

DOING LEAN CONSTRUCTION AND TALKING ABOUT LEAN CONSTRUCTION

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Abstract

For the ideas and practices of Lean Construction (LC) to be successfully disseminated, effective communication is at a premium. This communication takes place in various contexts: workshops, seminars, conferences, and 'out there', in the industry. Conventionally, a number of distinctions, the most common of which is one between *theorising* and *practice*, are used to characterise what goes on in these different settings. We suggest that, when we wish to address cultural phenomena like LC praxis (theory/practice), where the communication of what it is we mean plays such a vital role, such distinctions are misleading and give rise to much confusion. Instead, therefore, we propose that statements about LC, which might be assumed to have a distinct theoretical or abstract status, be seen as a kind of *act* and be treated as any other kind of act. In other words, we will suggest that *talk* about LC, whether this be referred to as theorising, explaining or describing and *practice* (doing LC) should be conceived of as essentially the same kinds of activity.

Keywords: lean construction, communication

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INTRODUCTION

Lean Construction (LC) is a philosophy, a radically new way of thinking, talking about and re-forming the processes and organisation of construction. The International Group on Lean Construction (IGLC) brings together people—academics, consultants and other practitioners—from a range of different countries. Effective communication is at a premium if its ideas and practices are to be disseminated. This paper aims to contribute to this end, noting with humility that the *lingua franca* of the Group is English.

LC requires that the familiar and everyday be looked at afresh and alternatives be imagined and turned into practice. To achieve this, a conceptual apparatus, a specialist terminology or set of thinking tools is used. Some of the terms are imported from the Japanese (e.g. *kaizen*, *muda*) and some familiar terms are given new emphasis and meaning (e.g. flow, conversion, process/product). Evidence that the new way of thinking is being adopted is to be found in talk, such as occurs on occasions like this, where we try to extend our theoretical or conceptual grasp of what is at issue by articulating our thinking and exchanging our experiences, and on site or in the design office, where we try to apply the practices that the talk is about; trying to learn from it, trying to apply what we learn in one situation to another and, again, using these experiences to refine our conceptual grasp and so on.

We will propose that there are a number of distinctions or separations which are conventionally used to characterise what goes on in these different settings. The most common are *theorising* as opposed to *practice*; *thinking* as opposed to *communicating*. We will put the case that these distinctions are symptomatic of a fundamental separation which is characteristic of a mode of thinking that we have all to some extent inherited as late twentieth century people. In particular, we will propose that it is useful to think of theorising simply as a kind of communicating and that its adequacy be assessed in just the same way that we assess effective and ineffective communication.

If this all seems unduly philosophical, given the theme of this conference—LC in practice—we insist that our purpose is radically practical and we will illustrate what we are getting at with reference to two cases. The first concerns a construction industry workshop on the impact of culture on technology transfer; the second concerns an, as yet, stalled effort to install the Last Planner. We will consider the implications of these two cases.

CASE 1: TALKING ABOUT CULTURE

A recent workshop on *Cultural Factors Affecting International Transfer of Construction Management Best Practice* was organised by the Norwegian Building Research Institute (Byggforsk 1997) and sponsored by CIB. The reason for the Workshop—the same reason for setting up CIB's Task Group TG23 on culture (CIB 1997)—is the widely held assumption that throughout the world there are different traditions, different ways of doing things which influence the transfer of technologies (LC, for example) from one context to another. What are these differences? How does one study them? What does one do about them?

The first session of the Workshop was devoted to reviewing the various frameworks available for addressing culture (e.g. Hofstede 1980, 1991) Although it was agreed—taken for granted, even—that the discussions needed to be 'structured', in subsequent sessions, these frameworks were ignored, and other ways were sought to organise the discussions. One session became rather tricky, as various ways of proceeding were proposed. Somebody stood by a flip chart recording what were called

‘factors’ or ‘headings’, offered by the group, which referred to ways in which culture affects how technologies and practices are transferred.

In these efforts to establish some kind of ‘framework’, the following exchanges occurred.

A Just to make sure that we don’t get too abstract here, I wonder if it is possible to choose some examples and structure what we are talking about around those physical examples [...] If you take any specific issue, these headings [will] appear in different proportions. You could tidy it all up by defining more clearly what we are trying to do.

B [The] trouble is, we don’t actually look at the transfer of technology internationally. In a sense, our discussion goes down to things we are more comfortable with and there is a tendency not to address the issues that the workshop is structured around. We all do the same. It’s much easier to talk about the problems within our own country, but the idea of this meeting, since it is an international meeting, is to say: ‘well, yes, but what about the bigger issue of how things can actually be translated worldwide?’

A Can I show [you all] something? [puts slide on OHP] I have difficulty in appreciating things if I can’t see the practical implications of them. You can talk round in circles and I think it depends on what you are actually trying to transfer. [...] I believe that in different countries people will have different approaches and different perspectives, in terms of how they particularly see that [transfer]. So, again, trying to think of things in practical terms, I was thinking, well what are we trying to transfer? Because it is only when we say, ‘this is the specific problem. We are trying to transfer this. What are the barriers?’ that you can begin to break it down and understand that. We can discuss the framework, but it will be a very loose framework and when you actually come to address specific issues you actually have to focus in and find out what it actually is that you are trying to transfer.

C [So are you saying that] we need to have some concrete examples on what to transfer?

A I don’t think it necessarily has to be about transferring a specific technology, or people management, or whatever. But if you look at that as a series of headings for example, it just illustrates that the construction process is a complex set of issues and maybe we should be focusing on the kinds of issues we are trying to transfer in terms of a specific technology.

C OK, thank you.

After a some more discussion in which the effort was made to identify what kind of ‘product’ should come from the workshop (a Report was agreed to), another delegate, also emphasising that he was a practical man, asked what people would do if asked by a student how to go about doing a PhD on the topic of culture. Using this analogy, he offered another framework. This did not seem to serve the purposes of the group either. Yet another delegate asked why we didn’t just describe some of our experiences where we thought culture was an issue. This stimulated the following comment.

B There is an interesting dimension in this discussion. There is a camp that is arguing that we work from experiences and illustrations, and there [...] is a group that wants to talk about theory and ideas. As far as I can see, it is essential that both are brought together because there is no point in [discussing] experiences unless that stimulates the ideas and there’s no point in the ideas unless you can illustrate them with the experiences. So, my suggestion is that whatever format we take, there ought to be some combination of ideas linked with experiences, linked with actions that you might want to take. There seems to be an assumption that there is a conflict between

the two. I don't see any conflict. I think the two have got to confront each other to make some progress.

Later, when the meeting had broken up into three smaller discussion groups, the pattern that emerged was (to us) a familiar one. Delegates made general statements of the sort that in their country there was high power difference (thus using one of the 'dimensions' of culture provided by Hofstede's model) and that this made it difficult to get people to accept a redistribution of responsibilities that (say) LC requires. They then illustrated what they meant with examples from their own experience.

What can this material tell us? We will attempt here to point out some of the features of the discussion that are germane to the points we will subsequently raise.

Note, first of all, how the first speaker seems to expect that the discussion will become abstract. For him, this is clearly undesirable; there is an implied value-judgement in the use of 'too abstract'. Thus, he seeks to 'close off' that particular avenue, to ensure, so to speak, that an appropriate level of abstraction is maintained. And to do this, he suggests the use of 'examples', and 'physical examples'—in other words, not hypothetical or invented examples—giving a reason (the headings will appear in different proportions) for his choice. Finally, he sees the need to 'define more clearly what we are trying to do'. But what does he mean by 'more clearly'? 'More clearly' in this context seems to mean 'more specifically': the clarity he is seeking will be achieved by the use of 'physical examples'.

The second speaker seems to disagree. His response that, were the first speaker's route to be followed, the discussion would '*go down* to things we are more comfortable with' is no mere observation of fact; there is a clear value judgement here. He is saying that, if examples are used, the discussion will 'go down' and that this is a bad thing because 'we don't actually look at the transfer of technology internationally' and we don't 'address the issues that the workshop is structured around'. He therefore reiterates (what he takes to be) the meeting's purpose—to address the 'bigger issue(s)'. By this we understand him to mean (something like) the more generic issues; the issues that have trans-situational applicability; issues that are more abstract, more generalised, less specific, less idiosyncratic and less parochial than those things with which we are (merely) comfortable.

But the first speaker perseveres, trying a different approach: he can't understand things if he can't see the practical implications of them. He needs to see practical implications of the things that are talked about. He wants to know, 'what do I do?' Hence he points to dangers of abstraction—that the meeting will end up 'talking round in circles'. He recognises that in different countries people will have different approaches and different perspectives¹.

He mentions (twice) the need to address specifics so you can 'focus in'; only then do you 'find out what it actually is that you are trying to transfer'. He acknowledges that 'we *can* [if we really want to] discuss the framework, but it will be a very loose framework'. By 'loose', we understand him to mean abstract, decontextualised, generalised and non-specific².

¹ Given this, our corollary, which we will outline below, is to argue that if we are going to be successful in transferring ideas, a logical first step is surely, therefore, to explicate (make explicit) those different perspectives, to try and 'see it from the other fellow's point of view'.

² To some extent, he can be seen as calling into question the very point of the framework, enquiring into the utility of moving away from specifics, because when you come to address other specifics, you have to abandon the decontextualised model, understand the present situation ('what it actually is that you are trying to transfer') and then somehow recontextualise the decontextualised model (normally) without reference to the original situation(s) from which it was first produced. With a generalised

His next reply again highlights the dangers of abstraction: as our speaker puts it, ‘if you look at that as a series of headings [...] it just illustrates that the construction process is a complex set of issues’.

Having now described some features of our case study material, below, we will explicate some of the lessons that can be drawn from it.

THE SOCIAL ORGANISATION OF THE WORKSHOP

The first point to note is that the group itself was *doing culture* in that setting; they were looking for a way to organise *themselves* as well organise the *topic* (culture) for discussion. Some of the features of this process were the need to get agreement on what they were there for; the need for agreement on what to produce, in this case a report; the need to establish some common vocabulary. There was, of course, all those other taken-for-granted features of the situation that were less remark-able; the desire to maintain harmony; the necessity to look for compromises; a number of references to coffee breaks where ‘problems could be ironed out’, and so on.

Available to them were conceptual schemes which characterised culture, the topic they were there to discuss, what kinds of thing it referred to; why it was germane to their purposes; how it was supposed to have an effect on their concerns. Though they came from different national backgrounds, a basis on which to organise themselves was given in what people like them, in that kind of setting, do (someone with no such experience would have wondered what the heck was going on). An expectation of (at least some of) the group was that there should be some kind of cognitive framework. What role is such a framework expected to fulfil? Here, there were differences amongst those present. B summarised it as two camps. Another way to describe it might be two different expectations about the role of cognitive frameworks.

One view is to credit the cognitive framework used with an independent status separate from the phenomena to which it refers. We think this is what A was alluding to when he said ‘we mustn’t become too abstract’. We are not saying that we can’t or shouldn’t talk in terms of cognitive frameworks; the fact is, we do engage in such talk, just as we engage in many other different kinds of talk, all to achieve different purposes (chatting, gossiping, explaining, instructing, etc.). Although, in fact, everybody knows this, it might have been useful to draw this commonplace knowledge to the attention of the workshop. For, despite the fact that everybody does know this, there is a widely-held assumption about the way language works which is the basis for a further assumption, which is that it is possible to develop a purified non-contingent language for describing cultural reality; of getting beyond what is incidental and superficial, to the way things *really* are. And this is what we think frameworks, such as Hofstede’s, for example, aim to do.

It amounts to this: abstract symbols (words) are taken to stand for or represent phenomena. Lee (1991, p200) puts it as follows:

“[It is a tradition that treats] natural language, or language in general, as though it were *fact-stating*. That is, language is seen as making reference to, or corresponding with reality; as expressing meanings, mental entities or ideas. It follows, therefore, that through an examination of language, its propositions and formal expressions, we should be able to arrive at the society’s corresponding

framework, the original context of its production and consumption (someone else’s) is first abstracted away (the reader is rarely given the opportunity to see how this has been done), leaving future potential users to then (somehow) reapply context (their own) to see how the framework might be appropriate for their situation.

ideas or thought objects. Language can thus provide for the investigator access to a society's way of thinking or its cultural 'reality'."

Thus, words are assembled into meaningful wholes following the rules or grammar and syntax and are credited with a separate or independent status from whatever it is they refer to. The view that we take, in contrast, holds that while the separation may be a useful assumption for some purposes, when we wish to address cultural phenomena like LC praxis (theory/practice), where the communication of what it is we mean plays such a vital role, it gives rise to much confusion. This confusion can be eliminated, or, at least, clarified, if we hold to the principle that statements about LC, which might be assumed to have a distinct theoretical or abstract status, be seen as a kind of *act* and be treated as any other kind of act. In other words, we will suggest that *talk* about LC, whether this be referred to as theorising, explaining or describing and *practice* (doing LC) should be conceived of as essentially the same kinds of activity.

CASE 2: IMPLEMENTING LC - A STALLED ATTEMPT

A second (much shorter) case may make this clearer. A workshop on LC for practitioners, given by Lauri Koskela, Glenn Ballard and Greg Howell, was held in UK last year. One delegate at the workshop, a project manager from a UK construction firm, followed up on it by writing an article for a professional journal and an internal report for his firm recommending LC. Interest was expressed by the firm and initial moves were taken to install the Last Planner on one of the firm's projects. Some months ago a project was identified and Glenn Ballard provided assistance (for which we are very grateful) on how to set the initiative in motion. So far, we have not moved any further forward. We frankly do not know why the attempt has stalled (if not failed).

Several standard possibilities come to mind. We ourselves have not adequately 'sold' the idea. The commitment in time and energy required of the firm was greater than at first anticipated. The firm does not think that its current procedures can readily be aligned with those of the techniques we intended to install. The firm has chosen to apply other improvement techniques on other projects. The firm was not able to get the collaboration of the client and/or subcontractors. The project manager who attended the original workshop was not able to get the go-ahead from his superiors. We do not know. We use this case to make the following points. The project manager in question 'understands' LC to the extent of being able to write an excellent and persuasive article. However, how an idea is explained and how it is understood are dependent on the occasion for which the understanding is required and the explanation given. As noted, our explanations of what constitutes LC have failed on this occasion for the kinds of reason indicated above. Our explanation of what LC consists of, for example, could have met with the response (as it in fact has done on other occasions) 'well that's business process reengineering and we already do that'.

To an extent, we understand what LC is 'about', as did the project manager. But what we have difficulty with is understanding *how* to communicate it effectively in order to get a project in motion (and then, perhaps, once in motion, we find out that we don't understand after all!) and, consequently, how to develop our understanding. In an important sense, then, we *don't* understand it, because we don't have the experience to give meaning to the words we use. Glenn understands far more than we do, but consider in what that understanding consists. Amongst the materials that Glenn sent us was a schedule for organising a social process; the process of installing the Last Planner. It consisted of detailed agendas for a series of meetings with key points to be made and key questions to be asked of those involved in the initiative. Whether we could have learnt to use it as Glenn uses it, we have yet to find out. In short, what Glenn provided

was a recipe for an act of communication: what the Last Planner principle consists in. What Glenn knows, we submit (with due respect to Glenn), is not so much a set of concepts, a theory or thinking tools *and* an ability to put them into practice—which is the way it is conventionally conceived—but a language-in-use-and-for-use. What Glenn knows is inseparable from what Glenn (or Lauri or Greg) is able to do.

Language, we repeat, is used for different purposes on different occasions. Thinking about, talking about and doing LC are, in a sense, different phases of the same project. We think that this point closely parallels a key principle of LC itself: ‘production completes design’ (Howell et al 1996). In the same way design should not be seen as a process distinct from production, so the idea, the theory or whatever we wish to call it, is only known or understood in the act of articulation. This is not necessarily to question the way we think, reason or imagine but to assert that when we commit ourselves to the articulation of ideas we are in the realm of communication and are talking about the *use* of language.

The events described above—the culture workshop and our effort to set up the Last Planner are instances of culture in action. The questions then inevitably arise: what kind or type of culture are we observing in each case? Are we saying something about, say, the conservatism of British culture and its resistance to new ideas? Is this case typical? and so on. In short, the expectation is for some kind of statistical validation before we are able to claim that we know something about culture. But of course we all know about culture. We do it all the time. What kind of demonstration do we need to make about what each of us knows about how culture affects the transfer of know-how or how to set up the Last Planner? As we have suggested, we need rhetorical skills and, amongst these skills, the presentation of statistics which show how successful LC has been is a powerful persuader. However, and this is a similar problem to that of cross-firm benchmarking, there is the expectation that it must be possible to make general statements about particular cases for them to be useful. On the contrary, for generalisations expressed in generic terms given by a conceptual framework to be useful, it requires that we have a thorough and accurate understanding of what the terms refer to—comparing like with like. It is worth noting here that while Japanese production philosophy is based on the use of statistical inference, the crucial issue is the *meaning* that is and can be attached to given data sets.

Therefore, our answer to such questions is to ensure that we have an accurate and thorough understanding of the phenomenon in question, and, as we have noted, such phenomena are both highly complex and commonplace. They are both obvious and not obvious. The capability of a Glenn or a Lauri or a Greg is that they know what to say and do in particular settings; they can communicate LC. Given that, as well as being capable men, they are also modest, they will, no doubt, say that much of the time they are uncertain about what to say or do next. They might say, or others may say about them, that they have, or their effectiveness would be improved if they had, some coherent theory on which to base their talk and action. Let’s therefore now consider how such theory is expected to work.

Such theory is to be found in the work of Durkheim, Weber and many lesser theorists including Hofstede. Taking Durkheim first: his assumption was that language is a formal, classificatory system which refers to, but is separable from, the elements of the cultural system. This conception of the relationship between language and culture invites us to do several things. It invites us to think of language (in which the theory is expressed) in a highly abstracted form and not to treat language in the way it is actually used. It frees us to seek a relationship between action and language categories by treating the latter as cognitively encoded thought structures. As Lee (1991, p199) puts

it, ‘language is [seen as] the gateway to the “Group Mind”’: establishing the formal properties of the language system is held to reflect or mirror the properties of the cultural system.

It also invites us to ignore the particular ways language is actually used to perfect a pure (scientific) language on the assumption that it can be applied back to the reality that actual language only imperfectly captures.

The fact is, as was evident in our first case, trying to organise the discussion in terms of a formal conceptual system took place within all the everyday ways we organise discussion. The provision of such formal languages cannot replace ordinary language and cannot describe what they aim to describe.

THE USES OF LANGUAGE AND THE USES OF THEORY

The two case studies given above illustrate some problems which occur when we attempt to communicate our ideas. How can we start to tackle these problems? Further, can ‘lean thinking’ help us in this regard? Finally, what consequences do the answers to these two questions have for the development of Lean Construction Theory?

The approach we adopt is based on the observations of the philosopher Ludwig Wittgenstein about the nature of language in use. Initially, Wittgenstein adopted a view of language which is very widespread, particularly among those who seek to build theories. It can be summarised as follows: the purpose of language is to describe the world. In his later work he abandoned this position, holding instead that language has an *indefinite* number of uses. Thus, in addition to describing, language is also used for instructing, claiming, exhorting, insulting, excusing, endorsing, encouraging, objecting, provoking, etc. The use of language to perform some of these actions has been described above.

In answer to our first question, it is our contention that overcoming obstacles to communication may be facilitated by considering the use we are making of language, what, if anything, we are trying to achieve with it. In the first case study, a problem has arisen in the following way. Various techniques exist which are held to improve the efficiency of the construction process. We wish to communicate these techniques. Cultural differences are perceived as an obstacle to this communication. What, in practice, do these ‘cultural differences’ amount to? How do they constitute an ‘obstacle’ to communication? How are we to overcome this obstacle? To what extent do we need to talk about the techniques themselves, in order to do this?

This is a typical problem for theorists, when theory is conceived as generalisation, because generalisation involves abstraction and abstraction, by its very nature, loses, or otherwise conceals, much information about specific cases.

Both case studies concentrate on the problem of communicating innovative ideas. Conventionally this might seem like a problem of providing a description of the idea (the procedure to be followed, or whatever). However, it can be seen that many other activities are involved: warning, proposing a course of action, criticising, asking permission, making a plea, indicating, asking a question, compromising (case study one); persuading, negotiating, instructing (case study two).

Therefore, taking this (praxiological) view of language—language as natural-language-in-use—what can be said about our cases?

1. It can be seen from case study one that talking about a problem (how do we overcome cultural differences) is identical to thinking about that problem. Indeed, there is little other justification in holding workshops like the one reported, or indeed the present one!

2. It can be seen from case study two that talking about lean construction (persuading people to try it, negotiating the conditions under which it is to be undertaken, instructing people as to its methods) is identical to doing lean construction.
3. In the ways that talking about lean construction *is* about describing lean thinking, it is closely related to that activity in the following way: a) we often think in words; b) learning about lean construction is about reading or hearing descriptions of activities, or about following instructions for those activities; c) formulating a clear description of lean construction is one thing we might mean by the term ‘theorising lean construction’.

There are, however, other things we might wish to do under the rubric of theorising lean construction. We may wish, for instance, to formulate a *convincing* account of lean construction. In this case, we would not be simply describing it, but devising a description which will appeal. In this case, we would not want to rely entirely on logic and fact, but also to employ rhetoric.

Furthermore, we may wish to provide an account of lean construction which facilitates further advances in the field—which allows us to generalise from one successful practice, in order to develop others. In this case, the account we develop will involve abstraction. The tension between this desire to abstract and the problem of losing sight of the phenomenon from which our abstractions are taken is explored in case study one.

CONCLUSIONS

Fenves (1996, p16) suggests that ‘if we are to be recognized by our peers, we must describe our work in a form that is respected, particularly in academic circles’. What we have tried to outline, with reference to a workshop on culture, is the way this search for respectability is conventionally conducted. In this respect, we concur with Fenves (*ibid*) who observes that, ‘in engineering at least, academic respectability is based, first, on the attributes of mature disciplines and, second, on established formalisms of the physical sciences of mathematics’. Symptomatic of this mode of working is a desire to articulate generic concepts, to develop and adopt a formal language to describe what we have learnt, to attribute concrete features to situated relationships; in short, so to speak, to separate out the essence or core of LC theory.

It seems to us that the project of theorising lean construction is still in its early stages—though we look to speakers at this conference more knowledgeable than ourselves to inform us of the state of the art. We submit, however, that progress in LC (both practical and academic) will be greatly aided, not by restricting ourselves to the narrow agenda that Fenves describes (and which he endorses as a ‘fact of life’), but by considering and reporting *the various uses to which theory can be put* and, indeed, looking for other uses which may become apparent.

What we have found so stimulating in the mainstream of the work of IGLC is its emphasis on ‘situatedness’ and on the flows of meaning that constitute construction projects. By this, we mean that generalisation at the substantive level is mistrusted and attention is focused on making explicit that which is normally taken for granted. We suggest that this should continue; that we should not ourselves fall into the trap of the ‘product’ way of thinking which, as it were, translates these socially constituted processes into packaged versions (or reifications) of them, thence to be traded in such a way that the processes to which they refer are ignored either as somebody else’s business or as so obvious as not to warrant attention. Thus, we see the concern with ‘process’ and the efforts to comprehend and communicate it—attending to and

describing all those highly sophisticated social processes by which and through which construction is done—as the major concern of LC, in order to do it better.

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