

THE ROLE OF ETHNOGRAPHY IN THE IMPLEMENTATION OF LEAN CONSTRUCTION

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ABSTRACT

Lean Construction is a radically new way of thinking about the construction process. To engineer its adoption means questioning assumptions, ways of thinking and practices - the culture - into which people have long been schooled. Therefore, efforts have been made to understand the existing culture; to establish the reasoning and rationales it embraces in order to change it. Part of this project has resulted in the presumption that there are mental models, mindsets or general dispositions to think and act in a certain way. While these constructs may be a useful first step in putting oneself 'in the other's shoes' in order better to develop and negotiate change strategies, there are a number of dangers associated with them. There are two in particular. The first is the 'cultural dope' fallacy where another's action is seen simply as the acting out of a version of that other's culture which has been constructed by the analyst. The second is the presumption that it is possible for an analyst to provide such constructs without being subject to the fact, which has become a commonplace in management studies, that everybody (including the analyst) has a point of view; a mental model of her own. With reference to case material, the paper explores some ways in which ethnographic research methods can help to avoid these dangers and at the same time contribute to the management of change.

KEY WORDS

Lean construction, ethnography, culture, research methodology, action research, change management.

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INTRODUCTION

The concept 'mental model' has been useful in trying to focus on the fact that what we think, believe and value influences the way we act (e.g. Howell et al 1996). Students of culture, of course, have long sought to establish the belief and value systems that underlie what people from different cultures take to be normal, right and proper behaviour. This pursuit has had several outcomes, amongst which is the effort to establish the norms and values that distinguish one culture from another and how these affect organisational behaviour. Perhaps best known of these is Hofstede's dimensions of culture (Hofstede 1980). However, there are two problems with these efforts. First, people's behaviour may be seen, simply, as the acting out of the culture as characterised by the analyst. This is dangerous since it forecloses enquiry into culture as a continuously emergent and creative process. Thus, for example Garfinkel's phrase 'the cultural dope' (1967) dramatises the fact that sociologists have created 'the typical-member of-a culture' whose behaviour is seen as exclusively evidence of this membership. This *fiat* is then put to various explanatory purposes, amongst which, as Suchman shows (1987), is to offer simplistic accounts of the connection between what people think and do, ignoring the immensely subtle processes by which people learn, innovate, communicate and so on. Second, there is the danger of ethnocentrism. This takes many forms. Of note here is the failure adequately to understand the culture of others because of the desire to achieve a summary account that reflects, in some way or other, the reason, often unspecified, for wanting that account.

How culture is conceptualised has practical implications for managing change. In this paper we begin by considering how work at the Lean Construction Institute addresses culture and in particular the use of the concept 'mental model'. We will argue that their emphasis on the detailed understanding of situated practice is consistent with an ethnographic (participant observation) approach to culture. Through the use of interview data from a project on which major organisational changes were being tried, we will then show that while the concept mental model could be used to interpret this material, several other readings of it are possible. In contrast to the mental model reading, which implies a blockage to change, the alternative readings are intended to draw out the potentiality for acceptance of change.

ETHNOGRAPHY

The ethnographic approach to the study of culture originated in anthropology and has been a feature of anthropological and sociological research for a long time. Possibly the earliest example of this approach is the work of Nikolai Miklouho-Maclay, who spent a decade from 1871 to 1882, studying the way of life of the people of the Madong district in New Guinea (Cheater 1989). Some important studies in anthropology and sociology have been Evans-Pritchard (1937), Whyte (1955), Wieder (1974) and Anderson, Hughes and Sharrock (1989). Some examples of the application of the approach in management studies have been Mintzberg (1973) and Kunda (1992).

The essential feature of the participant observation approach is that the researcher gets to know a culture by living within it. This means that the researcher learns the culture in much the same way that members of that culture learned it themselves: by talking to them, witnessing the way they live their lives, and taking part in their activities. There are a variety of ways in which such research can be pursued, depending on the time

available to the researcher and the extent of access to the research setting which s/he can negotiate. Much of the research is done through semi-structured interviews, or in-depth discussions with informants. It is common for the researcher to have a principal informant, who will provide descriptions, as well as act as a guide to the setting. Where direct observation is possible, this is always preferable and if audio recordings can be made, these prove extremely useful. The utility of video recordings is more controversial, since these are considered intrusive. Participating in the activities which are being researched enables researchers to test their impressions and reasoning about the setting in a way that is unavailable in any other research approach. Participation also makes the researcher's presence in the setting less intrusive, reducing its impact on the natural order of interaction taking place there.

Ethnographic studies can be conducted from a number of perspectives. Mintzberg, for instance, used a grounded theory approach, while Kunda worked from a critical perspective. Our own approach is ethnomethodological. This means that our focus is on analysing the ways in which people perform their mundane activities in a visibly orderly manner. The analysis stands as an account of the ways people make sense of (or order) the world and communicate that understanding in the course of their activities. That is to say that participants in a setting display, in their activities, *evidence* of an analysis of the setting. The purpose of EM analysis is to *evoke* and *clarify* the participants' analysis. Thus the EM analysis is not *constructive* but *explicative*. It seeks to tease out what is present in the setting and not introduce any analytic devices that are not already there.

We have argued elsewhere (Seymour and Rooke, 2000) that the detailed understanding of practice required of ethnography is an integral feature of the action research undertaken by the Lean Construction Institute. However, we also see a tension in the fact that this research explicitly aims to institute a new way of thinking; to change the culture under study. For much of the time, this is not a problem since the aim is to *demonstrate* the practical benefits of thinking about the production process in a new way. The change process consists of situated, practical demonstration where the 'proof of the pudding lies in the eating'. People become willing participants in the evolution of their own culture. For example, the conventional emphasis on resource utilisation as a means of achieving greater productivity can be shown to be a mistake. The 'physics of production' in construction obeys a different logic. But as Deming famously explored in formulating his 14 points, the profundity of the change that people need to undergo to embrace fully the production logic that he called for, is considerable and the reasons for doing so not easily demonstrated. Why this was so in Deming's case was that he was not just challenging the rationality of existing production methods, not even just the interests that were vested in the organisational forms that accompanied them, but a social and moral order. As such, an appeal to the 'facts' or attempts at rational argument and demonstration are simply irrelevant. To paraphrase Cotgrove (1982 p13) slightly on the arguments about environmental pollution - when protagonists in some debate appear to be arguing about some objective condition of, for example rivers and waterways, about which they both in fact agree, what they are arguing about - 'progress' or 'preserving the environment' - is defence of different moral and social orders - 'some state of society which is deemed to be valuable and worth preserving'.

TWO BODIES OF KNOWLEDGE

We have identified a number of such ‘orders’ in the construction industry in the UK (Seymour 1986, Seymour and Low 1990) which, while they coexist for the most part, are frequently the source of acrimony and dispute. A feature of them is the existence of two distinct approaches to knowledge about the possibilities and constraints of construction. Each of these approaches consists of a different set of practices for the acquisition, constitution, evaluation and application of knowledge. Each leads to the constitution of a body of knowledge which, while often complementing the other, can sometimes come into contradiction with it. The difference between them loosely parallels the distinction which Ryle (1963) draws between ‘knowing how’ and ‘knowing that’. The first of these is practical, implying the skill, or ability, to perform some task, or activity (*knowing how* to erect a falsework system, for instance). The second is an objectified form of knowledge, such as that possessed by academics and professionals. It is knowledge about something (for example, *knowing that* the square on the hypotenuse is equal to the square on the other two sides of a right angled triangle). Of course, all human beings possess both kinds of knowledge, but their knowledge of a particular domain of interest may be biased towards one kind, or the other. We have found this to be the case in construction.

THE STUDY

The following extracts from tape-recorded interviews with two site managers are taken from an extensive study of a partnered, fast-track project. The impetus for procuring the building in this way was provided by a number of engineers and managers from the client organisation and a design-build contractor. Already known to each other through work on previous projects, they successfully ‘sold’ this procurement route to the client’s senior management. While the project was generally successful, there was much scepticism and downright disapproval from site managers about the way things were done. First, we identify what might be seen as the existence amongst these managers of a mental model – what they see as normal, right, and proper about how things should be done. We might refer to this as a ‘contractual’, ‘hierarchical’, ‘transactional’, ‘merchandising’ or ‘product’ model, in short, a ‘mentality’ or set of attitudes that proponents of Lean Construction see as resistant to its adoption.

However, second, we propose that to categorise culture in this way would be to overlook some other features of what is evident here. Remembering Garfinkel’s injunction about ‘cultural dopes’, our purpose is not to find evidence of such a model, but to demonstrate the kinds of reasoning that inform the reading they offer. To put it another way, we are less concerned to characterise the *product* – their culture; to construct a version of their mental model, but to describe the *process* – the ways in which their beliefs, values, etc are formulated and expressed. This allows us, we think, to get ‘toeholds’ for collaborative change. It assumes that an organisational culture is not some underlying, determinable reality that can be objectively described but *exists in* the way it is described by the people that constitute it; the way a culture is practiced is through descriptions of it. This conception of culture is likely to be unfamiliar to researchers in construction management, even counter-intuitive, given the largely realist assumptions which the majority of them share. But, for example, formulations like ‘usual practice’, ‘best practice’, ‘company policy’, ‘contractual games’ and countless others, are not merely descriptions. They are *used* to make a culture *visible* for the purpose of

transmitting it and, indeed, enforcing it. To put it another way: these formulations are instructions that may serve the purpose of descriptions for researchers intending to produce accounts of industry practice (culture). However, their prior status is that of a consequential feature of the settings in which they originate. This conception of culture is the starting point of the practice of 'Appreciative Enquiry' (Elliott 1999). Along with a growing number of writers on organisation and management, Elliott emphasises that organisation is continuously sustained through language and the 'stories' we tell each other about it. These stories or readings are not so much *about* the organisation but *are* the organisation. Action and all material manifestations of it are variously read. How these readings are communicated and negotiated is the very stuff of organisation. Understanding how organisations change and the task of directing change, therefore, centres on the idea of organisation as text and the different ways in which we can read it. This is a distinctly different emphasis from the majority of treatments of organisational culture to be found in the literature (see e.g. Brown 1995) as a *thing*; an objective, definable entity. Rather, we are concerned with culture as a process, our purpose being to understand some of the generic features of this process. We emphasise too that what we try to demonstrate here is *suggestive* of an approach to understanding the management of change. Though we offer some practical suggestions for managing change which follow from adopting this approach, it is for people themselves to learn through using it. This is because the benefits of the approach are far greater than can be gained from reading the 'findings'. In meeting the primary objective of explicating the unique features of the setting under study; highlighting those features which are essential to the kind of deep understanding that is aimed for, it is not assumed that what is revealed will have generic relevance for other settings. It may do, but the search for such relevance brings with it the danger of premature foreclosure and defeat of the primary objective. To use the 'knowing how' and 'knowing that' distinction, the knowledge and understanding achieved tend to the former.

DO THE SITE MANAGERS HAVE A MENTAL MODEL?

We find that the views (rationales, beliefs, etc.) of the site managers in the study are stated in terms of a basic contrast between practical knowledge and theoretical knowledge. It relates to two issues: organisational arrangements and the relationship between design and implementation.

The following speakers can be taken to be saying that when projects do not have a clear contractual basis (partnered projects, for example) they are vulnerable to opportunism. Their model assumes a sceptical view of human nature and motivation which resonates McGregor's famous 'Theory X'. That is, people have to be controlled with the threat of legal or economic sanction; be given finite areas of responsibility with the financial rewards associated with them explicitly stated. Unless all this is recorded in formal, documented procedures, there is a tendency for any ambiguity and uncertainty to be exploited. Control and coordination between client needs, design and construction are effected through hierarchy. The issue as they see it, is who should be at the top of the hierarchy, designers or constructors.

The essence of partnering (they said) is simply good practice which, at its best, can be found in the construction industry already. Partnering is the new buzzword, promoted by clients who were instrumental in creating the contractual, uncooperative, confrontational

atmosphere in the construction industry in the first place by their lowest price procurement policies. To overcome the deeply rooted suspicion and mistrust which has developed over the years, it is not enough to talk about trust and openness. There must be a sound contractual basis if better, more co-operative relations are to develop.

Manager A 'People have been partnering for hundreds of years. Partnering in an uncontractual format is an insipid term. There are grey areas and people don't have defined tasks. That leads to problems. That is what has caused problems on this job. I don't think you can have a partnering project of this sort with the commercial concerns. We did have the commercial concerns here. You can't have partnering detached from the commercial aspects of the job. Here we did.'

A 'One of the problems on this site is that you've got people who don't understand partnering, not just the buzzword. They haven't got a clue -they're working in traditional adversarial (sic). Everybody has a traditional understanding of partnering and until it's in the JTC, the engineering contract, a recognised standard form, people will have different understandings of it. At the moment all it is is a buzzword.'

A 'There's no logical hierarchical link of the process of partnering. This job has been hindered in certain aspects by this rather lame attempt at being friends.'

There are here many of the features that Lean Construction proponents² have noted in conventional practice. The regulation envisaged in the above is based on the view that construction is a series of 'conversions', typically as represented in the Critical Path Method (CPM). These activities are identified largely on the basis of their time and cost implications and become the basis for works packages to be subcontracted. It is assumed that sufficient coordination of contractors can be achieved solely by means of initial programmes and budgets; through defining, awarding and enforcing commitments.

While formally rejecting hierarchical breakdown of work activities on this project and encouraging fluid participation of all participants in the total process, the underlying logic of hierarchical work breakdown remained. This gave rise to many coordination problems. Thus, a frequent comment about coordination meetings, for example, was that people were only interested in their 'bit', resented attending meetings if they thought that discussion did not concern their 'bit' or being 'guillotined' if matters associated with their 'bit' had been insufficiently aired, and so on.

In the following comments we see that the contractual view is closely associated with the view that the only viable authority structure is hierarchical, and frequently authoritarian. In the next quote, the only authority the speaker feels he has at his disposal is the threat of financial punishment. Partnering, as applied on the project, he believes, removed that authority.

A '[Partnering] I would say that it weakens your power rather than anything else. There have been times when you just wanted to grab a few guys and really fire a round into them, whereas because of 'Partnering' you feel handcuffed, y' know you've got the

² For example, see Koskela (1992).

'Partnering' handcuffs where I can't quite send that shitty letter to the guy, because that's not 'Partnering.' It's through the sort of, 'Wait a minute, we're 'Partnering' we can't do this, we can't do that'. Whereas you can do that. You can have a very strong position with partnering without appearing weak, whereas we've adopted a weak stance. 'They're our partners, we need those guys; get on with them.' Whereas they're letting us down badly in certain areas, and they deserve repercussions. They should be paying the price. It shouldn't always be money straight into their bank account. We should be taking some out when they mess up, that's part of the partnering process.'

The following speaker seems to be rather more ambivalent. His main concern is with the hard, unremitting work to which people were subjected. However, we draw attention to the control he sees as available to him and the dilemma of being deprived of it.

B 'There has been, I mean people have worked under a hell of a lot of pressure over the past six months, and people get a bit stressed out, and, you know they (pause) the partnership is perhaps not always, well, in my words, perhaps not all what it's cracked up to be, with regards to the sub-contractors, er 'cos sometimes I think, I mean on this contract, there's no financial disincentive for the contractors. If the contractor hasn't met any of his programme dates, so what? The only disincentive is that he hasn't made his bonus money, but no one is gonna take money away from him, from his contract price.'

B '[Is it better to have a retention?] Then they start saying: ' Well, you're not trusting us now you're threatening us with a bloody LAD or whatever; a big stick. Where's the trust?' But it's gotta work both ways.

B 'I would say we need to revert to the old traditional approach where we do design, managing, construct and we have engineers, assistant engineers, section engineers, senior engineers, subagents, site agents, contracts managers, project managers.'

B 'You have to have a thorough grounding in your construction knowledge and you also know the hierarchy system. We've got graduates here who expect to walk into shirt and ties and suits and manage when they haven't the technical basis. The best way to sort out a job like this is by old style GF's [General Foremen]. This job has got turned round because we've got GFs here.'

B 'There doesn't seem to be enough gap between the WPM [Work Package Managers] and the foremen in the sort of clout they have, y'know, like the foremen deal with everything unless they've got a problem. It seems that the WPM deal with everything and the foremen are just legs for them.'

B 'The only way that, one way of doing it is that you've got the design complete before you start, you've got a full scope of works for each contractor, and you address all the interfaces, within the prelims,' the special prelims,' so each contractor knows exactly what he's gotta do, he knows perhaps that he's gotta do part of the work, go away, come back again, go away, interface with two or three other people, erm, he knows that restrictions are going to be placed upon him. When he knows all that to start off with, he

can price it properly, and say to him, 'look, y'know we expect you to have a spirit of co-operation on this contract, blah, blah, blah, blah, blah,' erm, price that into your work!'

Belief in the need for hierarchical and contractual remedies tended to be reflected in attitudes to the purpose of documentation. The following speaker was asked for his views on verbal communication in the context of the aim on the project to reduce paperwork. He replied:

A 'It has got to be policed because you'll find problems occurring and people will say "Hang on, I never said that." Verbal communication should be encouraged between people that are within the same network; within a team it's highly important and within the immediate structure, but it has its limitations and it's very dangerous as well. This job, no-one has written a letter!'

B 'Everything needs to be recorded and traced. Once people know that they're being watched it adds that extra line manager. Your whole working mannerism changes and your man management, your time management personally improves.'

Finally, the following two statements relate to the lack of coordination (as they saw it) between design and implementation.

A Well, you know we've found that, we find that certain sorts of designers y' know at the very start had their design attitude, y' know, 'we're the design guys and you are the builders', y' know 'we wear suits and you wear jeans', 'we go out to lunch and you have a sandwich in you little hole of an office type thing.' You know it's almost like a culture thing, they don't see us as professionals, they see us as brickies, brickies with a tie ((laughter)) which is unfortunate. Y' know we can build things, they can draw it, y' know its easy to draw, and y' know even looking at myself and Allie, we can design as well, OK, erm we're maybe not qualified to do the structural designs, we know how to do them, erm but that would bore us to be honest. Erm so the structural guys initially, we had problems with Ron to look at an (issue warning) and Ron is, we've almost got him thinking the way we think, you know rather than, 'oh that's a problem, no I want that, I want that.' But you then say, but do you need it, you want it, but do you need it?' 'Well I don't need it but it would be ideal if I could', and I say 'well, but it will cost you money to have what you want, so tell us what you need. Y' know it's looking at that and it's actually getting him to buy into helping us, rather than the normal sort of, at one stage you could have almost painted the cabins blue and said we were [another construction firm], for the difference. It was like two different companies. It's a case of, 'we've designed it, we know best, we're the designers, you will build it, to the letter, no matter what', y' know, 'if it's a bad detail, tough, that's what we want', y' know, whereas we sort a look at things and we'll sort a reappraise how it should be done, we'll find from the tradesman even on site, they'll tell us, 'that's stupid, that will never work', y' know and we're like the liaison with the experienced guys, that's where the industry is failing at the moment, the fact that they are not taking into consideration what Joe Bloggs the carpenter knows out on site about 'Best Practice' y' know, even bricklayers, y' know you've got erm like the architects, the details we had initially on block work, you could

tell that they never, ever laid a block, seen a block, and knew what sizes they were. ((laughter)) you know the things did just not work, no matter what, they'd have us cutting things, they'd forget that if you cut a block it costs you money to cut it, in both men and machinery. Whereas, by maybe altering a dimension by twenty mil, would save x number of thousand pounds on the contract, but they don't see this, they just see that, 'I want that line of blocks there, and that's the ideal height, whereas it would have made no difference, they could have jiggled with figures and saved cutting and the usual sort of crap, erm y' know and they didn't seem to, er, grasp that you can't, if you want special stuff, if you want special ties or special blocks, or mortar, that you need to order that and it takes some time. It took us, erm, three-to-four weeks just to get an approval just for the block sample, which we done in a day. Now that could have been approved, the client had approved it, but the architect was sort of putting obstacles in the path, y' know worrying about the colour of mortar, which was being painted, erm just general finishes, it was silly, totally silly.

Q I mean could this relationship have been improved by having construction and design in the same building, or is it a lot more fundamental than...

A They should have been in the same building, there has always been a sort of 'them and us', and obviously because they are with the client, erm, they were always getting a slightly better deal it would seem, y' know we were left to it, and at times we were struggling severely, erm there was just so much information, we were, everyone said we were, going fast, we could have went twice as fast if we'd had the information at the time when we wanted it, we knew when we wanted it...

Q So they were getting it first, you're saying, design, and you're getting bits of it or...

A That's right, it was maybe done, at one time we were saying look, 'tell us what you're working on, send us, if a drawing is half finished, send it to us that night and then we know that you're working on it at least', erm and we can sort of start thinking of opportunities that we could gain a lot, we lost a lot of opportunities that could have been totally averted

A 'How many builders were involved in the design?' (pause) There wasn't one, there wasn't one builder, there wasn't one guy involved in doing any design co-ordination, any drawing co-ordination, erm, who was actually going to build it, or had ever built something, with the exception of maybe a barbecue in their back garden, ((laughter)) you know that's probably about it! Part of the problem was, we had the architects working on the cream, and what they tend to do as you know is the old scenario, they'll spend ten minutes designing the building, and then they'll spend the next two years designing the landscape, 'cos they can draw pretty flowers, y' know there's that one, we had the amenities, the best designs, and layouts, and blockwork and suchlike, were carried out in the amenities before the pallet set-down area, and the pods. The pods were programmed before the amenities, so then when we came to build these, we had no information hardly, we didn't have any layouts, we didn't have anything. But, if we'd have wanted to build the amenities, we could have, but we didn't want to, because they were not critical, and it was just the sort of short sightedness. Y' know to be honest the design team should have been led by a builder, and that didn't happen.

B There have been problems, because design at times has not been able to keep up with construction. That might not be the designer's fault always because they might not always know what the client has wanted, they tend to rely a lot on sub-contractors' design, especially on the services side, and if that doesn't work erm (pause) the interfaces between what the services contractor wants and what we're providing, say in the building as such, in terms of openings and structure for services to pass through doesn't always tie up.

Q Is it a question of buildability?

B It's not only buildability, it's also just understanding how construction actually works, it's not just the buildability, but certainly buildability comes into it a lot. It's just that designers sometimes think they know how to organise contractors, and that sort of thing, and they don't I'm afraid. It's not their field, and they should leave it to us over here. We have had problems where the designers have spoken direct to contractors, told them what to do, when to come on site, and that sort of thing.

ANALYSIS

As noted, it could plausibly be said that we see here evidence of a mental model. However, we are more concerned with *how* the speakers express or manifest their culture. We find that a basic device is that of contrast. There is a contrast between theoretical knowledge and practical knowledge. It is used with reference to two issues: i) the relationship between engineering design and what happens on site, and ii) project organisation.

The speakers know that on the one hand there is an objective body of knowledge which is shared by members of the engineering profession. We refer to this as 'engineering knowledge'. On the other hand, there is a body of practical knowledge that is possessed by experienced site personnel. We refer to this as 'site knowledge'. These bodies of knowledge are distinguished in three ways: the mode of acquisition, the mode of validation, and the domain of application. Engineering knowledge is acquired in colleges, mainly from books and lectures. It is heavily biased towards knowing-that, though some effort is made to provide laboratory and field experience. Site knowledge is acquired on site, in the normal course of the day's work, by observing more experienced people and by attempting to perform new tasks. Consequently, engineering knowledge is validated by the possession of academic and professional qualifications which stand as a guarantee that their possessor will perform in a competent manner, while site knowledge is validated only by the demonstrated ability to perform tasks successfully. Finally, engineering knowledge is concerned primarily with the theoretic viability of constructions. Site knowledge, on the other hand, is concerned primarily with the processes by which those constructions are physically realised. Of course, these two domains cannot be separated, they interpenetrate and it is this that leads to competing claims to truth.

We see a similar contrast being made about project organisation. Thus, for example, partnering may be a good idea 'in theory' but the very need for it was brought about by the clients, those up there, 'the suits' who never understood the practicalities of site work and who systematically undermined the give and take that enabled it, in the succession of contractual and organisational changes which were driven by the need for a low tender price. All 'they' know about is the 'bottom line'. Like the designers (in their account),

they've never been on a site, they 'don't want to know', they distinguish themselves from us, don't want to mix with us, etc. The irony is (they say), if there was more respect for 'the likes of us', what we know and could do would save them money.

The competing claims to truth which arise out of these contradictions can often underpin disputes which might appear to be about something else - economic interests, occupational rights (turf wars) or status/class differences. Thus, while this is, indeed, framed in terms of a turf war – who should be in charge, designers or builders? - the issue we think is more complex than that, but in this very complexity lie the possibilities of resolution. Two things may be observed. First a moral order, as defined earlier, is seen to be under threat. Second, it is subtle and multi-layered, continually evolving; not immutable but subject to change.

Some sense of how deeply such matters run is pointed out by Sharrock (1974). He shows that the relationship between particular bodies of knowledge and collectivities is such that collectivities can be said to have ownership rights over bodies of knowledge, noting that 'rights' is a moral category. These ownership rights are jealously defended. Thus, in a real sense, engineering knowledge belongs to engineers. Only engineers are properly qualified to make engineering decisions. Even if a non-engineer makes a correct engineering decision, this decision cannot be known to be correct until it has been validated by a properly qualified engineer. In contrast, site knowledge belongs to anyone who has site experience, whether engineer or not. Those who possess it are capable of making sound decisions about the construction process which are unavailable to those without such experience. Thus, they too are arbiters of truth in a particular domain.

Willis (1977) also observes that the divide which exists between the respective owners of bodies of knowledge can be profound. The preference for experiential over book knowledge can be extremely strong among manual workers:

“The shopfloor abounds with apocryphal stories about the idiocy of purely theoretical knowledge. Practical ability always comes first and is a *condition* of other kinds of knowledge.” (p56)

However, even among engineers, their site experience is highly valued. They can often be patronising or contemptuous towards the 'curly d's', as purely theoretical engineers are sometimes known. Similarly, engineers' confidence in their professional and scientifically based knowledge can lead to distrust and contempt for extemporized solutions coming from unqualified site personnel. These judgements are complicated by the fact that construction takes place within a particular set of contractual/social relationships. For example they may see any deviation from their design specifications in terms of another category 'contractor' as an attempt to 'cut corners', in order to increase their profits. It is regarded as a universal (and, indeed, almost acceptable) motivation among contractors, to try to 'get one over on the client'.

THE DISTRIBUTION OF KNOWLEDGE

It is clear that in determining who has access to, or properly owns, these bodies of knowledge, it is not sufficient to note a distinction between engineers on the one hand and unqualified site personnel on the other. Indeed, to capture even an approximate picture, it is necessary to recognise a whole series of distinctions that are habitually used: between designers and site personnel; between designers with site experience and those

without; between engineers ‘willing to listen’ and those not, between engineers and non-engineers, between contractors and clients’ representatives, and finally, between accommodating and non-accommodating Resident Engineers (REs). These paired categorisations work in a similar fashion to Russian dolls, one part of each pair containing the pair which follows it. The relationships between them all can be represented diagrammatically (fig 1).

However, it is to be stressed that such categories are situationally qualified; sub-categories are created and evolve. Of the many examples in the transcripts quoted earlier, we select a few. ‘Well, you know we’ve found that, we find that certain sorts of designers y’ know at the very start had their design attitude, y’ know, ‘we’re the design guys and you are the builders’. That is, they are not *all* like that and they *can* change. Similarly, note the two qualifications: ‘The only way that, one way of doing it is that you’ve got the design complete before you start, you’ve got a full scope of works for each contractor, and you address all the interfaces, within the prelims, the special prelims.’ The pugnacious tone of ‘there have been times when you just wanted to grab a few guys and really fire a round into them’ could be taken as evidence of the industry’s ‘adversarial culture’ but equally as simple frustration that his knowledge of what is going on on site is being ignored. It is to be noted that ‘there have been times’ (when?) ‘a few guys’ (which?)

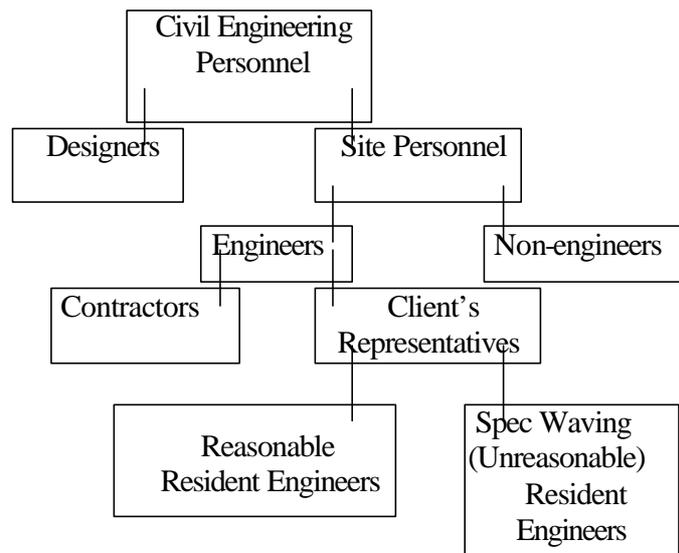


Figure 1: Paired Categorizations

why them? and so on). Finally, it would be very revealing, we think, to know more about what one of the speakers means when he contrasts ‘verbal communication [...] within the same network [...] the immediate structure’ with something else which he does not specify. His reference to writing a letter implies that the aim on the project to reduce paperwork was just another example of something being ‘alright in theory’ but had not been worked through in practice.

NEGOTIATING CHANGE THROUGH APPRECIATIVE ENQUIRY

What we tried to do in the previous section is to challenge the view implied by the concept mental model; that people’s attitudes and actions are formed and guided,

dominated even, by a coherent *gestalt*. Rather, it is fluid or malleable. What people think and believe, we suggest, does not 'drive' their action in quite the way it is commonly implied (Suchman 1987, Seymour and Rooke 2000). What people do is very much more a question of what is situationally evoked. This is not to suggest that people do not have principles or that they do not try to find consistency and coherence in what they do, but it *is* to suggest that in inferring the motive, values or the reasoning 'behind' people's behaviour we not assume a consistent 'position' as Fisher and Ury (1981) call it.

To put it another way, we have tried to show that the concept mental model and much of the generalising we see in management studies is a matter of jumping to conclusions. While texts on good negotiation practice consistently advise that we listen carefully to what people say, the strong tendency seems to be that we fit what we hear into our own projections. Moreover, as Elliott (1999) and Maurer (1996) observe, these projections tend to be negative ones, hindrances that need to be got rid of or put right. Closer attention to what people say and how they say it, as illustrated above, suggest that there are usually grounds for negotiating agreement which blanket categories foreclose. In other words, Appreciative Enquiry is about reading what people say and do as opportunities for shared constructive action, noting the subtleties of qualification and exception, rather than seeing the confirmation of an immutable cultural disposition. As Elliott puts it (p12): "The appreciative approach [...]is about choosing (or negotiating) to construct our organisation with an initial intentional empathy [to achieve] transformation of a culture from one that sees itself in largely negative terms – and therefore is inclined to become locked in its own negative construction of itself to one that sees itself as having the capacity to enrich and enhance the quality of life of all the stakeholders and therefore moves towards this appreciative construction of itself."

We suggest that appreciative versions of what these two managers are saying would emphasise, not the contractual/hierarchical content, but their frustration at the non-acceptance of and disrespect for their kind of knowledge. They see people making decisions, whether in design or setting up organisational arrangements, which are not rooted in the situational knowledge which they feel they have. It is normal right and proper, they think, that people who know how to do it should do it. Designers and people who favour new procurement methods don't know the reality as they do. However, their negative characterisations, their arguments in favour of tidy contractual boundaries and hierarchical certainties coexist with their desire for design-implementation integration and to be relieved of rush, panic and stress.

CONCLUSIONS

The practical implications of what we have argued in this paper have been been announced frequently – walk the floor, listen to what people say, don't jump to conclusions, don't project your own fears and inhibitions on to others and so on. What we have tried to emphasise here is a mode of analysis which is revelatory – carefully exploring what is there rather than foreclosing it by applying *a priori* assumptions and categories. Using this method in specific circumstances may be expected to reveal possibilities otherwise hidden. Thus, while we endorse the summary or generic slogans of the kind cited above, we are trying to delineate a mode of research which will complement or help enable people to put them into practice. We observe that its methods

of finding out and its aims as to what is to be found out challenge conventional expectations about research and the way it contributes to practice.

We also observe that the work of the Lean Construction Institute also challenges (mostly implicitly and in what is practiced rather than what is written) conventional expectations about research, emphasizing the radical importance of situated understanding; of 'telling it like it is'; of cultivating an operational system whose foundation is the replacement of abstractions, vaguaries and wishful thinking with what is explicitly and reliably known. However, operationalising this principle with regard to matters of human intention, motive, values and belief is less easily done than it is with tangible outcomes – PPC, for example. The role of ethnography is to furnish information on these matters; to help change agents achieve a thorough and equally reliable understanding of the situation to be changed. This is demanding and time consuming. It involves the careful monitoring, recording and analysis of what goes on. It requires great effort on the part of the specialist ethnographer and on the part of those who might use the materials s/he supplies. Given the usual pressures to produce results, to provide executive summaries, progress reports and so on in bullet point terms, we see an inevitable tendency to oversimplify; to look for the 'bones' of what is being said (consider the impatience that is engendered at having to 'wade through' the lengthy transcripts offered in this paper); to characterise a given culture (attitudes, beliefs and so on) in a way that forecloses further enquiry. For example, even on projects (as in the one cited in this paper) where there is formal commitment to, and, indeed, genuine efforts towards openness and trust, there was much talk amongst the 'change agents' of 'dinosaurs' and a readiness to blanket a wide range of comments and observations as obstructionism. A consequence, as we have seen in the foregoing transcripts, was frustration and resentment about not being listened to. We see this as a waste that can be prevented. Thus. The ethnographer's role is to reveal the actual analyses that practitioners use to make sense of the settings in which they work and that guide their activities in these settings. In a sense this role consists in giving a legitimate voice to members who are exposed to and/or required to change. We emphasise 'legitimate' because what is heard is the product of a *bona fide* research process with its own epistemological credentials. The dismissal of much of what is said and heard as *mere* opinion, for example, is a consequence of a conventional research tradition which effectively wastes crucial data about what needs to be understood.

Two aspects of such practitioners' analyses are of particular importance to Lean Construction initiatives. First, resistance to change may come, for example, from attitudes of suspicion and resentment. Here, the Lean Construction practitioner has the choice of embracing resistance and co-opting the energy that it represents (Maurer) or negotiating the 'corridors of comparative indifference' (Wrapp, 1984). Second, regarding the elements that are conducive to the introduction of Lean Construction, the challenge is to identify these elements and build on them by bringing Lean Construction solutions to bear on perceived problems. Both involve a thorough understanding of what is being said and the context in which it is said.

For example:

"Part of the problem was, we had the architects working on the cream, and what they tend to do as you know is the old scenario, they'll spend ten minutes designing the building, and then they'll spend the next two years designing the landscape, 'cos they can draw pretty flowers, y' know there's that one, we had the amenities, the best designs, and

layouts, and blockwork and suchlike, were carried out in the amenities before the pallet set-down area, and the pods. The pods were programmed before the amenities, so then when we came to build these, we had no information hardly, we didn't have any layouts, we didn't have anything. But, if we'd have wanted to build the amenities, we could have, but we didn't want to, because they were not critical, and it was just the sort of short sightedness."

First, the resentment is obvious. But is it an insurmountable obstacle to change or does it offer the possibility of change? This is a judgement that must be made on each occasion by the ethnographer and Lean Construction practitioner in consultation with each other. It must be done with full regard to the context in which the talk was originally produced. Crucially, it cannot be taken as a straightforward description. The talk is an activity in itself. Thus, it might be glossed as; just moaning, making an excuse or justifying a course of action. On the other hand, it might be glossed as making positive steps towards change. If we strip away the insulting characterisation of architects, the practical problem is revealed. Lean Construction can provide an answer. The strength and persuasiveness of this answer is that it is provided in relation to a real problem experienced by this manager. Generic conclusions are all very well and no doubt necessary to the Lean Construction practitioner who is looking to formulate his/her understanding in a communicable way, but they stand in a reflexive relationship to the situation in which they are used. Our generic conclusion, then, is that the Lean Constuction practitioner can be aided by an ethnographic researcher whose role is continually to make explicit the needs and problems of *this* or *that* manager rather than this or that *type* of manager.

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