

How local is local knowledge? Space, time, and knowing in project work

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Introduction

Numerous authors have identified a polarisation, or even rift, in theories of organisational knowledge and learning. Cook and Brown (1999), for example, have written about contrasting epistemologies of 'possession' and 'practice'; Gherardi (2000) has drawn a sharp distinction between practice-based theorising on organisational knowledge and mentalist or functionalist perspectives; and Swan *et al.* (1999) have characterised approaches to organisational knowledge as lying on a continuum between cognitive and community models. While it would be an exaggeration to say that practice-based approaches to knowledge have supplanted cognitive or mentalist perspectives, the former have arguably launched a persuasive critique against the latter which has proved increasingly difficult to ignore. However, there is a puzzling ambiguity in practice-based approaches which limits their otherwise important contribution to debates on organisational knowledge. This concerns issues about the mutually constitutive relationships between space, time, and knowing. What we argue in this paper is that the shift in perspective associated with practice-based approaches from a static, individualistic, functionalist, and entitative view of knowledge to one which emphasises knowing as a dynamic, situated, practical, and collective accomplishment, has not been fully paralleled by an equivalent shift in conceptions concerning the interplay between space, time, and knowing. This has important implications because the understanding of context, setting, or situation which is so central to practice-based approaches is incomplete without explicitly engaging with conceptions of time and space. While this may appear to be an unduly abstract consideration, it is no exaggeration to

say that these dimensions are inescapably woven into the fabric of organisational life. To leave them undisturbed and unexamined is to promote a view of context which is strangely at odds with the spirit of practice-based theorising.

This is not to say that practice-based approaches have no implications for how time and space are conceptualised. These facets are so ingrained in our everyday language, consciousness, and experience that particular conceptions of space and time are persistently invoked in our efforts to make sense of, talk about, and act in and upon the world. Metaphors of time and space, for example, are a regular feature of language which are taken for granted, yet which “enable and constrain particular ways of seeing and being in the world” (Schultze and Orlikowski, 2001, p.47). Their ingrained and taken-for-granted character, to the extent that space and time have become naturalised categories within modes of being, is revealed as much in the writing of social theorists as in everyday life. As Urry (1985, p.22) has argued:

It should be clear that most, if not all, theories in the social sciences contain implications about the patterning of human activity within time-space. Social activity necessarily involves passing through time and space. The passage of time involves movement through space ... Changes in the temporal order of events generally involve changes in spatial patterning. Even the repetitions of everyday life involve both temporal and spatial regularities. However, most sociological theories of such activities do not draw out the temporal and spatial implications. They tend to remain at an implicit level. Indeed in many cases if the implications were fully specified they would be found to contradict other aspects of the theory in question.

There is something of this danger of contradiction in practice-based approaches, perhaps more so than in the cognitivist, mentalist, and functionalist perspectives which they are challenging. It thus useful to consider, as we do in the first section of the paper, the often implicit conceptions of space and time in these different approaches as a precursor to thinking about how a more systematic inclusion of these concepts potentially opens up new avenues in theorising organisational knowledge. This will also help to underline some of the confusions and ambiguities arising from the lack of a more explicit consideration of the interplay between space, time, and knowing.

The second section then turns to consider a selection of contributions from social theory which have given more sustained consideration to the spatio-temporal character of human action and interaction. Drawing in particular on the work of Bourdieu (1977, 1990, 1991)

and Giddens (1984, 1990), we assess how far such notions as habitus or time-space distanciation are adequate for thinking about the varied spatio-temporal character of social practices. While these approaches suggest the lifting-out and transposability of practice through the development of norms and dispositions which are capable of generating a broad range of more or less appropriate actions across a wide range of times and spaces, they nevertheless reproduce the tendency to equate the situatedness and context-dependency of practice with localisation in time and space. In common with other authors (e.g. Latour, 1987, Star, 1995), there is the suggestion that abstraction, generalisation, and de-particularisation are the main ways that knowing and practice can be stretched across more extended times and spaces. Weick (1995) has made a similar point in his argument about the extendability of organisational practices through the spread of 'generic subjectivity' whereby relations are conducted on the basis of regularised and interchangeable role-based expectations (see also, Chia, 2002, Kallinikos, 2003). However, it is questionable to what extent generic subjectivity is the only way that social relations can be conducted across more distanced time-space. Is it not also possible for interactions at a distance to be accomplished through relations based on a more personalised and situated intersubjectivity where those involved in communication do not orientate themselves to each other as complete strangers?

In the third section we consider this question in the light of an empirical illustration of the unfolding relationship between members of a team involved in a consulting engineering project for repairing a hydro-electric power facility. This example is drawn from research currently being conducted by the authors into the knowledge and communication practices of a range of project teams in the consulting engineering, computer, and defence technology sectors.¹ In opposition to arguments which offer a stark choice between the intense sociality of place-bound, locally situated practices or the generic and anonymous subjectivity of interactions distanced in time-space, our illustration suggests a more contingent, intricate, and mutually constitutive relationship between the spatio-temporality of practice and the evolution of different forms of subjectivity.

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Situating knowing in space and time

The characterisations of space and time that can be inferred from practice-based and cognitivist approaches are arguably quite different. They can be summarised as the distinction between space-time embeddedness and disembodiedness. That is to say, these alternative approaches promote radically different visions of the extent to which knowledge can be levered out of the context within which it was created and transferred to other contexts. Cognitivist approaches, with their emphasis on the extensive codifiability of knowledge, highlight its fluidity and mobility, depicting it as applicable across a wide range of times and spaces. The ability to decontextualise and disembed knowledge in these perspectives is closely related to their view of knowledge as object-like, abstract, and self-sufficient. This is what Cook and Brown (1999) denote as an 'epistemology of possession'. According to Gherardi (2000, p.213), the reification of knowledge associated with such perspectives has "grown more overt with the 'objectified transferable commodity' envisaged by the knowledge management approach, which treats knowledge as practically synonymous with information". The elision of knowledge and information is in large measure consistent with the central position accorded to codification in the cognitivist literature. Often based on a limited, and even contrary, reading of Polanyi (1958, 1966), whose writings arguably resonate more closely with practice-based approaches, there has been a strong preoccupation with the issue of 'converting' tacit into explicit knowledge. Gore and Gore (1999, p.556) provide a typical rendering of this argument:

If tacit knowledge can be captured, mobilized, and turned into explicit knowledge it would then be accessible to others in the organization and enable the organization to progress rather than having its members having to relearn from the same stage all the time.

The focus on capturing or surfacing tacit knowledge has also been heavily influenced by the work of Nonaka and Takeuchi (1995), although again this is based on a partial reading. Any concern with the other transformations they identified in their spiral of knowledge creation, namely combination (explicit to explicit), internalisation (explicit to tacit), and socialisation (tacit to tacit), tend to fade into the background compared with the attention devoted to externalisation (tacit to explicit). Even more sober commentators writing on the economics of knowledge appear to be caught up in the enthusiasm for codification (e.g. Boisot, 1998, Cohendet and Meyer-Krahmer, 2001, Cowan *et al.*, 2000, Cowan and Foray, 1997). It is

through codification, according to these approaches, that knowledge can be put into circulation and become a source of economic value. Cohendet and Meyer-Krahmer (2001, p.1563), in one of the few direct references to the spatial and temporal implications of this process, have described codification in the following terms:

The codification of knowledge is a process that aims at reducing and converting knowledge into messages. These messages can then be processed as information that will serve to 'reconstitute' knowledge at a later time, in a different place, or by a different group of individuals. The main interest of this process of transformation of knowledge is to facilitate the treatment of knowledge as an economic good which can be exchanged.

The capturing and packaging of knowledge (c.f. Clark 1998, Stewart, 1998) are depicted as necessary antecedents to its commodification. It is the treatment of knowledge in stable, objectified form which permits the issue of its transferability across space and time to be considered largely unproblematic. As Gherardi (2000, p.213) has expressed it, the "transfer of knowledge ... may be accomplished without distortion: to transfer is not to transform" (see also, Gherardi and Nicolini, 2000, Shariq, 1999). It is also in this sense that the theoretical contradictions arising from the more explicit consideration of space and time mentioned earlier tend to be less pronounced, if not absent, in cognitivist approaches compared with practice-based theorising. Indeed, the portrayal of knowledge and the implications for time and space in cognitivist perspectives are quite consistent. Space and time typically appear in these approaches as abstract dimensions, stable co-ordinates providing an independent and homogeneous container for the flow of people, knowledge, and resources. This makes it easy to conceive of knowledge in object-like terms as a clearly bounded substance capable of being moved around this four-dimensional container without loss of integrity. As Law (1999) and Law and Mol (2000) have observed, this is a familiar Euclidean topology in which object integrity is about stable volumes moving around within a larger volume. Boisot's model of the information- or i-space exhibits such a topology (Boisot, 1998, Boisot and Cox, 1999, Boisot and Griffiths, 1999). Even though the dimensions of the space in question are not defined by spatial extension but rather by variations along the axes of codification, abstraction, and diffusion, the visual depiction of knowledge moving around within a clearly delimited container means that the topological similarities are difficult to avoid.

The spatio-temporal implications of the emphasis in cognitivist approaches on disembedding and decontextualising knowledge are thus primarily about movement and mobility within a passive space-time container. Certainly the limits of knowledge flow are acknowledged by these perspectives. However, while recognising the 'stickiness' of tacit knowledge (Von Hippel, 1994), codification is nevertheless presented as the lever allowing knowledge to be unstuck and set in motion. This image of disembedded, free-flowing knowledge is given even more extreme expression in some parts of the literature on virtual teams and organisations. Here it seems that any sense of spatio-temporal fixity has been dissolved in the face of the frictionless flow of information across electronic networks. In these cases, space and time appear not so much as stable co-ordinates against which to measure the movement of knowledge, but are almost entirely erased as a relevant nexus for social action. Echoing Leo Marx's (1964) earlier sentiments about the 'annihilation of space and time', there have been many recent proclamations announcing the 'death of distance' (Cairncross, 1997), "death of location, death of organizational boundaries, death of time zones" (Prasad and Akhilesh, 2002, p.102). Information and communication technologies are typically identified as the murder weapon in this frenzy of killing (e.g. Lipnack and Stamps, 2000, O'Hara-Devereux and Johansen, 1994, Rayport and Sviokla, 1995). Writing about virtual teams, for example, Lurey and Raisinghani (2001, p.524) have suggested that:

... these teams are able to perform their work without concern of space or time constraints since they are given access to the same technologies to communicate and coordinate their activities. These information technologies effectively link people together, despite their working at different times or in different locations, thus enabling them to communicate and share resources as needed.

Practice-based approaches have offered a comprehensive critique of these confident declarations regarding the disembedding of knowledge. This primarily focuses on the inadequacy of treating knowledge in object-like terms as "a substance that can be 'sent', 'received', 'circulated', 'transferred', 'accumulated', 'converted' and 'stored'" (Gherardi and Nicolini, 2000, p.330). Rather than viewing knowledge as something 'out there', which is separate and separable from practice, it is depicted in practice-based approaches as a dynamic, negotiated, situated, social accomplishment. For Orlikowski (2002, pp.250-251), this:

... leads us to understand knowledge and practice as reciprocally constitutive, so that it does not make sense to talk about either knowledge or practice without the other. It suggests there may be value in a perspective that does not treat these as separate or separable, a perspective that focuses on the knowledgeableability of action, that is on *knowing* (a verb connoting action, doing, practice) rather than *knowledge* (a noun connoting things, elements, facts, processes, dispositions).

The shift from *knowledge* to *knowing* implies a concomitant ontological shift. The portrayal of knowledge-as-object in cognitivist approaches is arguably based on a representationalist view of individual cognitive beings gathering information about, and building up representations of, an objective, external, knowable reality where truth is about the correspondence between thought-objects and objects-in-the-world (Winograd and Flores, 1986). In this view, according to O'Connor (2001, p.287):

...the power of knowledge depends on its degree of abstractness and generality - the more abstract and general, or 'decontextualized', knowledge is, the more contexts in which it will allow for 'intelligent behavior' ... Learning, in this view, is a matter of building up increasingly decontextualized knowledge in the minds of individuals, which can then be transferred to other times and other contexts to be 'applied'.

Practice-based approaches, in contrast, are deeply critical of representationalist thinking with its reliance on a series of strict oppositions or dualisms (between subject and object, mind and body, thought and action, and so on). Instead, they present a relational (which does not imply relativist) view of the mutually constitutive nature of social phenomena which makes it meaningless to speak of them independently. This is closely tied to an understanding of social reality as something which is not simply 'out there' waiting to be discovered; reality is "still in the making" rather than "ready-made and complete" (James, 2000 [1907], p.113). As Lave and Wenger (1991, p.51) have argued:

... the socially and culturally structured world ... is socially constituted; objective forms and systems of activity, on the one hand, and agents' subjective and intersubjective understandings of them, on the other, mutually constitute both the world and its experienced forms. Knowledge of the socially constituted world is socially mediated and open ended. Its meaning to given actors, its furnishings, and the relations of humans with/in it, are produced, reproduced, and changed in the course of activity.

It is from recognising the mutually constituted character of knowledge and practice that questions of context, situation, and setting come to the fore. This is because at "issue here is

not knowledge as a self-standing body of propositions, but identities and modes of action established through ongoing, specifically situated moments of lived work, located in and accountable to particular historical, discursive and material circumstances” (Suchman, 2000, pp.312-313). Although not always explicitly stated, this emphasis on the situated nature of knowing and practice reveals a number of assumptions about the associated character of time and space. Unfortunately, in some versions of practice-based theory, the lack of direct engagement with these concepts, particularly with the spatial nature of practice, means that there is more than enough room for ambiguity and confusion. A good example of this concerns the tendency to conflate situation or context with the immediacy and co-presence of socially shared space and time. Sensitivity towards the particular, the contingent, and the specific, which practice-based approaches make a strong case for, too easily becomes a preoccupation with the local. Indeed, terms such as specific, particular, contingent, and local seem to be used almost interchangeably. Add to that a tendency to slip between metaphorical and spatio-temporal uses of ‘local’ and the picture becomes no clearer.

Nevertheless, out of this confusion it is possible to detect a tendency for situated knowing to be presented in terms of the participation of people in embodied, collective practices which involve co-presence, where space and time intersect. This vision of the localisation of practice is strongly promoted by the choice of settings for practice-based studies, which in turn tends to be influenced by the guiding traditions in these approaches, such as ethnomethodology, symbolic interactionism, cultural anthropology, and social psychology. Thus, we are offered such examples as flute-making in Boston (Cook and Yanow, 1993), ship navigation crews (Hutchins, 1995), error checking on airline flight decks (Hutchins and Klausen, 1996), Alcoholics Anonymous meetings (Lave and Wenger, 1991), and insurance claims processing (Wenger, 1998). What all of these rich examples have in common is a focus on the immediacy of physical co-presence. They are about people participating in practices together, talking, observing, listening, manipulating artefacts and material technologies, all with a face-to-face orientation. There are, of course, exceptions. The frequently cited study by Orr (1996) of the work of photocopier service technicians, for example, does not presuppose ongoing co-presence since the service technicians largely work independently of each other. However, the significant practices of story-telling, through which collective identities are constructed and the technicians make sense of their work, occur through face-to-face encounters where supervisors or colleagues are called upon for help, and when they meet up for meals or coffee.

The strong emphasis on direct, face-to-face interaction involving co-presence lends a particular, immediate character to conceptions of time and space in practice-based approaches. To some extent this is consistent with the concept of enactment which often informs practice-based theorising (Smircich and Stubbart, 1985, Weick, 1979, 1995). Drawing on insights from phenomenology (Heidegger, 1962, Husserl, 1964, 1970a, 1970b) and Pragmatism (James, 1950, 2000, Dewey, 1966), enactment refers to the ongoing, socially situated, provisional, and emergent attempts by people to make sense of the world by extracting cues from an ongoing flux of experience. Continuous interaction and collective negotiation of meaning are important aspects of this process. As Tsoukas and Chia (2002, p.577) have described it, “[o]rganizational phenomena are not treated as entities, as accomplished events, but as enactments - unfolding processes involving actors making choices interactively, in inescapably local conditions, by drawing on broader rules and resources”. However, it is often tempting to interpret these interactions and negotiations in purely localised terms, situated in the here-and-now of everyday experience with no connections across wider swathes of time and space. The use of the term enactment, with its connotation of locally situated performances, is equally suggested by the closely related idea of ‘instantiation’ preferred by Giddens (1984). However, a closer reading of these arguments suggests that there is more to enactment or instantiation than the immediacy of co-present interactions. This is where the conceptions of time and space in practice-based approaches begin to suggest, if not inconsistencies, then points of tension which require further articulation.

On the one hand, one gains a strong impression of the localised, deeply contextual character of performances, where collective sensemaking is an inter-subjective accomplishment of interacting agents. This offers an important antidote to the abstract, universalising, and decontextualising impulses of cognitivist approaches. However, for some it also runs the risk of voluntarism, privileging the constitutive actions of human agents in the here and now (e.g. Fox, 1996). On the other hand, from a more charitable perspective, it is clear that enactive sensemaking and allied practice-based approaches have a highly temporalised notion of practices of knowing which casts doubt on the easy charge of voluntarism. This suggests that we are not dealing with largely unconstrained “playing fields of interacting, strategically acting and negotiating agents” (Lash, 2002, p.39), but neither is this a case of determining structures in the form of pre-established normative rules whose influence can not be escaped in the immediacy of action. Turning again to insights from Pragmatism, enactive

sensemaking attempts to side-step the paralysing dualism of structure and action by considering the ongoing interplay between knowing and experience of the world. As James (2000 [1907], p.112, emphasis original) described it:

We plunge forward into the field of fresh experience with the beliefs our ancestors and we have made already; these determine what we notice; what we notice determines what we do; what we do again determines what we experience; so from one thing to another, although the stubborn fact remains that there *is* a sensible flux, what is *true of it* seems from first to last to be largely a matter of our own creation.

There are also close similarities here with the writing of Heidegger (1962) who argued that people are 'thrown' into ongoing situations, a condition of being-in-the-world, in which understanding is necessarily based on making choices guided by pre-existing and pre-reflective suppositions. There is thus no presuppositionless space through which one can step out of the flux of experience in order to reflect on it. Being is thoroughly temporal in that it always emerges out of a past and tends towards a future. Our experiences are shaped by past experiences and an orientation towards the future in terms of expectations, elements of which are given meaning by our current experiences. The concept of enactive sensemaking captures something of this emergent and ongoing weaving together of presuppositions, expectations, and action through its focus on the temporality and context-dependency of extracted cues and their capacity to stimulate and guide action. Crucially, it is only through being enacted that values, beliefs, expectations, dispositions, and norms are summoned into existence and given definite form, and so action is always open-ended and provisional. Their enactment or instantiation under specific conditions of action and interaction may serve to reproduce relatively durable regularities of interpretation and activity, but sometimes they may also be transformed and modified, producing what Weick (2001, p.226) terms a new *residuum* of enactment, which establishes a changed set of opportunities and constraints under which subsequent sensemaking takes place.

The sensitivity to the temporality of knowing and practice in enactment helps to avoid the twin pitfalls of voluntarism and structuralism. However, there is a tendency towards one-sidedness in this argument which privileges the temporal character of experience at the expense of the spatiality of practice, mirroring a wider bias in social theory (Foucault, 1986, Soja, 1989). Thus, while the emphasis on the immediacy of action and interaction is

