational enculturation towards safety – for example, through a number of well-publicized safety campaigns – was translated into an employee-led, participative approach to practical safety issues which recognized the need to go beyond rules to achieve safe working. At the same time, the rule structures which did exist were viewed in process rather than outcome terms: that is, they were seen as tools for highlighting safety issues and

prompting safe working practices, but not as an end in themselves. In this context, issues concerning ineffective PPE, site-based hazards or shortcomings in risk assessments and method statements were brought to Safety Action Group meetings by operatives, together with their suggestions of how they might be remedied. As the following data extract demonstrates, this process regularly resulted in changes to equipment or procedures:

Safety Action Group meeting field notes: A steel fixer requests a new type of gun for metal fixings – expected to improve safety and production, but wire is more expensive. CH [contract manager] agrees to get JC [structures manager] to arrange a trial of this at [part of the site] and get feedback from everyone before deciding – says they need to do quite a controlled comparison between this gun and what they are using now to justify the expense to the client. Similar discussion of gloves – operative explains why anti-vibration gloves are a problem: get stuck in gun grip – can't pull your hand out easily. Also true for breakers, used for breaking down concrete piles. CH is more interested in the operative's feedback than in JA's [safety officer] comments on 'current thinking'. Agrees with JC that he will test out various tools/gloves combinations to try to find a better one and report back to the next meeting. A manager suggests getting some sample tools/gloves lined up for the next meeting – CH says that's too long to wait; do it straight away.

Similarly operatives acted as 'behavioural based safety advisors', taking time out from their normal work to observe colleagues and provide feedback – to them and to management – on the working practices observed. Unlike compliance based approaches, the aim here was to observe and proliferate good working practices as well as to understand and advise on those which were seen as putting workers at risk. That this needs to be integrated into the culture over time – and that it is not a typical approach within the sector – is illustrated by the comments of one Contract Manager who worked hard to take an HRO-type approach to safety:

Interview notes: CH – Contract Manager: Safety is normally cascaded down, but 'you've got to get some bottom up going as well. When you actually sit down and listen to what a bloke says, and implement it, he'll come up with another idea. Or his mate will come up with an idea.' So many examples of where people talk it but don't action it – and when that happens, you actually make it worse than it was. 'If you can action it and make it visible, then you've cracked it because then people realize that, you know, "safety is important around here. We can see that."'

The same manager recognized that, just as rules were insufficient without heedfulness, so understanding of the issues was insufficient without the willingness to take action: he saw this as a matter of 'safety leadership' but was clear that leadership was not confined to the top of an organization:

You will find safety leaders at all levels on the contract. SAG meetings, the safety action group process, is a clear way to identify them. Then you need to engage with them, engage them with the process – empower them to go and do stuff that they can see needs doing, without having to come back to you every five minutes. Give them permission to go and do what they think needs doing. And then the message spreads around. (Colin, Contract Manager)

HRO thinking is unlikely to provide a complete answer to the difficulties of dealing with the uncontrollable and invisible risks discussed above: the difficulties of enculturation across a fragmented setting and the lower skill levels of many workers in the sector when compared with more traditional HRO settings are likely to throw up barriers to both the creation of a strong guiding framework within which initiative can be exercised, and the wider understanding needed to underpin the safety decisions taken within such a framework. Nonetheless, the HRO notions of heedfulness, mutual checking and initiative offer a useful lens through which to consider the shortcomings of rule-based safety approaches and the need for hybrid strategies in addressing the diverse risks which may be faced within a single working environment.

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