‘In the air’ and below the horizon: Migrant workers in UK construction and the practice based nature of learning and communicating OHS

Keywords: Migrant workers; Ethnography; Communication; Occupational Health & Safety; Tacit skill

Abstract:

Local, tacit and normally unspoken OHS (occupational health and safety) knowledge and practices can too easily be excluded or remain below the industry horizon of notice, meaning that they remain unaccounted for in formal OHS policy and practice. In this article we stress the need to more systematically and routinely tap into these otherwise ‘hidden’ communication channels, which are central to how everyday safe working practices are achieved. To demonstrate this approach this paper will draw on our ethnographic research with a gang of migrant curtain wall installers on a large office development project in the north of England. In doing so we reflect on the practice based nature of learning and sharing OHS knowledge through examples of how workers’ own patterns of successful communication help avoid health and safety problems. These understandings, we argue can be advanced as a basis for the development of improved OHS measures, and of organisational knowing and learning.

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Ethnographic snapshot:

After completing a site induction on a large office development in the North of England, I arranged to be shown around the site by a helpful trainee. From outside the tower block, we watched the curtain glazers working on the stone clad north elevation facing onto the main road and site entrance. My guide explained some of the curtain wall installation process to me and, as I had asked about migrant workers onsite, he identified a team of glazing installers (who he believed to be Polish) as we reached the twelfth floor of the tower block. I walked up to one of the workers to introduce myself. Viktor [1] *was very approachable and curious of the unfamiliar face on his floor and I got on well with him from the start. I told him about our project, after which I learned that, while his team did include some Polish workers, he was Russian. Viktor explained that he was a curtain wall installer, employed directly by the trade contractor, and that his team was made up not only of Polish and Russian workers, but also Lithuanian and Bulgarian workers and supervisors, and English and Italian managers.*

While he was waiting to lift the window panel up a floor with a floor crane, I asked Viktor some questions. He told me he was now in his early thirties and had been working with the trade contractor, GlazaBuild, in the UK for three years and visited his family back in Russia every few months. With the exception of one project in Northern England, Victor had mainly worked in London, always with the same core team of personnel.

Viktor spent a lot of the time leaning over the side of the building to get a good view of the ground-floor workers. As I joined him he suggested I turn my hard-hat around like his, for a tighter fit and a better view. After answering some of my questions, Viktor started to volunteer descriptions of what he was doing and suddenly, through his commentary, a world of communication channels came into closer focus. After a short exchange through a small earphone and microphone (which I had failed to notice before), he explained that he was communicating with workers on the floors directly above and below him, who are not visible. 'Did you see the hand signals?' Viktor asked, after a suspended window panel was guided upwards. When he shouted back and forth to the workers on the ground, I asked him what was said. 'I can tell you what I said, but it was in many languages', he answered. When I looked back puzzled he explained how 'we've got our own GlazaBuild language' – mixing words and phrases from different East-European Languages, English and Italian depending on who is being addressed. By now my guide, like me, was quite astonished.

Our opening narrative describes an encounter that formed part of Dylan Tutt's experiences of doing ethnography with a group of migrant East European curtain wall installers, working with Italian and English supervisors and managers, on a large north of England office development project. During our study, the glazing contractor had 31 personnel working on this large site (including supervisors and engineers). Dylan's fieldwork at this particular location largely involved following the everyday work of the gang of curtain glazing installers within the team, and the communication between the workers on different floors as the glass panels were raised and installed on the building.

Introduction

In this paper we reflect on how ethnographic engagements on construction sites can bring to the fore ways of knowing and communicating that are not necessarily immediately visible. In doing so we draw on a commissioned ethnographic project with the UK sector skills council *ConstructionSkills*, into the communication skills of 'non/low English speaking construction workers' and 'English speaking site managers' (Tutt et al., 2011). Structured communications between site managers and migrant workers are undoubtedly important. Yet as the example above suggests safety and health on construction sites is also realized as it is performed. This paper shows how an ethnographic focus on everyday communication and collaboration between migrant workers themselves, as it is enacted with tools, technologies and materials of the trade, brings this to the fore [2].

Our research responded to a context where some commentators had attributed recent increases in fatalities on construction sites to migrant workers' supposed use of less safe working procedures and low English language skills (Owen, 2007). Yet this claim needs to be unpacked in terms of the research knowledge. There has been minimal

and uneven recording of statistical information on the nationality or migration status of workers in the sector. The Health and Safety Executive (HSE, 2010) estimate that migrant labour makes up 8.2% of the labour force in the UK construction industry, rising to 18% in London and the South East, and the 2009 Survey of Construction Workers indicated that migrants account for around 37% of the workforce in Greater London. However, there is no universally accepted figure since official figures do not always account for workers who are undeclared or self-employed and are therefore unlikely to underestimate their representation in the workforce (Cremers and Janssen 2006). Indeed on the basis of interviews with union and employer association representatives, Lillie and Greer (2007) estimated that migrant workers could make up as much as 10 percent of the construction workforce. The HSE has been collecting information on migrant worker deaths in the construction sector for a number of years. This data indeed indicates that the proportion of migrant construction worker deaths to the total number of construction worker deaths increased substantially from 2.9% (2 of 70) in 2002/3 to 17% (9 of 52) in 2008/9 (HSE, 2011). However, these are not official figures, since the HSE did not collect information on the nationality of workers who died until April 2008, and are still not recording this data for reportable injuries (CCA/Irwin Mitchell, 2009: iv; HSE, 2012). This data suggested that there was a rise in deaths of migrant workers in construction that is at the very least twice what should be expected. While this may be a result of more culpable failures on the part of employers, the emergent data suggests that migrant workers may be at a higher risk and more vulnerable than UK workers. Later HSE statistics indicate that migrant worker fatalities may have fallen to 5% of total construction fatalities in 2009/2010 (2 fatalities from a total of 42) (HSE, 2011). However, to put this sizeable drop in context, there is also disagreement on the extent of reverse immigration of East European workers since the recession, as well as some data pointing to significant increases in migrant workers returning to the UK from the second quarter of 2010 (Migration Information Source, 2011) . Yet, this hazy picture tells us little about the role of language skills in communication on construction sites, how health and safety is managed by migrant construction workers themselves, or their strategies and successes in staying safe and the ways of knowing/knowledge this involves. Thus, the starting point for our ethnographic study was to examine how migrant construction workers already communicate in cross-cultural contexts where safety was a key concern.

During the six-month research period, the glazing contractor GlazaBuild consistently topped the Site Safety League Table for trade contractors onsite. While the 'marking' for such schemes by main contractors is considered quite arbitrary by some construction workers, the team nevertheless received maximum scores in each category, including general site safety, housekeeping, and 'attitude and innovation', along with the comment: 'exceptional/example to others' [3]. Their praise was reported on the project's public, 'front-stage' display at the site entrance. Yet, as Viktor described, the team had evolved its 'own GlazaBuild language' – a conglomerate of communication methods: a mix of different languages, gestures, simple hand signals and phone links which together helped coordinate a series of complex tasks. In researching the communication of health and safety information between migrant workers and English speaking site management, we had encountered the apparently contradictory status of a trade team topping the safety tables while not strictly speaking English in much of their everyday work. Thus inviting

us to probe at the assumptions (and factors) of what makes safe practice and effective communication onsite and how this is achieved.

In what follows we describe the gang's collaborative communication work, consider the development of local knowledge and tacit skills, and illuminate some of their more informal (or unofficial) practices. We present one reality of what constitutes migrant worker interaction and communication 'on the ground' in the UK construction industry. In doing so we demonstrate how an ethnographic approach can enable understandings of how communication channels developed by migrant workers themselves within the specificity of a gang can become central to achieving everyday safe working practices. Thus we argue for the importance of attending ethnographically to how local knowledge and tacit skills are actually developed and utilized in context.

Research Methods: Onsite and In the Field

Our research project set out to analyse migrant worker and manager perspectives, understandings and everyday work practices on site qualitatively. This involved using contextually appropriate ethnographic methods to identify existing instances of successful communication between migrant workers, their native co-workers and managers/supervisors, and safe working practices. This ethnographic approach provided us with a route to understanding 'local knowledge' as it was enacted on site (Pink et al 2010) in ways not accessible through standard interview and focus group methods. Our bottom-up approach was designed to investigate *lateral* communication practices (between workers themselves) rather than just *vertical* communication (from managers to workers), which can too often be the conventional industry assumption. Undertaking this research also made us aware of the importance of focusing attention on how health and safety knowledge circulates not just within work group communities on site, but how this extends and moves within such communities away from the workplace (Tutt and Dainty, 2009).

The fieldwork was multisited, covering ten construction sites across the UK including different sized projects run by a variety of main contractors. The specific methods used were contingent on the opportunities and emergent phenomena on each site, but included combinations of: 'shadowing'/ intensive study of workers; participant observation of workers at key areas on site (such as site inductions, canteens, sites of specific trades); formal interviews with health and safety managers/directors and site managers; informal interviews with migrant workers and co-workers; collection of hazard report cards, site safety books, photographs and other visual materials (e.g. work activity, signs, site safety league tables). As is common in applied ethnography (see Pink 2005) the time restrictions of this commissioned research project limited opportunities for building the deeper experiences and relationships which characterise traditional ethnography (e.g. see Thiel, 2007, 2012, Moore 2012, Paap, 2006). Nevertheless the comparative dimension of our multi-sited ethnography showed how communication skills and approaches were developed differently across diverse construction sites. Indeed in addition to the curtain glazing team we focus on here, to bring together the findings of working across sites, we focused on a set of key case studies including: comparing site inductions for migrant workers; analyzing case studies of the informal/ semi-formalised roles of interpreters and translators on site. These generated understandings both of communication practices

comparably across sites and of how knowledge and practices developed amongst particular groups of workers on specific sites. We made multiple visits to five of the ten construction sites during the fieldwork, which enabled different kinds of access, ranging from regularly shadowing workers on site, to being limited to site induction rooms and canteens, or pre-arranged interviews. On each site relationships developed with key figures (gatekeepers), who were invaluable for enabling access to other workers.

On the site we focus on in this paper, Viktor, an experienced curtain glazer with the trade contractor, became Dylan's key contact point and gatekeeper. Viktor quickly understood the types of information and experiences we were trying to access and proved just as pivotal in helping to put other workers at ease with the presence of the researcher. This included introducing Dylan to a more taciturn Bulgarian colleague in the team, and occasionally vouching for him in front of workers. This was done by reminding them of past occasions during which they had met onsite (without incident or repercussion). For instance, by joking in front of the team about details of the gang's habits or that Dylan was secretly hired as a government spy. Through this relationship Dylan accessed the team and their everyday working practices in ways that would have been impossible if simply working through management gatekeepers. Moreover, the routes to understanding opened up by this collaboration were not simply verbal, but, as we outline below, involved new insights into workers' and managers' perspectives through photographic and visual methods.

Nevertheless there were still inevitable moments, considering our interest in health and safety practice, where the ethnographer's outsider status noticeably impacted on team workers. For instance: Dylan felt awkward and conspicuously distanced from the work at hand, during the manual carrying of cladding materials; and his presence as an observer once led to nervous glances from a team member working at height in an adjacent tower block, preparing to lift in the suspended window. The worker did not recognize Dylan from the week before and continued adding further layers of Personal Protective Equipment (gloves, followed by hard-hat chin strap etc.), perhaps assuming his conduct was being critically scrutinized by an inspector. Dylan abandoned this observation, becoming equally worried about the diversion and extra burden on concentration that his presence was placing on the curtain glazer.

Researching Communication Channels in Action

Ethnographic learning is characteristically serendipitous, invites attention to the unexpected, and requires researchers to be open to how multiple (and sometimes contradictory) perspectives work in relation to each other. In the following sub-sections we focus on a series of research encounters to show how these aspects of ethnography helped us gain a closer understanding of how communication actually happens between these migrant workers in the installation of curtain walling, as part of their ongoing production of OHS knowing in practice.

Curtain walling installation is a complex operation. It entails the fixing of a façade to the building structure, to keep the weather out and protect the building's internal environment

and involves the use of many different materials, tools and equipment, along with a range of skills and knowledge. The final assembly process in curtain walling is still predominantly carried out by manual labour onsite, with the associated costs and risks in terms of safety and quality control, so achieving a low accident rate is not necessarily to be expected. The main tasks of the team during the fieldwork period involved surveying the structure, fixing support brackets, fixing and adjusting mullions and then fitting each unit in place to comprise the unitized glazing system of the building. An overhead floor crane was used to lift each glass panel into place before being fixed internally. Upon installation, each unit's seals were tested externally with a power washer from a mobile hydraulic man-riding basket (MEWP). Dylan established relations with different participants in this process and in this section we outline how these various people provided entry points into specific ways of knowing about the task and the types of communications that it entailed.

In the vignette with which we opened the paper, Viktor was working on the twelfth floor operating a floor crane to automatically lift the glass panels up or down a floor level. It was essential for Viktor to maintain effective communication channels between the ground level supervisor and workers and the operatives on the floors immediately above and below him, and he spent a long time looking down to the ground-level workers. Part of his communication with them involved leaning over and shouting key words and phrases in a mixture of different East European languages, depending on which personnel were being addressed. Some of the GlazaBuild managers were Italian, the main contractor management including Section Manager, Paul, were English, and the window fitters and supervisors were a mixture of Russian, Polish, Lithuanian, and Bulgarian. Thus English was not necessarily the common spoken language, or even the second language. While observing his work, these calls back and forth were mainly between Viktor and a Lithuanian supervisor or a Bulgarian worker. Viktor told Dylan this communication concerned making slight adjustments and checks while the panel was suspended in the air.

Gesture as well as talk was collaboratively practiced as part of this group communication. Simple hand signals were used by workers at the ground level to indicate to Viktor the required pulley movements right/left/up/down. In addition to the visible workers twelve floors down, an earpiece and mobile phone link was used to communicate with the workers on the floors directly below Viktor and his crane, who were not easily visible to him. This was crucial for checking the small movements needed to pull the suspended glazing panels in from Viktor's pulley, and have the panels safely secured into place. Physical inscriptions on materials also provided an important means of communication between the team, including the gridlines of 'setting out' engineers, and markings on claddings to be measured off by curtain glazers. There was therefore a rich diversity of everyday communication channels involved in the work. The team interaction involved multiple participants attending to the ongoing talk (shouted up/down and mediated by phone link), orienting to each other and their actions, manipulating the objects, tools and materials of the trade (crane, guide ropes, EDM (Electronic Distance Measurement) equipment, mobile phone, glazing unit etc.) and the larger activities they were engaged in, both as a team and for the project as a whole. Yet at an organizational level these local forms of communicating and knowing cannot always be simply inspected or garnered by management, nor are they always directly visible to the

researcher as an observer. Indeed we will argue that local OHS knowledge and practices can too easily be excluded or remain below the industry horizon of notice, and in the next section we discuss how visual ethnographic methods that engaged participants through their own visual and verbal observations helped provide access to such practices and knowledge.

Photographing on the twelfth floor

On the twelfth floor Dylan asked if he could photograph what Viktor could see and who he could communicate with as he worked. Noticing Dylan's awkwardness and reluctance to lean over the edge – with no head for heights – Viktor offered to take some photographs himself. These photographs, which picked out the relevant work tasks and workers in his network of communication from the twelfth floor showed us Victor's visual perspective on the curtain walling task and also made us question our own assumptions about the scene. The photographs moreover provided a way of connecting the experiences and visions of the curtain glazers to those of management. As Dainty, et al. (2006) have pointed out, workers from different parts of the supply chain may speak 'different languages' in that 'their interpretation and understanding of roles and responsibility are rooted in their occupational role context' (p. 80). Ethnographic photographs can offer some routes to understanding these differences. Paul, the Section Manager for the external envelope of the building, was a key interlocutor between the main contractor and GlazaBuild management and despite working for the main contractor he considered his main role as 'looking after' the GlazaBuild workers. In a conversation regarding the twelfth floor workers, Paul described his job to Dylan as involving a lot of 'meetings and paperwork', taking on a role of intermediary which he contrasted with the more hands-on role of Lithuanian supervisor, Alan. Using annotated images (including some taken by Viktor) as visual prompts Dylan asked Paul to talk through his version of the tasks and the roles of personnel in the photographs. This produced some different perspectives on the tasks to those offered by the curtain glazers. For example, in his capacity as a manager, Paul identified a major function of the ongoing dialogue between twelfth floor workers and ground level supervisor as being to maintain a clearance zone, whereas the workers had mostly described this talk in terms of negotiating small technical adjustments to the task at hand.

In response to Dylan's interest in communications Viktor had begun to orientate Dylan's attention to the flows of communication between the floors. This multitude of tasks – maintaining contact and regular checks with workers on the floors immediately above and below, and with ground level workers – was not a secondary-role or minor part of the job. Yet, for the workers these practices of communication were an implicit part of the finer-grained tuning of window fitting. The photographic process reminded Dylan of this. For when Dylan asked Viktor if he could photograph him 'at work', he stepped back from the edge of the building from where he played his communications role. He posed by his tool of the trade – the floor crane – through which he identified his workplace identity. Viktor's explicit understanding of his work, and the skills-set that differentiated him from other workers, were therefore connected to the visible and tangible tools of the trade. This reminds us of the importance to look beyond the research focus to attend to how participants identify their own roles.

Learning to re-think at Ground Level

Events at ground level likewise contributed to the ongoingness of ethnographic learning, inviting Dylan to re-situate the communications process, in several ways. Here, the Lithuanian supervisor Alan, was a key figure in the hands-on coordination of the curtain glazing activity of the team. He liaised with managers and GlazaBuild engineers who always came to see him (rather than the other way round) since he was needed on the ground. Because of his hands-on role, Alan had to be continually interruptible as well as ready to answer questions and deal with problems from the workers he was overseeing. In this sense his visibility and ubiquity at the heart of operations was important – indeed Viktor identified him first to Dylan from the twelfth floor as an important contact point in the team's communication process. Alan was also the main focus, on the ground, for time-critical problems. Communications (including warnings) and coordination with other site work is essential. As Luff (1995: 39) has pointed out 'the complex interrelationships between the weather, personnel and the materials inevitably intervene' and it was here on the ground that Dylan was jolted from the fine grained detail of communication flows to be reminded how these were in fact contingent on the ongoingness of site activity outside this microcosm of action. Potential hazards and problems can arise at any moment and the supervisor has to act even if it means delaying the work. Indeed the team's curtain glazing work was temporarily suspended (with the glazing panel being pulled in on the seventh floor) because a large crane was in operation above, suspending a large concrete cladding panel. Alan had a good vantage point, and helped coordinate the pulling in of the window. This event expanded Dylan's awareness of communication chains involving the trade team, opening out from the minutiae of interpersonal communication to time-critical communication with the wider construction site.

When the ground level team was back in operation, Dylan observed the process of raising the glazing panel, attaching it to Viktor's floor crane, and guiding it up to the relevant floor. The ground level workers used ropes to steady the glazing unit, so it did not spin in the air, while Alan oversaw the operation. This process also brought new complexities to our understanding of how language figures in communication processes on site. Alan told Dylan that the team of workers does commonly speak English, but this is intermixed with East European languages, especially during quieter chat among themselves. However his louder 'orders' – clear simple, commands – were always delivered in English. While this was not something that Alan or the other workers explained, the contextual knowledge that ethnography offers allows us to infer its role. It seems likely that the use of English for imperative and command forms was related to the team's organizational structure. First English language is linked with authority on this UK site with British main contractor management. Second English provides a contrast against a backdrop of mixed East-European languages that marks a significant shift in the level of message being communicated. In other words, hearing a raised voice in English becomes equated with important information or critical commands being communicated to the team.

Through an ethnographic approach that attended and adapted to work processes as they were played out *and* to the ways these were seen and spoken from the different (organizational) perspectives of skilled workers and managers, we could see and interpret how communications were part of safe working. While English was part of the curtain

glazers' communication, it would be a mistake to directly equate English language communication with safe working amongst the team. Indeed a number of different linguistic, visual, embodied and technologically mediated forms of communication were at play.

Explaining Successful Communications in Context

Construction projects involve the collective coordination of a host of specialist teams and individuals, and ethnography allows a fine-grained focus on these groups. Yet ethnographic understandings need to be situated in relation to industry-wide issues. In the following sections we show how the analysis and comparative situating of the ethnographic materials outlined above furthers an understanding of safety knowledge and communication, particularly in relation to the stability of the group; tacit skill and local knowledge production and development; and the practice of collaborative work through the material surround.

Historicity of the group

The success of the curtain wall team described above developed in a context characterised by the casual, fragmented nature of the employment structure in construction. Existing research demonstrates that more needs to be known about the actual composition of gangs (e.g. Fellini, Ferro & Fullin, 2007; Luff, 1995: 23) and their everyday work practices. Moreover, patterns of informal training and skill development processes and pathways in gangs of construction workers vary across context because 'local institutions [e.g. labour markets, training organisations, and different points of access and routes to work] structure the very social interactions through which immigrant workers acquire, develop, and demonstrate tacit skill' (Iskander and Lowe 2010: 2, see also Tutt and Dainty 2009). Yet, recent research also reveals the gang as a key locus for industry skills and knowledge. For instance Iskander and Lowe outline how the housing slump in Philadelphia in the US impacted on undocumented Mexican immigrants, in that the skilled component of their work was removed along with the disconnection of the gang relationships, meaning 'the on-the-job experience they had acquired over several years in residential construction became irrelevant overnight' (2010: 9). Such tacit knowledge of construction work, they argue, is 'held in the social relationships through which it was developed' (Iskander and Lowe, 2010: 9) and this skill-base can be rendered invisible or even destroyed with shifts in the labour market. It is precisely the making visible of this type of valuable knowledge that, in a research context, our ethnographic approach enabled.

The majority of the GlazaBuild team had worked together on curtain glazing jobs in the UK for at least two years and held permanent contracts with the company. They knew they would be working together on a subsequent project, and the value of their teamwork was recognized by GlazaBuild supervisors. The historicity of the relationships developed in the team and their shared forms of tacit, practice-based knowing in part explain their success and their relative visibility in the company. Their employment status stood in stark contrast to that of self-employed and (often quite itinerant) agency workers. Indeed, such stable teams may not be revealed by conventional labour market accounts which tend to document this well known high-turnover of personnel and long

subcontracting chains within the industry. For the majority however, the nature of work tasks may not necessarily involve forging day-to-day relationships and building 'knowledge-in-action' (Gherardi and Nicolini, 2002) among the same core team of workers. The curtain glazing team could maintain stable group membership which has been linked with low accident rates (Gherardi and Nicolini 2002; Mars 2005) and allows the ongoing development of local knowledge and the fine tuning of interpersonal communication between team members. Indeed, Wenger (1998) differentiates between a team and a community of practice on these temporal grounds, with the latter being able to 'exist over time' through participation that has value to its members, since they are defined by knowledge rather than task. While we only had access through our ethnography to part of a community of practices' life cycle, and did not have the opportunity to study how new individuals join the team and learn to develop tacit knowledge, it was very evident that their shared cultural practices "take a while to come into being and may live long after a project is completed" (p.4). Such a community, that preserves the tacit aspects of knowledge that formal systems can fail to capture, while adapting to local circumstances as people interact and learn together is, according to Wenger (1998), ideal for initiating newcomers into a practice (p. 6). As Gherardi and Nicolini (2002: 216) explain, 'by attending to, and becoming part of, conversations during practice and about practice', new workers entering the team encounter (and make their own markings on) the 'tacit map' of organizational knowledge and communication networks, including learning 'who knows what and who can be asked what in what circumstances'. The relationship between formal education/qualifications and tacit skill is complicated. While the former provides training certification of this knowledge, and is crucial to labour market access and career security and progression, Jones and Miller (2007: 67) argue that 'skill depends on being able to call on a pattern of clues, signals and symptoms in action'.

Burt et al. (2008) also stress the importance of group cohesion and team tenure, with their study finding a positive correlation between these factors and 'caring', in the sense that the loss of a single team member and the introduction of their replacement "could expose the remaining team members to risk - as initially the remaining team members will not know if they can rely on (trust) the new team member to care about their safety (nor will they know whether they should care about the safety of the new employee)" (p. 88). Their questionnaire study of employees in the forestry and construction industries in New Zealand also found that caring was positively related to the amount of knowledge an employee had about their fellow co-workers. However, when reflecting on the relationship between co-worker knowledge and caring and workplace safety, Burt et al. (2008) conclude that "at a practical level, members of a work team that get to know each other may develop caring attitudes, but perhaps only if they actually like each other" (p. 87). Indeed, Burt et al. (2009) argue that safety-specific trust which team members place in their organisation's hiring of new employees can be misplaced, and "not trusting them or the organisation's selection and induction processes may be the safe option" (p. 1005). While their survey research also indicates the importance of stable group membership over time, our ethnographic research reveals how their recommendation of "encouraging new employees to quickly familiarize themselves with the job" with the help of other team members (2009: 1005) would oversimplify what is a more complex, but also a more locally adaptable, process of developing team

working practices. Indeed, we will now consider the nature of tacit skill and local knowledge development, in relation to the curtain glazer team, in greater detail.

Tacit Skill and Local Knowledge

The physicality and sensuality of work – its *felt* quality both in terms of touch and manipulation of bodies, tools, objects and materials, and in the socially experienced, learned and shared skill of the work – is central to definitions of tacit skill and an essential quality of learned safety knowledge. However, when neither employers nor researchers document this element of everyday collaborative work practice and interactions, new knowledge of the safe work practices and skills of such a trade team can go unnoticed [4]. In his landmark text *Principles of Economics* (first edition 1890), Marshall (1961) discusses the advantages of localized industries/trades and hereditary skill [5]. He communicates a sense of tacit skill formation as a collaborative endeavor, something that is socially acquired and context specific, and describes how "the mysteries of the trade become no mysteries; but are as it were in the air … [and apprentices may] learn many of them unconsciously" (p. 271). Yet, how exactly we understand the situatedness of situated learning is important. Lave and Wenger (1991) explain how learning is not situated in practice 'as if it were some independently reifiable process that just happened to be located somewhere' (p.35). Instead, learning is conceived as 'an integral part of generative social practice in the lived-in world' (ibid). The situatedeness of learning has practical qualities in the sense that everyday work practice requires participation in the sociocultural practices of a community, or the work of moving towards full participation, as part of the mutual constitution of 'communities of practice'. Within the embodied and embedded practices of situated learning is also the concern with identity, with the processes through which, for instance, the curtain glazers learn to speak, act and perform in ways that make sense within the community.

Polanyi's concept of tacit knowledge distinguishes between knowledge that is acquired explicitly and later tacitly enacted through routine ('skills'), and that of 'implicit learning' acquired "from data and stimuli which may not be consciously registered or regarded as meaningful" (Jones and Miller, 2007: 51).". Indeed, of the latter, Iskander and Lowe (2010: 3) suggest tacit skill 'often remains implicit, folded so deeply into everyday work practices that it can virtually disappear'. It may however be that, rather than disappearing, such skill simply remains below the horizon of notice from members outside of the team. Wenger (1998) refers to this as a 'bootlegged' relationship to the official organization which is "only visible informally to a circle of people in the know" (p.5).Tacit skills, located in teamwork might thus be seen as implicit in the sense that their communication practices, and close coordination of tasks, are taken for granted. It is the resultant high quality work and exemplary safety record that is monitored and celebrated onsite. Such practices indeed seem coherent with what Yanow (2004) identifies as the all too familiar management response to organizational problems, in prescribing 'new' procedures without consulting the workers and their 'local knowledge', that is, knowledge which is typically developed within a community of practitioners, and 'is held by those at lower levels of the organization, who – it is assumed – could not possibly have anything of value to contribute beyond the brute force of their muscle power' (pp.9-10). Indeed, Contu and Willmott (2003) argue that Lave and Wenger's (1991) situated learning theory has always been imbued with an understanding that

learning processes are integral to the exercise of power and control, especially with regards to access and membership of, and interchange among, communities of practice within capitalist work organizations. If, as we have shown, the focus is shifted to not what is achieved, but to the detail of how it is achieved, it becomes clear tacit knowing is integral to successful communication for the avoidance of health and safety problems.

As we have argued elsewhere, such tacit knowledge can also be understood through the notion of 'local knowledge' which encompasses more than simply the unspoken. In researching the construction industry, 'local knowledge' is difficult to pinpoint given that the concept of being in a locality cannot be directly correlated to the realities of construction site work (Pink et al., 2010). Yet, if we re-interpret the idea of locality to refer to a field of sociality, and shared practices it is possible to see how knowledge grows and becomes embedded in workplace contexts. The notion of 'knowing in practice' suggests understanding work-practice knowing as knowing through regular interactions with specific other persons (other workers and managers), materialities (tools, materials, technologies), institutions (companies, contractors, agencies) and discourses (e.g. Lave, 1988); it is an 'enacted capability', which stresses the importance of ongoing and situated action (Orlikowski, 2002). It thus involves interacting in a recognisable environment that might be reconstituted in rather different configurations for different jobs, rather than in a determined locality. There is a body of construction knowing, experienced and mobilised in practice. This 'knowing' is not a fixed body of knowledge; it is not attached to one locality, but it is learnt, adapted, modified, and engaged in practice by group(s) of practitioners who are in frequent contact with each other. As we have seen, the gang of curtain glazers spoke an adaptable language (including English and Italian as well as different East European languages), which involved the tailoring of communication content to identify, address and communicate with specific workers in the team. This is just part of their team dynamics; the well-rehearsed communication practices and working relationships built up, alongside their learning of the affordances of shared tools and materials of the trade, through months, and in most cases years, of curtain glazing together on different construction sites.

Gherardi and Nicolini (2002) have understood the 'knowledge-in-action' shared and sustained through the group interaction of gangs of workers on construction sites, as a form of 'organizational competence' and an element of workplace safety (p. 192). From this perspective, safe working is 'the final outcome of a collective construction process' (Ibid). Hence to better understand how communication already does and might further take place within a multi-cultural workforce with varied levels of English language skills, communication must not be considered as something that just happens between (select) individuals. By studying the team work 'from the ground up', we looked beyond simply the communication between site managers and migrant workers, to the broader context of effective communication of safety between the team. Communication is not just a linear giving and receiving of messages in this way but rather, the collaborative work in construction involves the organization of individuals' tasks and activities within a setting which are contingent on the moment-to-moment demands of others. The social interactions and encounters through which tacit knowledge is developed are multimodal in quality, involving language (indeed, the use of different languages), gesture, embodied actions and the physical manipulation of tools, objects and materials, all found in workers' co-participation on given work tasks.

Collaborative Work through and with the Material Surround

Even though the curtain glazers comprised a relatively stable team, with their well-developed communication channels and working habits, they needed to work through an unstable material environment, constantly changing in terms of time and space. An ethnographic approach, involving Dylan's *being there* in the material context, has enabled us to acknowledge how this relationship between the team, and the shifting materiality and temporality of the site develops as part of safe working practices.

Both materials and objects were an integral part of the team's communication. The practice of the GlazaBuild language – which Viktor named after the firm and its trade work – is mediated through technology and coincides with embodied action, such as hand signals. Dylan's experience of being on the site as an ethnographer enabled him to see how the material surround is more than simply a backdrop to the team's collaborative work and how objects were not just separated things that workers communicate about. Indeed many elements of the teams' communications cross conventional conceptual boundaries around objects and organizational practice. Consider the physical inscriptions on cladding mentioned earlier, where the GlazaBuild architect/engineer for site supervision plotted markings of dimensions and extra information for the glazers [6]. This shows how the communication brings together materials, knowledge and action in a sense that is obvious in everyday practice and yet difficult to articulate. The steel beam itself may be seen as a fixed material object, a 'technical object', but through its markings is also 'overarching and future tense (e.g. a building being designed) and only partly expressed in material instantiations', having the nature of 'epistemic objects' (see Ewenstein and Whyte, 2009). When taken up by different members of the team, the marked cladding reflects the ability of 'boundary objects' (cf. Star and Griesemar 1989) to mediate knowledge across a boundary - in this case between the designers and engineers and the operatives - while maintaining a common identity across sites. The nature of the cladding mediated knowledge between different constituencies, thereby allowing the different skill groups to communicate and collaborate on the common task of curtain wall installation. In other words, it acted a means of translation between these different constituencies.

The team's work with tools and material was often unspoken and hard to describe in words. The GlazaBuild language itself worked in a similar way. Supervisor, Alan, and the ground floor workers use of English for imperative and command forms shows a complex and developed (and developing) system of communication between the team. The rules and codes of the language as it is used in practice were not always easily expressed or reflected upon by the workers. As Viktor explained, 'I can tell you what I said, but it was in many languages'. In one sense the curtain glazing team can be seen as providing a finely tuned example of the successful communication practices that already exist, developed by migrant construction workers and (native and migrant) managers themselves. Yet their communications are also part of an ongoing process through which their local knowledge is being developed in interaction.

For example, the mobile phone link enabled personalized channels of communication for those engaged in talk, while the practice of shouting down/up to colleagues – with the volume of talk announcing that the speaker was not simply addressing the curtain glazer on the mobile phone link; and the selection of language/s for

the shouted messages carrying different degrees of comprehension or incomprehension between the team – also opened (and closed) different channels of communication. This involved the tailoring of communication content to identify, address and communicate with specific workers in the team. It acted as a plural and evolving medium, produced by multiple actors and producing multiple messages for a group, which as a practice, produced both a 'lack in completeness of being' and a 'capacity to unfold indefinitely' (Knorr Cetina, 2001: 181), adapting along with minor changes in the personnel (and associated languages) or structure of the team.

This overseeing and overhearing of other team workers, whilst simultaneously engaging in (seemingly other) ongoing work tasks can be, as Heath and Luff (1991) explain, a core component of everyday work in complex organisational environments. This is not undocumented in construction industry research. For example, in a study of the use of mobile technology in the construction industry Brown and Perry (2000) identified the use of the hand-held radio system for 'listening in' to be a common collaborative working practice, such as in the sourcing of materials onsite, which goes beyond the linear person-to-person conversation between workers. Such 'overhearing' is key to the collaborative work practice of the curtain glazers, in which each worker in perceptual range may have a different (and changing) participation status relative to the talk (Goffman, 1981: 3). Our ethnographic study of the curtain glazers at work illuminates some of these intricate working practices, including a mixture of languages and personalised and public channels of communication between the team of workers, which helps us to start to re-evaluate relationships between 'foreign languages' spoken on site and poor safety practice.

Behind the Curtain (wall): Reflections on the ethnography of communication practices

Large construction projects are managed through temporary multiple organizations that come together for a single project which, by definition, can build an unstable employment structure and demand a mobile workforce. However, this issue is rarely unpacked down the labour supply chain, with a consideration of how local knowledge is produced and developed or how stable working relations are created and maintained. The GlazaBuild curtain wall installers can be seen as having a stable job in both senses of having a permanent contract and, when working on a large office block project such as this, of maintaining a fairly consistent team/working unit. Within the transitory and temporal surroundings of the construction project, the team was able to maintain stable relations through an evolving network of interactions, including different competencies with (and affording different uses of) objects, tools, materials, and languages.

Maintaining the intricate network of communication channels between team members is not, overtly, a primary function of the workers' roles onsite. Nor is their communication necessarily knowable and understood at the same level by all workers in the team. For example, Viktor's choice of language was used to identify, or was only understandable by, certain workers. Indeed while Paul, the Section Manager, understood that the practice of shouting between Viktor and the ground-workers was mostly about maintaining a clearance zone, Viktor said it was about the minor adjustments of the panel suspended in the air. Although such messages do not have a collective clarity (since they are intended to be selective) and they are not easily defined within the task-based nature

of their work, these communication channels play an important role in achieving the efficient and safe process of curtain glazing recognised site-wide by other workers and management.

While English was not, arguably, the common or dominant spoken language between the team, neither was there a single, dominant East-European language uniting the gang, thus the members could not collectively revert to their native languages. This is not an incident of the 'linguistic ghettos' in the workplace identified by Trajkovski and Loosemore (2006), which can further inhibit integration and second language acquisition. Rather, the speaking of this adaptable GlazaBuild language (including English and Italian as well as East European languages) is the tailoring of communication content to identify, address and communicate with specific workers in the team. Viktor explained how 'our own GlazaBuild language' helped serve a specific form of communication; it was a language shaped to the demands of the curtain glazing team.

What constitutes 'safe' or 'dangerous' practice, or 'good' language skills therefore has to be assessed (with inevitable subjectivity) in the context of the collective construction process. Here the curtain glazing team was deemed 'safe' in topping the Site Safety League table, taking pride of public place beside the site entrance. Yet they are not necessarily aligned with the top down, recommended safe practice of using 'good' English language skills – something that cannot be easily or uniformly measured onsite. While English language skills formed a component of the work practices of this successful team, our ethnographic study shows that defining safe practice is not as clear-cut as delineating fluent English-speaking and non-English speaking teams or workers. Instead, with an ethnographic appreciation of the contingencies and complexities of achieving safe working, it becomes clear that there can be a multitude of communication channels underpinning the successful functioning of the team as a whole.

In the example we have discussed, safe practice has been learned and absorbed into what might be called the stable group's 'organizational competence' (Gherardi and Nicolini, 2002). Yet Yanow (2004: 11) points out how 'many workers still experience a disjunct between what they know that (they believe) the organization should also know, and their managers' disinclination to value and capitalize on that knowledge'. This context calls for a closer focus on how such unacknowledged knowledge figures in construction work – since as Jones and Miller (2007: 73) explain, analysis of skills does not destroy the tacitness of the tacit component, nor does it convert one kind of knowledge into another. The study of communication practice, to advance understanding of how teams work and facilitate safe working, can also help promote or encourage a culture shift in the sector; towards valuing the local knowledge that is historically embedded in (shared) practices as an essential resource. On-the-job training does not ensure a simple transfer or development of tacit skills, but, being there opens up a variety of channels for learning to potentially flow into the experience, which 'enable[s] workers to not only hear about a process but observe it, experience it, and interpret it with guidance from others' (Iskander and Lowe, 2010: 3). Ethnography likewise involves *being there*, to explore how tasks are performed in practice and how people know what to do in practice. The strength of an ethnographic approach is that it allows researchers to understand how otherwise 'invisible' ways of knowing are engaged in everyday and essential construction work practices.

Ethnographic findings can also have further practical relevance in providing the basis for suggesting areas where employers and managers can make interventions to enable safe working. Key to our recommendations was the need to recognize the existing communication channels through which migrant workers enact safe working. We suggested that attempts to develop a culture of safe working should seek to identify, embrace and compliment the practices where local/tacit knowledge is enacted, rather than necessarily seek to displace them or to generate oversimplified generalisations. Ethnographic study of how safety is enacted in practice and local knowledge is developed, with the intertwined nature of knowing and doing, also challenges the industry's emphasis on regulation and the standardization of safe working practices (e.g. competency assessment requirements in the Construction (Design and Management) Regulations 2007).

This paper has demonstrated how ethnographic research can make visible the informal (or unofficial) practices, interactions and ways of knowing that can too easily fall below the industry (or official) horizon of notice. Our study of the team of curtain wall installers starts to indicate the specificity of the ways of knowing through communication that might develop on site. In doing so we suggest that intersections between institutional and local knowledge, as they are operated in practice onsite, should be further explored ethnographically and recognized as part of the way safe working is accomplished on construction sites.

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Endnotes

[1] All names and identifiers have been anonymized in this article.

[2] This paper is based on a chapter published in the book *Ethnographic Research in the Construction Industry* (Pink et al., 2012). We thank Routledge and Taylor and Francis for granting permission to reuse this material.

[3] Site Safety Tables are usually managed by the main contractor using factors such as a 'risk rate matrix' (differentiating between high risk and low risk trades) and the number of workers employed etc. which can have inevitable bearing on the incidence of accidents onsite, although some of the categories involve more subjective assessment, such as that of the 'attitude' of the workers.

[4] This idea of a collective manufacturing of individual and embodied skills, which develop and operate below the level of consciousness or articulation, resonates strongly with the concept of habitus. Indeed, Wacquant (2004: 16), in his ethnography of prizefighting, introduces the term 'pugilistic habitus' in relation to forms of bodily apprenticeship; that is, an individual mastery of a craft whose occupational apprenticeship is collective, with the boxing gym seen as 'a social and moral forge' (Wacquant, 2009: 147). While it goes beyond the scope of this paper, interesting parallels could be drawn with Paap's (2006: 180) discussion of the 'collective assertion of the "pigness" identity' which she encountered when working construction.

[5] While now fraught with dated and racist assumptions of migrant labour, that "very backward races are unable to keep on at any kind of work for a long time", Marshall (1960) makes early

observations of the distinct skill of trade communities and how “we are apt to regard as commonplace those excellences which are common in our own time” (p. 205).

[6] We are aware that the architect’s marking up of the panels was seen as an unusual practice and that this is a very hands-on interpretation of his role for onsite supervision and inspection of curtain wall installation.