

Refiguring global construction challenges through ethnography

Article

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Refiguring Global Construction Challenges through Ethnography

Guest Editors: Dylan Tutt and Sarah Pink

Introduction

This special issue advances interdisciplinary dialogue in Construction Management Research (CMR) by foregrounding new work undertaken by critical researchers who approach construction-related phenomena through ethnography. As we have previously argued, with our colleague Andrew Dainty (Pink et al 2013: 3), ethnographic research rooted in social science approaches has a key role to play in CMR precisely because it is sensitive to local context, to the practice of work as it is experienced and played out, and to cultural difference. As our more recent work has shown, ethnographic engagements in the construction industry reveal social, experiential and often unspoken ways of knowing. It is vital to understand these aspects in order to address any of the industry's enduring challenges, such as worker training and safety, as well as to engage with the possibilities and opportunities afforded the industry as digital technologies become increasingly pervasive in everyday and work environments (Pink et al 2014, 2016).

Indeed, it has been argued recently that CMR has expanded beyond its applied, engineering-dominated origins to engage with mainstream academic debates in management and social science, drawing in researchers from different disciplines (Schweber and Leiringer, 2012), and with Harty and Leiringer (2017) that it has become an academic field in its own right. Within this context, this special issue starts a conscious process of considering how such an academic field should be constituted as an interdisciplinary area of scholarship and practice, and what the role of ethnographic research should be in its development. We wish to put CMR into closer dialogue with ethnographic researchers whose work is focused both inside and outside the CMR community. Our ambition is to create an interdisciplinary relationship that is mutually constitutive. CMR brings distinctive academic insights and expertise on the business of construction, knowledge on project management and the institutional workings of the sector. This, when combined with the social, cultural and experiential insights of ethnographic research designs and insights, offers a powerful mode of mobilising the new research knowledge needed to address not only local questions, but to reflect on global challenges.

In our own work we have advanced ethnographic studies in the construction industry in three ways. First, by publishing with our co-authors, research based on ethnographic studies undertaken with construction workers on and off construction sites in academic journals relating to the applied research fields to which this research refers including *CME* (Tutt et al 2013a, 2013b, Lingard et al 2015), *Building Research and Information* (Pink et al 2010), *Safety Science* (Bust et al., 2008) and *Policy and Practice in Health and Safety* (Pink et al 2017). This has meant that we have been able to contribute ethnographic knowledge and the unique insights it offers directly into debates in the industry itself and around its key existing challenges - in our case relating to worker safety. Second by bringing ethnographic research in the construction industry into other fields of research, for example in journals of *Mobile Media and Communication* (Pink et al 2014), *Video Pedagogy* (Pink et al 2016), *New*

Technology, Work and Employment (Pink, et al 2017) and into debates about research methodology (Morgan and Pink 2017). This has meant that our examples drawn from ethnographies in the construction industry have influenced thinking in other fields, thus, meaning that ethnographies in the construction industry become more visible in broader academic debate. These exchanges provide an ideal opportunity for us to expand and advance the theoretical, methodological and international gazes that construction industry with its conventionally applied focus has been subject to, and in doing so to create new insights into its workings which are developed in dialogue with novel theoretical and methodological currents. Third, we have advanced our ethnographic insights about the construction industry in the applied aspect of our research in collaboration with colleagues in producing industry focused reports, and in presentations to industry partners within projects. It is completely possible for the same ethnographic study to have academic and applied impact across a range of fields, which has the effect of bringing the construction industry more closely into the purview of researchers in other fields which have paid little attention to it in the past. Such developments have significant implications for applied research in the industry and for the capacity of ethnographic research to also offer new applied insights, which are verified not only within the field of construction management research itself, but by our peers in the other fields that we dip its toes into.

Thus, our argument is for an approach to CMR that focuses on globally situated but local, social, cultural and experiential dimensions of the industry, through ethnographic attention to the detail of the human action, feelings and relationships that it depends on. In the emerging literature in this field, such studies have often focused on construction workers themselves, and the ways that they navigate their vulnerabilities and strengths in a dangerous workplace. However it is important to acknowledge that the industry is peopled at all levels, including by those who work in the industry itself, including architects and managers, communities whom building impacts on and anyone else who is implicated in its processes of design and implementation. This means that ethnographic studies might be carried out across or within any of these groups of people, in such ways as to provide deep and situated understandings of, for instance, their needs, frustrations, hopes and anxieties, as well as the social, economic and power relations in which they live and work (see Pink et al 2013).

Ethnography

Ethnography is not a single research method (O'Reilly, 2005). It represents a range of established observational and interview-based methods which were conventionally associated with the original meaning of ethnography as literally 'writing about the people' (Ingold 2014). However techniques such autoethnography (Grant et al., 2013), visual ethnography (Pink 2013), sensory ethnography (Pink 2015), online ethnography (Hine 2015, Kozinets, 2010), digital ethnography (Pink et al 2016) are increasingly popular and have stretched the definition of ethnography to include audio, visual and other practice. Ethnography is thus, a dynamic field of research practice, in which the techniques of doing research itself vary according to the ways that particular research designs are tailored to respond to both specific research questions and to the local context in which they are employed. Ethnography is also always inflected by theory, in that it is not a standalone set of methods, but rather its methods

are always understood as being conditioned by the (often discipline specific) theoretical approaches through which the knowledge they produced is made meaningful. Therefore, when undertaken by anthropologists, sociologists or designers, for instance, there might be variations in the ways methods are used, and how the materials they produce are analysed or mobilised. In this sense ethnographic methods differ from approaches in which the success and rigour of research is evaluated in relation to the extent to which the researchers have reproduced an existing standard method. Instead ethnographic research is successful when the researchers have been able to adapt to the local circumstances in such ways that they can get under the surface of what appears to be happening and offer new insights and understandings. As the articles in this special issue demonstrate, there are a number of ways to achieve this: through autoethnography whereby the researcher uses her or his own experiences of being a member of that industry and reflects analytically on these to draw out meaning and new knowledge; as an embedded industry ethnographer who studies what is happening around her or himself; or as a visitor who becomes engaged with the everyday lives of research participants who work in the industry, through ethnographic research techniques. In the construction industry, which is clearly a context riddled with unique challenges and opportunities for improvement - not least relating to the circumstances of those who work in it - such ethnography often offers new insights which can be used towards possible interventions to improve the everyday experiences of both specific participants in research and others who are in positions similar to theirs.

The articles in this special issue offer examples of how ethnographic practice might be played out (although not exhaustively). For instance, on the one hand, the practice of ethnography can be characterised by analysing the social through accessing the local (see the papers authored by Ewart and by Grosse in this issue). On the other hand, theoretically-informed ethnography can be highly creative in exploring and identifying new sites of inquiry and knowledge (see the papers of Hamid & Tutt, and Koch & Schultz). Therefore, ethnography is uniquely well positioned as an adaptable and exploratory methodology to examine the relationships and tensions between the construction workers, managers and a diverse range of actors in the sector and beyond. Academic ethnographers are also attentive to the wider contexts in which their research plays out, which might mean accounting for political, economic, gender and other inequalities. Thus, ethnographic inquiry can locate itself at critical points where these relationships are reconfigured and reconstructed in terms of: the local and the global, the self and the other, the citizen and the state, the society and the economy etc.

There has been a burgeoning growth in the use of ethnographic methods in construction management research in recent years, which to a certain extent has been pulled together through our own efforts (see Pink et al, 2013). Yet, arguably the intellectual framework of inquiry has been set too narrowly until now, with the ethnographic endeavour in CMR concerned with “how these methods embrace the *construction issues* facing *construction researchers*... to enable the construction industry to effectively function in the future” (Phelps and Horman, 2010, *italics added*). While recent work, particularly that developed by the editors of this special issue and their colleagues, has started to make new advances in

construction industry research through ethnographic practice and theory, we call for further work to consolidate this field of research. We believe there is much merit in this for two reasons. First to raise the profile of ethnographic approaches in the construction industry research context. Indeed this will enable construction researchers to better confront the research challenges they already face. However it will do more than this, in that ethnographic research also tends to open up the field of research further, to surface new questions and issues, and to demonstrate that the answer to the question originally posed might be neither what nor where originally assumed. Second, ethnographic research undertaken in the construction industry has the potential to bring significant theoretical, methodological and empirical insights to the fore that have bearings on debates and challenges that are being approached in other fields of substantive study or disciplinary discussion. For example as existing work has shown, the processes through which worker safety is often viewed and regulated in the construction industry have much in common with the ways that universities govern research ethics (Pink 2017, Akama et al 2018), or the ways that construction workers engage with digital video-based materials can inform us about wider questions relating to digital pedagogy (Pink et al 2016). The fact is that the construction industry is part of society, and if we do not view it as such, and understand the people who work in it, and the materials that flow through it as pertaining to these wider worlds of things and processes, then we stand little chance of comprehending its dynamics. Ethnographic research, when appropriately delivered, we argue offers the key to these understandings.

Special Issue Articles:

Koch and Schultz explore the relationship, on construction projects, between structural conditions and the actions and decision-making of site managers. They focus on failures and defects in buildings and building processes which they see as a common and recurrent experience on sites. In contrast to the large number of ‘very concrete’ defects occurring on construction sites, they explain that some failures and defects, and their technical, economic, institutional and symbolic aspects, can remain ill-defined and complex. Koch and Schultz adopt strong structuration theory as a framework to understand social practices as an on-going intersection between structures and agents, who take proactive or reactive action to solve problems occurring from defects (Giddens 1984). Their ethnographic research primarily focused on the onsite management activities and work tasks of the contractor’s project team, including interactions with designers, suppliers, subcontractors, and company headquarters. Two contrasting cases from their fieldwork are presented and analysed; one involving the assembly of precast concrete elements for a multi-story dwelling, and the other the construction of a penthouse.

Koch and Schultz conclude that the on-site problem-solving strategies can only solve the manifested problems on a short-term basis, rather than addressing the underlying structures. An unintended consequence of the unstructured problem-solving practices is that the on-site managers develop themselves into strong, ad hoc problem solvers, operating without seeking solutions, skills or competencies from elsewhere in the company or industry. Inevitably, this counters any (longer-term) attempts at organisational learning in the construction sector. As they state in their article, “the local agents actually learn from their experiences and the

processes, but their knowledge of specific solutions is diluted because they are either dismissed, move to other business areas or change jobs after project completion”.

Indeed, one of the frustrating features (even tragedies) of ethnographic research can be to experience, perhaps only in a fleeting glance or grasp, instances of injustice, mistreatment, misunderstandings or missed opportunities, and to then face the constraints or limits to enacting change or applying new knowledge to the problem.

Hamid and Tutt’s ethnography follows the lives of some of the Tamil construction labourers in Singapore. This included participants who were: working on sites, injured at work, on medical leave and/or seeking compensation, who face further obstacles in accessing labour justice, and seemingly have no place in Singapore, either metaphorically or socially. While the Tamil construction workers took great pride in their construction of Singapore, they explain how this essential role is controverted by their spatial marginalisation at various levels. Hamid and Tutt’s analysis develops themes around precarity and discrimination on construction sites (precarity of work), and the exclusionary practices experienced by workers in their offsite world, in particular describing surveillance and social control in Little India (precarity of place). Autophotography is introduced as a visual research method for CMR, in the form of worker photo diaries. This participatory method enabled the Tamil construction workers to present their lives through their own lens, providing a visual articulation of how they conceptualized their social position within Singapore. This enables us to scrutinize some of the geographical, social and cultural complexity of their everyday experiences in the city, empirically building a picture of both the exclusionary practices they faced and their everyday management (and mitigation) of them. Ramu’s photo diary offers an insight into the living conditions and (lack of) space for Tamil construction workers in the highly contested terrain of Little India. In contrast Anjappan’s photographs offer counter-narratives to the stereotyped (mis)representations from the dominant discourse in the local media, emphasising the common Tamil migrant heritage of Singapore construction.

In this research disposable cameras were used, but in many research environments the ubiquity of mobile phones means that mobile social photography platforms and practices can provide new avenues and opportunities for autophotographic research. Yet, Hamid and Tutt’s research is certainly indicative of the recent ‘participatory turn’ to collaborative and community based research in ethnography. Beyond the democratisation and participatory research potential of camera phones, Instagram, photovoice, and mobile and social media technologies more generally, is the visual immediacy they provide to gain forms of national and global visibility and/or to effect political socialisation and social change (see Qiu, 2009 on migrant workers and working class network society in China). Butz and Cook (2017) employ autophotography in their ethnographic research in an agricultural community in Pakistan’s Karakoram Mountains. This shares similarities with Ewart’s article in the special issue in revealing the social consequences of a newly-constructed road, although both are quick to distance themselves from “road impact” studies commonly encountered in international development research.

Ewart examines ethnographically the context in which the construction practices of Kelabit people from the rainforests of highland Borneo, emerge, thrive and decline, and he reflects on what this might mean for investigations into innovation in construction more widely. The article plots minor innovations in Kelabit housebuilding, namely changes to roofing and the introduction of cement, alongside cultural and technological change. In doing so he highlights that there are social consequences to innovations in construction which can often go unexamined in CMR, including here the co-dependency between patterns of migration (of men to coastal towns for paid labour) and innovations in construction (towards more durable housing).

Following the ‘reflexive turn’, ethnographers (should) take more careful consideration of who has the power to say what about whom, and the issue of how much influence the research participants (can) have over the unfolding ethnography becomes further problematized through autoethnography. **Grosse** introduces autoethnographic research to CMR, revealing the ways that managers/actors can negotiate difficult situations, and the effects on the people involved, through transformative events or epiphanies (experiences written and examined reflexively). An important function of autoethnography is “to expose ‘the elephants in the room’ of cultural context: social and organisational practices which beg robust scrutiny and critique but which are taken for granted as unquestioned, normative ‘business as usual’” (Grant et al., 2013: 5). Grosse’s paper applied three different aspects of reflexivity (reflexivity on, in, and of practice) to a particular project-based event, and his subsequent re/actions to it. Namely when an architect accuses Grosse of overcharging for a project in an email that was copied to the client. We will consider how reflexivity is practised differently by different construction ethnographers in the next section. For Grosse it required a willingness to question his own professional conduct, leading to uncomfortable revelations, before helping him to better understand and re-evaluate the managerial tasks that he faced.

Indigenous knowledge of the researcher:

Arguments regarding indigenous knowledge/expertise and researcher/academic expertise are, perhaps, particularly pertinent to research in construction, which is still a manually intensive, complex, and highly fragmented sector to work in. Grosse’s article moves us close again to the longstanding debate around the unique adequacy (UA) requirement of ethnographic methods, namely, how far researchers should (need to) be or become competent at the practices that they set out to study (See Rooke et al. (2004), following Garfinkel). However, Grosse confronts this from a very different perspective.

Grosse manages a construction company, building the brickwork and concrete structures of buildings, and is a carpenter and a civil and industrial engineer by training. He refers to Thiel (2010), who used his experience as a construction worker to study the environment with which he was familiar, but argues that there has not been any autoethnographic research undertaken by an active construction manager. Grosse analyses moments when the ‘practitioner insider’s view makes it difficult to maintain an ethnographic distance, but also the benefits for management insights, articulating his autoethnography as a status in which “I

am always the construction professional but cannot stop being the researcher". He discusses how reflexivity cannot operate without background knowledge, referring to economic, technical, physiological and emotional circumstances, and explaining, "I knew very well why I made such an expensive offer, as I know what it means to wheelbarrow some cubic meters of concrete into a courtyard, shovelling it into buckets, lifting it up and so on. I know what it costs, and *I know what it means for workers' arms and backs*" (the emphasis here is ours).

Schultz also reflects on his engineering competency as being both a blessing and a curse for his research: "When focusing on a particular defect, it was often an advantage, through observation on site, documents and engineering background, to be able to ask native questions, that is with reference to occupational profiles (i.e. craftsmen), materials, methods and equipment, but also to issues derived from rationality of management...". His place in the industry also resulted in certain restrictions and limitations regarding access and trust. These tensions were particularly fraught when negotiating the roles of ethnographic researcher and at the same time an employee in the company undertaking the project.

Hamid's cultural sensitivity and a felt, shared linguistic heritage with the Tamil construction workers also helped bridge the gap and build relationships with research participants. Fieldnotes record how it was felt that 'being a woman' also facilitated her research, as the men were forthcoming in listening to her and allowing her to photograph them, and yet gender posed as a barrier to gaining access to the (highly masculinized) construction sites.

Hamid's indigenous knowledge is also interesting in relation to her work and experiences of applied research. Hamid and Tutt explain how the remit of academic researchers and NGO practitioners can be differentiated in terms of access to workers, explaining how NGO TWC2's involvement with workers formally begins through instances of worker desertion being converted into case work. Hamid had previously worked as a volunteer for the migrant worker rights NGO, bridging these applied research worlds, and sharing a social interventionist research agenda to enact change. Indeed, by developing a blog post based on the research for publication on the NGO website, she could feed directly into the media debate. Yet, following the goals of decolonised research, Hamid and Tutt's auto-photographic research, in the form of worker photo diaries, recognised the Tamil migrant workers as "experts in their environments", particularly as the objective was to obtain the perspective of migrant workers themselves.

Global construction ethnography:

Global construction poses distinct challenges and opportunities for ethnography, and the articles included in this special issue reflect this, bringing to bear the experiences of researchers who have engaged with CMR ethnographically from the management of building defects in Denmark, to Kelabit housebuilding in Borneo. Attention to the relationship between the local and global is also one of the areas of expertise that ethnographically focused disciplines bring to the field of CMR. For instance anthropologists have long

attended not only to cultural differences, but to the global situatedness of the everyday experiences of the people they do research with. The tracing of the movement of people, materials and other things that is part and parcel of ethnographic work thus underpins the study of the barriers and borders between the local, national and international which can become more fluid in the contemporary era of globalization. Yet in recent years we have also seen the rise of populism, 'hard borders' and revised trade agreements as globalists and nationalists clash over industrial policy and identity. Mobility and migration are constantly re-patterned in different international contexts through a range of economic and political reforms and fixities. We should acknowledge the agency of actors and their sense-making activities. However, the wavering enactment of sponsorship systems, household registration systems, and land, residency and labour laws etc. can institutionally frame the ways construction projects operate and condition (an acceptance of) the ways in which we manage the workers who build our cities. Thus inviting critical social science perspectives on and understandings of the politics of these contexts in which the construction industry inevitably is played out. Within this, these political and economic contexts thus go beyond the contexts of the construction industry itself, and beyond the scope of the study of conventional construction management research. Instead they call on us as researchers to also step outside of these contexts, to understand that the construction industry and what happens within it is also to a certain extent contingent on the ways that its workers trajectories might be inflected by these global flows and stoppages. Construction, in its different manifestations globally, poses distinct challenges and opportunities for ethnography, and also overlaps with a range of different existing research agendas. These include but are not exclusive to fields of studies in migration, mobility and the transnational, infrastructure studies, safety research, urban planning, land activism, work and organisation studies, and digital and media anthropology and sociology. In this context there are some surprising gaps in the areas that have been covered. We do not review all of these here, but draw readers' attention to some key issues.

For example, the ethnographic study of the informal construction sector is largely absent from the CMR literature. Over the last thirty years we have experienced a global trend for the deregulation of construction labour markets and greater casualization of the labour force, with a huge growth in the number of 'informal employees' working in both informal and formal enterprises (Wells, 2012). The outsourcing of labour and extreme subcontracting means that unskilled and low skilled workers can often be employed in the construction industry without formal contracts or social protection. Outside of CMR there are, for example, a variety of ethnographies exploring how different global processes and conflicts in construction are enacted and negotiated in everyday life and engaging with how worker rights and welfare issues are politically produced and contested. For example, studies of identity politics and the reconstruction of ethnic, racial and gender identities in different construction labour markets (e.g. Kitiarsa, 2012, on masculinity of Thai construction workers in Singapore; or Parry, 2014, on social class and gender relationships in the management of Indian informal construction sector). Studies of transnational migrant construction working conditions and arrangements, and the operation of labour camps and onsite accommodation (e.g. Gardner, 2012, on Bahrain; or Buckley, 2012, on Dubai). Ethnography is a way to access marginalised voices in the management of construction and infrastructure projects and

to explore diverse experiences and perspective in these processes and projects. It can bring to the fore these under studied areas of the construction industry, and demonstrate how attention to them and the generation of supportive applied responses to the issues they raise might, if carefully developed within sympathetic circumstances, benefit both workers in the industry and the industry itself.

As a whole, this special issue calls for more constructive dialogue between researchers who employ critical interpretive approaches to study construction-related phenomena, which entails an effort to engage globally-dispersed researchers across the disciplines and to confront different epistemological barriers to growing this research base in the CMR community, and to contemplate the type of issues which we can and should engage with as a community.

References

- Akama, Y., Pink, S. and Sumartojo, S. (2018) *Uncertainty and Possibility: new approaches to future making*. London: Bloomsbury.
- Buckley, M., 2012. From Kerala to Dubai and back again: construction migrants and the global economic crisis. *Geoforum*, 43(2), 250-259.
- Bust, P.D., Gibb, A.G.F. and Pink, S. (2008) Managing construction health and safety: migrant workers and communicating safety messages. *Safety Science*, 46 (4): 585 – 602.
- Butz, D. and Cook, N. (2017) The Epistemological and Ethical Value of Autophotography for Mobilities Research in Transcultural Contexts. *Studies in Social Justice*, 11(2): 238-274.
- Fine, G. and Hancock, B.H (2017) The new ethnographer at work. *Qualitative Research*, 17(2): 260–268.
- Gardner, A., (2012) Why Do They Keep Coming? Labor Migrants in the Gulf States in Kamrava, M. and Babar, Z. (eds). *Migrant Labour in the Persian Gulf*. New York: Columbia University Press, 41–58.
- Giddens, A., (1984) *The Constitution of Society*. Berkeley and Los Angeles: University of California Press.
- Grant, A., Short, N. and Turner, L. (2013) Introduction: Storying Life and Lives in Short, N., Turner, L., and Grant, A. (eds) *Contemporary British Autoethnography*. Rotterdam, Netherlands: Sense Publishers.
- Harty, C. and Leiringer, R. (2017) The futures of construction management research. *Construction Management and Economics*, 35 (7): 392-403.
- Hine, C. (2015) *Ethnography for the Internet: Embedded, Embodied and Everyday*. London: Bloomsbury.

Kitiarsa, P. (2012) Masculine Intent and Migrant Man-hood: Thai workmen talking sex in Ford, M., Lyons, L. (eds) *Men and Masculinities in South- East Asia*, London: Routledge, pp. 38–55.

Kozinets, R. (2010) *Netnography*, London: Sage.

Lingard, H., Pink, S., Harley, J., and Edirisinghe, R. (2015) Looking and learning: Using participatory video to improve health and safety in the construction industry. *Construction Management and Economics*. 33(9): 740-751.

O'Reilly, K. (2005) *Ethnographic Methods*, London: Taylor and Francis.

Parry, J. (2014) Sex, bricks and mortar: constructing class in a central Indian steel town. *Modern Asian Studies* 48 (5): 1242-1275.

Phelps, A. and Horman, M.J. (2010) Ethnographic theory-building research in construction. *Journal of Construction Engineering and Management*, 136: 58–65.

Pink, S. (2017) Ethics in a changing world: embracing uncertainty, understanding futures, and making responsible interventions in Pink, S., Fors, V., and O'Dell, T. (eds) *Working in the between: theoretical scholarship and applied practice*. Oxford: Berghahn

Pink, S., Dainty, A. and Tutt, D. (eds) (2013) *Ethnographic Research in the Construction Industry*, London: Taylor and Francis

Pink, S., Tutt, D., Dainty, A. and Gibb, A. (2010) Ethnographic methodologies for construction research: knowing, practice and interventions. *Building Research & Information*, 38: 6, 647-659

Pink, S., Morgan, J. and Dainty, A. (2014) Safety in Movement: mobile workers, mobile media. *Mobile Media and Communication* 2(3): 335-351.

Pink, S., Lingard, H. and Harley, J. (2016) Digital Pedagogy for Safety: the construction site as a collaborative learning environment. *Video Journal of Education and Pedagogy* 1(1): 1-15.

Pink, S., Waterson, P., Dainty, A., Cheyne, A., Haslam, R., Gibb, A., Morgan, J., Hartley, R., Finneran, A., Bust, P. (2016) Interdisciplinary research for occupational safety and health knowledge. *Policy and Practice in Health and Safety*, 14:1, 22-33.

Qiu, J.L. (2009) *Working-class network society: Communication technology and the information have-less in urban China*. Cambridge, MA: The MIT Press.

Rooke, J., Seymour, D. and Fellows, R. (2004) Planning for claims: An ethnography of industry culture. *Construction Management & Economics*, 22 (6): 655-662.

Schweber, L. and Leiringer, R. (2012) Beyond the technical: a snapshot of energy and buildings research. *Building Research and Information*, 40 (4): 481-492.

Thiel, D. (2010) Contacts and contracts: Economic embeddedness and ethnic stratification in London's construction market. *Ethnography*, 11(3): 443–71.

Tutt, D., Pink, S., Dainty, A. and Gibb, A. (2013) Building networks to work: an ethnographic study of informal routes into the UK construction industry and pathways for migrant up-skilling. *Construction Management and Economics*, 31 (10): 1025-1037.

Tutt, D., Pink, S., Dainty, A. R. J. and Gibb, A. (2013) 'In the air' and below the horizon: migrant workers in UK construction and the practice-based nature of learning and communicating OHS. *Construction Management and Economics*, 31 (6): 515-527.

Wells, J., (2012) Informal Construction Activity in Developing Countries in Ofori, G (ed). *New Perspectives on Construction in Developing Countries*. London and New York: Spon Press, 166-181.