
This item was submitted to [Loughborough's Research Repository](#) by the author.
Items in Figshare are protected by copyright, with all rights reserved, unless otherwise indicated.

Coping with stone: a short-term ethnography of skilled work in UK housebuilding

PLEASE CITE THE PUBLISHED VERSION

<http://www.arcom.ac.uk/conf-intro.php>

PUBLISHER

Association of Researchers in Construction Management (ARCOM)

VERSION

VoR (Version of Record)

PUBLISHER STATEMENT

This paper was first published by ARCOM as part of the Conference Proceedings.

LICENCE

CC BY-NC-ND 4.0

REPOSITORY RECORD

Brett, Richard, Derek Thomson, and Andrew Dainty. 2019. "Coping with Stone: A Short-term Ethnography of Skilled Work in UK Housebuilding". figshare. <https://hdl.handle.net/2134/9205634.v1>.

COPING WITH STONE: A SHORT-TERM ETHNOGRAPHY OF SKILLED WORK IN UK HOUSEBUILDING

Richard Brett¹, Derek Thomson and Andrew Dainty

School of Architecture, Building and Civil Engineering, Loughborough University, Epinal Way, Loughborough, Leicestershire LE11 3TU, UK

Speculative housebuilding in the UK is frequently criticised for the poor quality of its outputs and low productivity. Reliance on traditional and overtly manual methods of building are seen as contributors to these problems and this mode of production is unlikely to significantly change in the near future. Individual performances of skilled manual work in housebuilding are investigated using short-term ethnography, which includes traditional techniques of observation and interview as well as the collection of audio-visual data. A theoretical ideal type of 'pure craft' is developed which is then taken into the field and used to analyse the execution of skilled manual work and attendant judgements about the completion of that work. The results of the fieldwork firstly reveal an absence of codified forms of knowledge that cannot be fully explained by the alternative concepts of tacit knowledge. Secondly, the fieldwork validates the potential of short-term ethnography to reveal unforeseen or taken for granted behaviours that play out beyond the usual focus of construction management research.

Keywords: craft, ethics, housing, quality, ethnography

INTRODUCTION

UK speculative housebuilding is subject to much criticism about both the quality and quantity of its outputs (Bryde 2008; Auchterlounie 2009; Craig *et al.*, 2010; Hopkin *et al.*, 2016). Partly this is a structural problem inherent to the labour model of the industry, which is reliant upon subcontracting skilled but scarce manual labour. The government-backed Farmer Review calls for a transformative switch to pre-manufacture and re-skilling of the construction labour workforce as a solution (Farmer 2016). While momentum is growing for the widespread adoption of MMC in housebuilding (NHBC 2018), the adoption of new approaches, especially in housebuilding, remains slow (Lang *et al.*, 2016) and the overwhelming proportion of new houses in the UK are built using traditional, labour intensive methods; between 2008 and 2015 traditional masonry construction consistently represented approximately 70% of houses built by NHBC members surveyed (NHBC 2016). This method predominantly refers to cavity wall construction (e.g. brick and block skins), timber floors, partitions and roof trusses, tiled roof coverings and plaster or drylined internal finishes. Mechanisation on these sites beyond the level of personal power tools is generally low, with perhaps a crane being the only significant technological equipment in use (Clarke and Wall 2000). These traditional methods give housebuilders flexibility to manage outputs and productivity in the most profitable,

¹ r.brett@lboro.ac.uk

although not necessarily speediest, manner as familiar building methods using generic components available ‘off the shelf’ provide programme flexibility to cope with unpredictable demand compared to the long lead times and necessary design freeze of offsite manufacture (Ball 2010; Lu and Liska 2008). Research in this field has tended to adopt, perhaps unsurprisingly, a construction management paradigm including, for example, a quality systems perspective (Forcada *et al.*, 2016), defect impacts and costs (Mills *et al.*, 2009), stakeholder perspectives (Hopkin *et al.*, 2017) and analysis of causes of construction defects (Jingmond and Agren 2015).

There is less in the literature where researchers are engaging at the very point at which the building work is actualised. A defining characteristic of the traditional form of construction is its reliance on human-scale production and energies. Given the criticisms of its performance, and the evidence suggesting this traditional form of construction will remain dominant, or at least significant, for many years to come, this research explores what happens at that human level of making on site with regards to judgements about building work taken by those that are performing it: The site operatives. Theoretical understandings of craftsmanship that draw on sociology, anthropology and philosophy consider the process of making from the subjective, individual perspective rather than from a management perspective. This research draws on theories of craftsmanship to explore speculative housebuilding at the “sharp end”, that place “beneath the progress plans and design drawings” (Orstavik 2018) and does so by deploying a short-term ethnography methodology on a speculative housebuilding site. Short-term ethnography is an evolving form of ethnography particularly suited to research in the workplace where the emphasis is on intense collection of multiple forms of data in specific areas of practice. This paper presents the intensity and depth of findings that can be found by a researcher using ethnographic approaches.

CRAFTSMANSHIP: UNDERSTANDING A FORM OF WORK

To understand the making of judgements by building workers, the research draws from a range of literature to identify traits of craftsmanship. These traits are used as reifications of a 'pure craft' concept- a way of working that is the apogee of manual work. In this concept, the craftsman is the judge of his own work, his products have more value compared to manufacture (Conty 2013) and craft output is inherently productive. Most importantly, as the craftsman is the sole judge, he doesn't need external approval and in fact “abhors articulation and specification” (Ingold 2013: 110). The traits of pure craft are:

- Autonomous working and problem solving.
- A hand-tool-material relationship where machinery may assist but doesn't dominate.
- Work is a negotiation with materials rather than a dominance.
- Outputs are not geometrically straight.
- Work activity is haptic, physical and dextrous.
- Judgements of completion are tacit, lack codification and based on the values of the craftsman.
- Work practice is based on a long period of training and the worker is within a field of established norms of behaviour. There is practiced expertise.
- There is creativity and uncertainty of outcomes until the end, i.e. non-hylomorphic.

SHORT-TERM ETHNOGRAPHY AS A WAY OF UNDERSTANDING CRAFT

The research deploys an ethnographic methodology to capture the personal experiences of participants and allows their subjective experiences of the world to emerge (Wadick 2010). The traits of pure craft identified above are then used as a theoretical lens by which to analyse the actions and judgements of building workers. Ethnography is “describing a culture and understanding a way of life from the point of view of the participants” (Mackenzie *et al.*, 1999). It develops in practice, especially for a novice ethnographer as is the case here, involving a combination of techniques as well as reflection on the role of the researcher (Gibb and Dainty 2013). Applying the social scientific ethnographic method to construction provides an understanding of construction work (Pink *et al.*, 2010) by providing access for the researcher to tacit understandings. Much has been said about the place of tacit knowledge in the construction field (Styhre 2009), especially with respect to workers actions, and it is an enormously important part of understanding craftsmanship. Ethnography is the method that allows the researcher to observe, hear, watch and speak with the participants, so providing the means to approach this tacit realm (Marrewijk *et al.*, 2014).

Traditional anthropological ethnography requires a long period of immersion by the researcher and extensive involvement with participants (Pink and Morgan, 2013; Pink *et al.*, 2010; Phelps and Horman, 2010). Ethnography appears within the body of construction management research, having “an important part to play in illuminating construction management phenomena”, but it remains “under-represented” (Bresnen and Harty 2010). For others the approach is “emerging” (Gibb and Dainty 2013) and “an innovative, highly immersed approach to exploring lived experiences” (Shipton *et al.*, 2014).

It has been used where researchers are seeking access to the otherwise undocumented perspectives of working lives, for example in conveying the embodied labour of building workers in refurbishment (Lyon 2013), changes in collaboration over a long period of time, (Marrewijk *et al.*, 2014), safety behaviours among workers on large construction sites (Oswald *et al.*, 2018), and the personal experience of being a construction site labourer (Löwstedt 2015).

Lengthy periods of ethnographic immersion on a construction site may be unsuitable because of the very contingent nature of construction activity. Delays, weather, and setbacks create “shifting temporal and spatial patterns” that may hinder the researcher (Löwstedt 2015). Frequent turnover of labour means a prolonged stay by the researcher would reveal nothing of the participants’ ethos and attitude (Sykes 1969). A more intense ethnography in short episodes is a response to the environment being studied. A pragmatic adaptation such as this is typical of the way ethnography is practiced (Atkinson and Hammersley 2007).

The intensity is achieved by shifting away from more traditional recording techniques and making extensive use of video and audio recording. By not being encumbered by the need to collect detailed field notes (the audio and video can do this) the researcher is more mobile and able to be more engaged with the participant. Secondly, and more importantly, the data is available for later analysis. Visual ethnography techniques can be planned in advance, but the way the use of video unfolds during the fieldwork is unpredictable (Pink 2007: 47). Typically, ethnography focusses on repetitive

behaviours. Closure is achieved when, after repeated observations, nothing “new about its cultural significance can be learned” (Mackenzie *et al.*, 1999).

THREE ETHNOGRAPHIC EPISODES

The following provides details of three brief episodes that occurred while ethnographic research was being undertaken during a speculative housebuilding project. The site, located in East Anglia, was for the construction of two large, high specification new houses with extensive traditional detailing required by the planning authority due to the immediate site context. The speculative housebuilder constructs approximately 100 houses a year, sometimes acting as main contractor to housing associations or developers. They have no directly employed labour, relying on subcontractors for all phases of construction. The site managers and project manager are employed by the contractor. The architect was employed by the developer. In this example, the contractor was building the homes for the speculative development division of their parent business. The houses were estimated to be sold for £650-700k each. At the time of this fieldwork, marketing of the properties had not begun.

One of the design details required was to build brick gables with parapets capped with reconstituted stone copings. In the following episodes the researcher is following the bricklaying gang as they attempt to finish the tops of the brick gables with coping stones laid up the pitch of the gable. The episodes are only a small part of a considerable amount of data collected but serve to illustrate the mobilisation of short-term ethnography as an “intense route to knowing”, and how, for the researcher, it brought practice and theory together both onsite and in subsequent analysis. Pink and Morgan (2013) present three qualities of short-term ethnography: The intensity of the research encounter, a focus on the detail and the ethnographic-theoretical dialogue. These qualities are borrowed as the sub-headings for the episodes below.

Episode 1- Intensity of the research encounter

The brickwork gables have been built by the bricklaying gang, and now they need to cap the gables with stone copings, laid to a pitch of 45degrees with a shoulder stone at the bottom and a top stone at the apex. The bricklayers lay the first stone at the bottom of the gable and very quickly appraise it visually, and then with a cursory measure of the projection using a tape. I am struck by how quickly they move onto laying the muck for the next stone and take this as unspoken confirmation within the gang that the first stone was complete. I ask the question, “you are very quick at deciding that something is right or wrong, aren’t you?” The gang leader responds, “if it looks right, it is right... nothings ever going to be spot on is it? Nothing”. After a pause, he offers some elaboration as if to suggest the first response was a little too simplistic. “if you level the bottom then in theory, they should be alright”. After a little less than an hour, when the copings to one side of the gable have all been laid, the bricklayers are more effusive with their judgements. They say the copings “can’t be too far out” and are “relatively in line”. The final concluding remark comes in the form of a rhetorical question from one of the senior bricklayers, “Look, that looks the bollocks doesn’t it?”

The intensity of the encounter (Pink and Morgan 2013) comes from the researcher positioning themselves at the heart of the action. The building site is a noisy, busy place and, with the scaffold only 1m wide, simply being near the action puts the researcher slightly awkwardly in the way, with workers brushing past, but the proximity brings contact, and inevitable conversation. But the intensity also comes from the baggage of theory that the researcher is carrying, and the irresistible need to deploy this in search of an explanation.

The overwhelmingly dominant method of judgement by the bricklayers was a continual visual checking that happened unceasingly, but was not supported by any explicit deployment of knowledge of what the visual checking was against, leaving the researcher to conclude that it could only be a check against the bricklayers own concept of what the gable should look like because there was no reference to plans, specification, method statement, installation instructions or any other form of codified knowledge. The bricklayer cannot produce perfection- this is impossible- but produces his version of Platonism's ideal type, at the second order removed, always with "his eye on the appropriate form" (*The Republic*: 596-597). It was as if the bricklayers were saying to the researcher "this is good because we say it is good; and we are bricklayers".

Episode 2- A focus on the detail

The coping stones were not made to measure for the length of the gable, and nor were the brickwork projections for the stone kneelers all the same size, although they were supposed to be according to the elevation drawings. This meant the stones needed to be cut by the bricklayers. In this instance the cutting was done by the boss of the firm. While on the scaffold he stands the unstable coping on end, somewhat stabilises it with his right foot, and then, slightly wobbling himself on his remaining standing left leg, uses a petrol disc cutter to cut the coping amid a cloud of dust with the cutting disc passing within a couple of inches of his toes. Immediately coming to my mind observing this is the overwhelming odds against the stone being cut as accurately as the bricklayer would really wish. Having finished the cut he comments to me that the need to cut materials on site should be "engineered out", but "it's the same on every site". The labourer expresses his approval of the cut when the stone is offered up, "that's awesome", he says to his boss.

After the gable copings were finished, the site manager walked past and made only one remark; "it's a shame about that little cut at the top. I would have done it differently". He was referring to a small slip of coping stone, approx. 100mm wide, next to the topstone. His preference was for the top two inclined copings to both be cut and so avoid having a very small infill piece.

Throughout the fieldwork the role played by tools in the activities of the workers was a constant theme for analysis prompted by the craft literature. Technology breaks the intimate connection between work and human agency that is so imperative to the concept of pure craft because *techne*, the skill of the craftsman, is "inseparable from the experience of particular subjects in the shaping of particular things (Ingold 2013: 315). The disc cutter episode brings to the fore the tension between getting the job done and appropriate levels of quality. While not detracting from any skill on behalf of the bricklayer in using the disc cutter, as a powered machine it lacks discretion (the roofers used the same tool for cutting GRP valleys) and removes the connection between sensory perception and the actions of the hands, which is the skilled constraint of the craftsman. While some ethnographies have uncovered work practices where workers are dissuaded from using power tools when they want to because of a philosophical attachment to craft methods (See Yarrow and Jones 2014), on the speculative site the use of power tools to speed the process is unquestioned. The workers want to save themselves from the laborious and tiring aspects of the work, as they always have done (Rose 1937: 5). In comparison with the carpenters that were observed on this site, the bricklayers were very low-tech and low-cost in the use of power tools. While the carpenters claimed to have perhaps £10k worth of tools in their van the bricklayers were keen to point out their most expensive tool was a £100 spirit level.

Even with the site manager's mild admonishment at the end, there was never any suggestion the work would be done in any way other than that which the bricklayers chose. Pye recognises two dimensions to making. One is the "workmanship of risk" where the quality of the work is not predetermined but "the quality of the result is continually at risk during the process of making". This is the emergent process of making. The other dimension is "the workmanship of certainty" where the "quality of the result is exactly predetermined" (Pye 1995). Many of the comments from the site management team and the architects about the bricklayer's work were that it was "good" in comparison to what other gangs might produce. The outcome of the brickwork is anticipated but unknown (Stein 2011).

Pink and Morgan (2013) suggest that focussing on details is appropriate in short-term ethnography as a solution to a context where in other forms of ethnography the researcher would be apprenticed into the subject of study. The cutting of the coping stones is an example where the background of the researcher enables him to seek out the details. The researcher already knows some of the copings will need to be cut and the cutting task will enable plentiful reflection on the presence or otherwise of the craft traits already identified in the literature. The ethnographic place, the realm inhabited by the researcher, cannot preclude the life experiences of that researcher. After all, it is those experiences that have led, through an unfolding life, to this fieldwork. And it is the "personal knowledge" (Polanyi 1958: vii) gained that lead to the researcher sensing that, of all the activities happening on site that Friday lunchtime, the cutting of the coping stones was the one to watch.

Episode 3- ethnographic-theoretical dialogue

The first morning of installing the coping stones immediately struck problems when the bricklayers laid the kneeler stone and the first inclined coping stone and realised that without mechanical fixings the copings could be displaced from the gable and fall to the ground in the future, as well as being difficult to lay now. Much debate ensued between the bricklayers and the site manager. The bricklayers talk of leaving the job until a solution is found. The site manager needs to keep the bricklayers on site and eventually comes up with a mechanical fixing solution of his own. He sources the necessary fixings and the work of laying the copings begins.

I was struck again, as I had been at other times during this fieldwork, of how little the decisions and judgements of the workers referred to any formal information, perhaps regulations or codes of practice, that might inform their decision making. Every problem was approached on its own merits, almost as if it was the first time such a problem had been faced because it seemed to me that the solution was developed from first principles, not from previous experiences of how these problems might have been overcome on other jobs.

In short-term ethnography, data collection and analysis are intertwined (Pink and Morgan, 2013) because a sharper focus is necessary. The lack of reference to plans, specifications, regulations, product information and the almost complete reliance on in-situ, instantaneous development of ad hoc solutions has some of the traits of craftsmanship. In this sense the theory had pre-empted the ethnographic experience. The craft theory from literature posited the presence of tacit knowledge as a trait of craftsmanship. But many of the episodes on site, including one in the example above, prompted the researcher to consider if the oft-repeated phrase, "we can know more than we can tell" (Polanyi 1966: 4) was an inadequate explanation of the lack of presence of codified forms of knowledge. It wasn't a case of knowing more than could be told, but more a case of just not knowing. The aura of the craftsman as master of his domain (Roper 1982) was not there, nor any confident display of "expert

performance” (Ericsson *et al.*, 1993). The theory that had been advanced in anticipation of the fieldwork was about the action, dexterity, physicality and materiality of the craft practice allied with an exercise of tacit knowledge in making judgements. In practice the first characteristics were somewhat there, but the tacit knowledge of making judgements was not wholly convincing in the field because there were repeated episodes where building workers were in an instantaneous, emergent situation where they made judgements as individuals but the idea that they were deploying solutions mined from a deep repository of knowledge was not the observation of the researcher. It was only the project manager who carried a sense of this mastery in the way he tackled problems and was self-aware enough to reflect that “I have been on building sites since I was fifteen. I forget just how much I know.”

The ethnographic place and abductive research

Some observation is done in the field, but by far the greater part of the ethnographic analysis takes place away from the field by watching recordings (Pink and Morgan 2013). The use of video cameras had considerable practical benefits for the researcher. But, in respect to Pink and Morgan’s emphasis of how audio-visual allows “ongoing reengagement”, the audio visual has served to extend the fieldwork into the researcher’s own workplace where the analysis of the video footage occurs. As the fieldwork finishes, analysis shifts away from the site which the researcher will never visit the again, but the video files provide the ability to instantly reconnect with the place, people and activities that were observed. The video footage provides for triangulation. Conversations can be listened to again. The sequence of works, the actions of workers, including very detailed footage of repetitive acts can be viewed over again to corroborate or contrast with field notes. The links between the ethnographic fieldwork and the ethnographic analysis are therefore not consecutive but concurrent. In this way, the ethnographic place is not the building site but the “entanglements through which ethnographic knowing emerges” which is not location specific, but where researcher, data and analysis takes place.

CONCLUSION

Short-term ethnography places the researcher at the heart of the action, literally in among the workers and their workplace. In being able to watch, listen, question and simply think about what is happening as the bricklayers go about their everyday tasks the researcher is in a continual negotiation with theory and practice, trying to understand what is actually happening by using theory as a tool for explanation. The anticipation ahead of the fieldwork was to use the concept of pure craft as a mirror, enabling reflection on what the workers were doing. However, the data obtained during the fieldwork, when analysed at the time and later away from the site, showed an absence in the way workers formed judgements. The task now is to explain not so much what they were doing, but to account for what they were not doing. This requires a renewed engagement with theory and with the fieldwork data that is typical of an abductive and iterative approach to ethnography that searches for patterns and reads signs (O’Reilly 2009: 107; Blaikie 2007: 90). Surprise, and an openness to new concepts during the conduct of the fieldwork (Agar 2006) occurred here for the researcher. Based on the observations made, the researcher reflected shortly after the end of the fieldwork that it seemed for many of the building workers “Things are entirely what they appear to be and behind them... there is nothing” (Sartre 1965: 140). The freedom, action and responsibility of these workers is the surprise revealed (Sartre: 1956). This ongoing entanglement with the fieldwork is possible because of

the possession of large quantities of data, provided by the adoption of a short-term ethnographic approach that can be continuously re-analysed.

REFERENCES

- Agar, M (2006) An Ethnography by Any Other Name, *Forum: Qualitative Social Research*, 7(4).
- Atkinson, P and Hammersley, M (2007) *Ethnography: Principles and Practice 3rd Edition*. Abingdon: Routledge.
- Auchterlounie, T (2009) Recurring quality issues in the UK private house building industry, *Structural Survey*, 27(3), 241-251.
- Ball, M (2010) *The Housebuilding Industry: Promoting Recovery in Housing Supply*. London: Department for Communities and Local Government.
- Blaikie, N (2007) *Approaches to Social Enquiry*. Cambridge: Polity Press.
- Bresnen, M and Harty, C (2010) Editorial: Objects, knowledge sharing and knowledge transformation in projects, *Construction Management and Economics*, 28(6), 549-555.
- Bryde, D J (2008) Is construction different? A comparison of perceptions of project management performance and practices by business sector and project type, *Construction Management and Economics*, 26(3), 315-327.
- Clarke, L and Wall, C (2000) Craft versus industry: The division of labour in European housing construction, *Construction Management and Economics*, 18(6), 37-41.
- Conty, A (2013) Techno-phenomenology: Martin Heidegger and Bruno Latour on how phenomena come to presence, *South African Journal of Philosophy*, 32(4), 311-326.
- Craig, N, Sommerville, J and Auchterlounie, T (2010) Customer satisfaction and snagging in the UK private house building sector, *In: C Egbu (Ed.) 26th Annual ARCOM Conference*, 6-8 September 2010, Leeds, UK, Association of Researchers in Construction Management, 1199-1208.
- Ericsson, K A, Krampe, R T and Tesch-Romer, C (1993) The role of deliberate practice in the acquisition of expert performance, *Psychological Review*, 100(3), 363-406.
- Farmer, M (2016) *The Farmer Review of the UK Construction Labour Model*. London: Construction Skills Council.
- Forcada, N, Macarulla, M and Gangolells, M (2016) Handover defects: Comparison of construction and post-handover housing defects, *Building Research and Information*, 44(3), 279-288.
- Gibb, A and Dainty, A (2013) 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.
- Hopkin, T, Lu, S, Rogers, P and Sexton, M (2016) Detecting defects in the UK new-build housing sector: A learning perspective, *Construction Management and Economics*, 34(1), 35-45.
- Hopkin, T, Lu, S, Rogers, P and Sexton, M (2017) Key stakeholders' perspectives towards UK new-build housing defects, *International Journal of Building Pathology and Adaptation*, 35(1), 110-123.
- Ingold, T (2013) *Making: Anthropology, Archaeology, Art and Architecture*. Abingdon: Routledge.

- Jingmond, M and Agren, R (2015) Unravelling causes of defects in construction, *Construction Innovation*, 15(2), 198-218.
- Lang, A, Glass, J and Goodier, C I (2016) Are housebuilders' production strategies a barrier to offsite construction uptake in the UK? In: Chan, P W and Neilson, C J (Eds.) 32nd Annual ARCOM Conference, 5th-7th September 2016, Manchester, UK Association of Researchers in Construction Management, 1245-1253.
- Löwstedt, M (2015) Taking off my glasses in order to see: Exploring practice on a building site using self-reflexive ethnography, *Construction Management and Economics*, 33(5-6), 404-414.
- Lu, N and Liska, R (2008) Designers' and general contractors' perceptions of offsite construction techniques in the United State construction industry, *International Journal of Construction Education and Research*, 4(3), 177-188.
- Lyon, D (2013) The labour of refurbishment: The building and the body in space and time, In: S Pink, D Tutt and A Dainty (Eds.) *Ethnographic Research in the Construction Industry*. Abingdon: Routledge.
- Mackenzie, J, Gibb, A G F and Bouchlaghem, N M (1999) Communication of safety in the design phase, In: W Hughes (Ed.) *15th Annual ARCOM Conference*, 7-9 September 2018, Liverpool, UK Association of Researchers in Construction Management, Vol.2, 569-78.
- Marrewijk, A, Veenswijk, M and Clegg, S (2014) Changing collaborative practices through cultural interventions, *Building Research and Information*, 42(3), 330-342.
- Mills, A, Love, P E and Williams, P (2009) Defect costs in residential construction, *Journal of Construction Engineering and Management*, 135(1), 12-16.
- NHBC (2018) *Modern Methods of Construction: Who's Doing What?* Available from <https://www.nhbcfoundation.org/publication/modern-methods-of-construction-whos-doing-what/> [Accessed 25/06/2018].
- NHBC (2016) *Modern Methods of Construction: Views from the Industry*, Available from <https://www.nhbcfoundation.org/publication/modern-methods-of-construction-views-from-the-industry/> [Accessed 24/06/2018].
- O'Reilly, K (2009) *Key Concepts in Ethnography*. London: Sage.
- Orstavik, F (2018) Negotiating and Knowing Built Quality. In: Gorse, C and Neilson, C J (Eds.), *Proceedings 34th Annual ARCOM Conference*, 3-5 September 2018, Queen's University, Belfast, UK. Association of Researchers in Construction Management, 717-726.
- Oswald, D, Sherratt, F, Smith, S and Dainty, A (2018) An exploration into the implications of the 'compensation culture' on construction safety, *Safety Science*, 109, 294-3002.
- Phelps, A F and Horman, M J (2010) Ethnographic Theory-building research in construction, *Journal of Construction Engineering and Management*, 136(1), 58-65.
- Pink, S, Tutt, D, Dainty, A and Gibb, A (2010) Ethnographic methodologies for construction research: Knowing, practice and interventions, *Building Research and Information*, 38(6), 647-659.
- Pink, S and Morgan, J (2013) Short- Term ethnography: Intense routes to knowing, *Symbolic Interaction*, 36(3), 351-361.
- Pink, S (2007) *Doing Visual Ethnography*. London: Sage.
- Plato (1974) *The Republic*. Harmondsworth: Penguin.
- Polanyi, M (1966) *The Tacit Dimension*. Chicago: University of Chicago Press.

- Polanyi, M (1958) *Personal Knowledge*. London: Routledge and Kegan Paul.
- Pye, D (1995) *The Nature and Art of Workmanship*. London: Herbert Press.
- Roper, P (1982) *Building Site Manual*. London: Northwood.
- Rose, W (1937) *The Village Carpenter*. Fresno: Linden Publishing.
- Sartre, J (1965) *Nausea*. Harmondsworth: Penguin.
- Sartre, J (1956) Existentialism is a humanism. In: W Kaufmann (Ed.) *Existentialism from Dostoevsky to Sartre*. New York: Plume.
- Shipton, C, Hughes, W and Tutt, D (2014) Change management in practice: An ethnographic study of changes to contract requirements on a hospital project, *Construction Management and Economics*, 32(7-8), 787-803.
- Stein, J G (2011) Speculative artisanry: The expanding scale of craft within architecture, *Journal of Modern Craft*, 4(1), 49-64.
- Styhre, A (2009) Tacit knowledge in rock construction work: A study and critique of the use of the term, *Construction Management and Economics*, 27, 995-1003.
- Sykes, A J M (1969) Navvies: Their work attitudes, *Sociology*, 3(1), 21-35.
- Wadick, P (2010) Safety culture among subcontractors in the domestic housing construction industry, *Structural Survey*, 28(2), 108-120.
- Yarrow, T and Jones, S (2014) Stone is stone: Engagement and detachment in the craft of conservation masonry, *Journal of the Royal Anthropological Institute*, 20(2), 256-275.