PLACING KNOWLEDGE MANAGEMENT IN CONTEXT

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ABSTRACT

We welcome the increased emphasis on practice-based theories of knowing as an alternative to the more representational, knowledge-as-object approaches which have characterised many organizational attempts at 'knowledge management' to date. Building on the findings of a short empirical study into the'knowledge management' initiatives of a global software organization, which highlighted the value of rich context in the generation of meaning, we seek to shed some light on a perceived confusion about the nature of organizational context. We show such context to be an inseperable part of knowing, which it creates and by which it is defined, and re-use Blackler's (1995) taxonomy of 'knowledge types' to illustrate the relational interaction between shared and deeply personal components of context. Finally, we use these insights to suggest a way in which organizations may be able to derive more value from their investments in internal initiatives by increasing their ability to support knowing – and hence the generation of meaning - amongst their employees.

Keywords: activity, context, knowing, knowledge management, meaning, practice, relational

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'KNOWLEDGE' AND 'CONTEXT'

In *The Coming of Post-Industrial Society*, Bell proposed that 'knowledge' could be considered as "a set of organized statements of facts or ideas, presenting a reasoned judgement or an experimental result, which is transmitted to others through some communication medium in some systematic form" (1973, p.175). Since then, organizations and researchers have paid considerable attention to deepening their understanding of the processes surrounding the generation and 'management' of organizational knowledge. One of the most influential among the latter has been Nonaka (1991,1994), whose 'knowledge spiral' explored the dynamics of the interrelationship between tacit and explicit knowledges between individuals and groups. Although Nonaka focused on the relationships of communication between such knowledge types (via processes of 'socialisation', 'externalisation', 'combination', and 'internalisation'), it is arguable that his view of all such knowledges as objects, able to pass between these different states, has contributed to a sense that the focus of knowledge management systems (KMS) should be to 'externalise' and 'combine' tacit forms of knowledge. Such an influence continues to be visible, for example, in Cohendet et al's recent attention to the "codification of experience, know-how and localised tacit knowledge" (1999, p. 239) via these processes of conversion; a similar dynamic underlies Crossan et al's (1999, p.523) "intuiting, interpreting, integrating, and institutionalizing".

Such approaches are understandable as reactions of organizations accustomed to accounting for shareholder value as they seek to define, measure and appropriate these mounting 'intangibles' into their books, but they contain built-in contradictions which cannot be solved via technology. These contradictions centre around the problem that *the meaning of any objective 'knowledge' will always remain the subjective product of the person in whose mind this is constituted, always relationally defined, and therefore does not transfer easily to others in a form which may be operationalised to the benefit of the organization.* McDermott has provided powerful case examples of the emergent nature of 'knowledge', conceived as the "residue of thinking" (1999, p.105), which, he argues, should form the proper focus of KMS. Such a view more closely reflects the original intentions of Polanyi - whose 1967 book, ironically, was credited by Nonaka for influencing his tacit/explicit spiral: "The ideal of a strictly explicit knowledge is indeed self-contradictory; deprived of their tacit coefficients (personal to the individual), all spoken words, all formulae, all maps and graphs, are strictly meaningless" (1969, p. 195).

Approaches to 'knowledge management' (KM) which attempt to sideline or ignore Polanyi's critical (if inconvenient) insight risk, at best, a misguided capital investment and at worst, disastrous consequences for intra-organizational interaction, since they

often replace established, localised communication structures, cultural norms and understandings – which, as we shall argue, can be conceptualized as components of context - with, for example, an indiscriminately applied, database-driven intranet.

As the 'invisible college' of opinion (Star, 1992) of those who question representationalist views of knowledge has increased its visibility within the literature, practice-based theories of *knowing*, (Blackler, 1995) in which objective 'knowledge' is reframed as intersubjective process, have appeared promising as ways "to avoid treating individuals as if they can be understood in isolation from their contexts, and the contexts as if they exist in isolation from individuals" (Blackler, et al. 2000). Such a view implies that knowing occurs via a combination of organizationally and biographically embedded contextual components, and thus demands a more sophisticated conception of context than the rather confused images which appear currently within the organizational literature, which shows a tendency to view context as either fixed, and static, or as wholly emergent, conjured, as it were, out of 'thin air'.

Even amongst those sociological theories of emergence which adopt the more recent view of context as a process - in terms of unique, temporary configurations of knowledge and power relations – there is little further agreement as to its key characteristics. For example, 'organisational' activity theory, as popularised by Engestrom (e.g. 1987, 1990, 1999, 2000) emphasises the socially mediated, contingent and situated nature of meaningful activity – but sees cultural forms as directly incorporated into the individual's consciousness, and focuses on the 'emerging object of activity' resulting from the interaction between the two, without unpacking the various shared and non-shared components to this interaction in any greater depth (this receives a degree of acknowledgement from Engestrom, e.g. 2000, p.308). This view of context as both medium and outcome of emergent interaction appears, of course, throughout Giddens' thought, whose proposition that a person's thoughts are deeply linked to structure in the mind – memory traces - underlies the theory of structuration (e.g. Giddens 1984), in which structures of signification, domination, and legitimation are continually drawn on, reproduced, and possibly altered in practice. At least in an institutional sense, therefore, the context of social interaction is held by Giddens to be instantiated at the moment in which it is drawn upon, reproduced, or possibly altered; however, unlike Giddens' wider work (e.g. 1991), structuration does not address fully those subjective components which contribute to a particular configuration of subjectivity and intersubjectivity at any given time: in otherwords, it arguably represents an incomplete conception of context.

Weick's sensemaking (e.g. 1995) highlights a different aspect of performative context again from those which appear in activity theory and structuration. Sensemaking grew out of an ethnomethodological focus with peoples' tendency to arrange plausible, or 'sensible' circumstantial conditions (i.e. a configuration of context) to justify - or assign meaning to - a particular outcome *after* the outcome itself had actually occurred. In this respect, Weick quotes Garfinkel's (1967, p.115) comment that

> "The actor's own actions are first order determinants of the sense that situations have, in which, literally speaking, actors *find* themselves" (Weick 1995, p.11, original italics).

Weick later remarks:

> "Thus, the concept of sensemaking is so valuable because it highlights the invention that precedes interpretation" (1995, p.14).

Sensemaking thus emphasises an alternative aspect of enacted context from structuration's focus on institutional replication in individual action: the more subjective, almost phenomenological, components of the eventual contextual mix that is assigned, by people, to explain their experiences of actions and events.

A still different view of performative context is taken by actor network theory, which reveals apparently fixed contextual configurations at any one moment to consist instead in emergent, enacted relationships in which entities acquire agency (conceived as a form of power) through their ability to enrol other entities, and to stabilise such relationships temporarily in the form of "immutable mobiles" (Latour 1987). Here, 'context' – seen in terms of such a temporary configuration – is only as good as its next – or continuing – enrolment of other entities within a network. Yet with the exception of certain recent attempts (e.g. Law and Hassard 1999), treatments of actor network theory, like structuration, have to date tended to address the more intersubjective, rather than, subjective, elements of which context is composed. Finally, a performative, but arguably equally incomplete, approach to context also appears in Lave and Wenger's situated learning (1991), which is more concerned with explaining the unfolding relational dynamics within groups - including the link between knowledge and position within the group – than 'communities of practice' per se, which remains little more than a phrase to describe a group of participants engaged in legitimate peripheral participation. Unfortunately, although Lave and Wenger embrace an emergent, relational view of social structure, the notion of context itself receives little explicit development, and is used in an unproblematic, situational sense (e.g. 1991, p.18).

Significantly, however, Lave and Wenger highlight a key context-related question, to which this paper is intended to present a solution:

> "The question seems to be how one describes the detachability of these skills from the participatory contexts in which they were acquired" (1991, p.19).

Lave and Wenger's inability to answer this question has percolated through to the secondary literature about the role of context in such theories. Thus, for example, Fox concludes that "SLT (situated learning theory) seems to work with a model of context both as *pregiven* and as *emergent*" (1997, p.737, original italics) – picking up on Lave and Wenger's unproblematic use of the term in both senses.

In addressing this confused situation, we draw upon a recent empirical investigation into employees' perceptions of the varying success of KM initiatives within a UK subsidiary of a global software organization. We show that those initiatives perceived as most successful were those where intersubjective communications were not separated from the encultured understandings within which they had been generated: where the 'context' surrounding peoples' interaction with knowledge artifacts was

richer. We then build on these empirical insights, to propose a model which explains the relationships between pre-existent 'ingredients' to context – both of the shared, and non-shared kind; the emergent configuration of these that is 'context' itself; and the result of this process: altered ingredients to a future contextual configuration.

RESEARCH METHODOLOGY

An interpretive methodology has been used, grounded in the belief that 'man is an animal suspended in webs of significance he himself has spun' (Geertz, 1975, p.5) to collect the empirical illustrations for this paper from the UK subsidiary of A1 Software, a major software development and consulting organization. Although subjectively defined, those issues considered by individual interviewees to be important to A1's knowledge management capability were therefore treated as valid empirical objects of study.

Data collection took the form of eight semi-structured interviews. Interviews were selected as the primary research instrument due to their suitability in eliciting in-depth views on a focused subject, and lasted between one and two hours over July-August 2000, supplemented by additional material where possible (interactive tours of A1's KMS, web-based material, technical bulletins). Interviews were conducted with a cross-section of individuals, of varying seniority, on both sales and consulting sides of the organization: the practice head, technical consulting manager, a practice manager, two staff managers, a consultant, a senior sales manager, and a sales manager. Observations and responses were recorded in longhand, in detailed note form. In addition, we had a valuable opportunity to present our findings at a feedback and discussion session with participants following our research.

Data analysis followed a 'semi-grounded' approach, where data was separated into first and second-order concepts (Van Maanen and Barley 1985, Orlikowski, 1993). As it became apparent that a pattern existed between types of knowledge supported by KMS initiatives and the degree of success they were considered to have enjoyed within the organization, three broad types of KMS were identified as first order concepts, and various theoretical and organizational issues were articulated in relation to these. Second order concepts – theoretical inferences made on the basis of emerging empirical patterns - included the importance of context, which we address in the penultimate section of this paper.

KMS: REPOSITORIES, INFORMATION FILTERS, OR COMMUNITIES?

'New' organizational culture versus the Bardic Tradition

A1 Software (the names of the organizations are pseudonyms) is a leading US-based global software supplier and consultancy offering products and services in over 145 countries. An initial analysis of the empirical data showed that A1 considers that it

makes use of ‘knowledge’ in several readily identifiable areas, including technical 'knowhow', organizational best practice, new product awareness, and project management. Additionally, more 'tacit' forms of ‘knowledge’ were also cited, such as customer information (considered the most important of all) and cultural self-awareness relating to its mission, identity and working approach. Importantly, there was little or no awareness by the senior personnel interviewed of the nature of these different types, nor of the most appropriate methods for their generation and transmission.

Five years prior to the research study, A1 bought Data1, a small UK-based software house, absorbing 200 Data1 employees into the workforce, with the specific intention of 'capturing' the specialised ‘knowledge’ possessed by Data1 employees and making this available within the wider A1 organization. Accordingly, in the following five years, several different types of 'knowledge management' initiative have been tried by A1 with varying degrees of success. Amongst these initiatives, a strong contrast was perceived by all interviewees (comprising both ex-Data1 employees and long-standing A1 employees) between new, 'global' knowledge projects, particularly large, high-budget ‘knowledge exchange systems’, and those that exploited what several ex-Data1 employees termed the 'Bardic Tradition':

> “Before there was writing…the bard would hold all the knowledge…it would be passed on, one to one”.

This latter term was used by some respondents to convey the role of certain longstanding, knowledgeable employees as ‘oral historians’: repositories of non-written, uncodified organizational knowledge, and the sense in which such individuals create and recreate organizational culture and identity through local communicative interaction. Although the Bardic Tradition was a locally used concept, rather than a ‘theory’ of organizational interaction *per se*, it shares similarities with Lave and Wenger’s dynamic of legitimate peripheral participation in its linking of communication, knowledge, and identity as aspects of the same fundamental interactive, non-codified process. However, whereas larger, more technology-driven approaches were often seen as more in keeping with A1's future development as a global organization (and therefore more progressive), there was a tendency to view forms of interaction based on the Bardic Tradition as local and backward. A common question asked within the organization was thus how A1 might best move away from the communication of such ‘knowledge’ within localised environments to its *capture* and dissemination on a global scale.

By making such capture and dissemination the goal of its KM initiatives, we argue that A1 was committing the error identified earlier in this paper of focusing on the wrong goal. Instead of pursuing objects (or ‘knowledge’), A1 should have been cultivating *processes* (thereby focusing on peoples’ generation of meaning and value). This view is supported by the reactions of A1 interviewees to the various types of KM initiative which they had experienced to date. We seek to show in the next sub-section that there was an identifiable relationship between the perceived success of a KM initiative and the extent to which this was aligned with the cultivation of interactive

process – which combines more of the available contextual ingredients to human experience – and hence meaning- than mere abstracted text.

Collecting data, codifying information, generating meaning

We were able to group the KM initiatives within A1 into three categories relating to this continuum between object and process. The first category comprised those initiatives which sought *to collect and archive explicit 'knowledge' in the form of historical data*, such as 'knowledge repositories', best practice, old presentation slides, reports, and documents. These initiatives tended to be 'flagship' projects with a high budget and high corporate visibility, but interestingly none was felt to have been very successful. One interviewee commented:

> "A1 makes knowledge management too formal and inaccessible, with the usual cultural problems - templates produced in the US, etc. Instead of lots of processes, documentation, gateways, procedures, etc., (you need to) push responsibility down to the group of people with an interest in a particular subject. There's a need to build recognition at an individual level in an increasingly networked, global environment, and KM represents the link that's required between career development and culture to achieve this."

It is possible to discern a strong sense from the above comment that much of the 'knowledge' contained within such repositories was felt to be irrelevant to the personal circumstances of the knowledge user. Such circumstances impact both on the types of information used and on individuals' motivations for sharing it in the first place. This meant that not only was much existing data inappropriate, but that there was a serious lack of 'qualitative' information. For example, we were told that a customer relationship management application introduced the previous year had been scrapped because salespeople had not provided it with sufficient data; people had been reluctant to provide essentially qualitative, subjective information regarding client relationships (previous project successes/failures, etc) - information which they would have been happy enough to have provided through communicative interaction:

> "The technical side of things is easier to document than the organizational side of things".

Some respondents felt that the appropriate way to convey such information was heavily context-dependent, and that to attempt to codify it was "asking for trouble". This was due to its availability for subsequent access and use by others who might take it out of context and misinterpret its meaning.

The second category of KM initiative identified within A1 was those approaches which sought *to codify 'raw' data into more readily useable forms of information.* Examples included decision-making tools, profiles and templates intended for customisation by individuals, CASE (computer-assisted software engineering) tools, and 'technology-push' reports and news. Unlike the category identified earlier, the *context* of the user had sometimes been successfully anticipated, and such initiatives were considered to be more meaningful. For example, in their ongoing struggle to

keep up with ever shorter product release cycles, salespeople and consultants specialising in a particular technology area found 'technology-push' news bulletins to be an essential method for appraising themselves of new technical developments. It is worth mentioning that these were heavily tailored to the requirements of this limited user group, and would have been fairly indecipherable to users from another context, since an outsider would have lacked the shared vocabulary required to assign meaning to what he or she was reading.

However, such 'knowledge-filter' initiatives were not always satisfactory, and vital, client-sensitive information of great commercial value to A1 was becoming terribly distorted through the process of being abstracted from its initial context. As an example, the sales person's meetings with the client were written up in the form of a briefing for the consulting team tasked with eventual implementation of the product:

> "So consultants often have only the vaguest idea on arrival (at the client site) of the spec - and this idea can be completely wrong, too. The worst was at XYZ. The job sounded like 'put in system X'. But they really wanted a review of enterprise systems across the whole of their HQ, which would have led to a huge job. The project went dreadfully".

In this instance, context-specific, 'between-the-lines' customer intelligence was being lost through attempts to codify it – at some considerable cost to A1. Despite such examples, however, some of these initiatives were felt to have been more successful than those which sought indiscriminately to collect and distribute data. For example, specialist sites on the corporate intranet were perceived as successful by the members of their clearly defined interest groups:

> "The Corporate Repository is little more than a subset of the intranet where 'everything gets dumped'. This has already become subsumed by specialist websites. For new products, the only official Knowledge Management is an email from the States saying 'there's a new product/release – look on this website'. But this works well."

The third category of KM initiative identified comprised those KM initiatives which relied on *continual inter-subjective communication between individuals* - in other words, where groups of people were able continually to refine the context of their interaction and hence ensure the continued relevance of the knowledge being communicated:

> "Communication within A1 is 80%/20% in favour of face to face contact. It's always a case of knowing people".

Such initiatives included 'mentor' relationships between new and experienced recruits, communities of practice indexes (corporate 'yellow pages'), special interest groups, email, and informal interactions of all kinds. All respondents considered these to be the most successful type of initiative, both personally and in commercial terms:

> "For example, recently a consultant had an idea for offering universal 'blanket' licences to universities, whose IS departments had previously to negotiate lots of individual licences. This went down so well with academic institutions, boosting sales in this sector, that the approach has been adopted throughout Europe*; but it was all communicated by word of mouth"*.

There was a strong feeling that real-time (preferably face to face) communication occurred in a way which was appropriate to the continually evolving context in which such communication was needed, eliminating the need to 'repair' old and inappropriate information to render it meaningful to the current environment:

> "There's lots of information out there and it's useful; but it's often not quite what you need. It usually needs updating and making accurate….useful documents are posted to the departmental website, but these are just documents - the real knowledge lies in consultants' own 'toolkits' which they build themselves. People accumulate IPR (intellectual property rights) on their laptops."

In addition, it is possible to discern a sense from this that what the organization really 'knew' derived from the emergent interplay between the exchange of shared material, or 'forms', and other contextual aspects involved in such inter-subjective communication: much as a well-stocked bookshelf contains 'just books', useful documents at A1 are described above as 'just documents'. They are not 'knowledge' in the sense that they can be simply pasted into the context of a client project, since all contexts are different and require the generation of new meaning through communicative interaction. The 'new' information on consultants' laptops was meaningful and appropriate to the 'new' environment, from which it continued to derive its meaning and relevance; in short, meaning and context can be seen as two parts of a duality.

Implications

The implication of the findings in this section is that in building ambitious, database-driven 'knowledge management systems', A1 Software was decoupling 'knowledge' or shared forms, from the very context which rendered it meaningful, and from which it derived its current value. Ironically, a cheaper and more appropriate model had existed within the organization all the time: the 'Bardic Tradition'. More than any of the KM initiatives discussed, the value of the strongly shared, encultured identity amongst ex-Data1 employees was stressed by every individual interviewed. For example:

> "In learning about new products, I'm very well connected because of the of ex-Data1 network. I feel sorry for my newer colleagues who don't have access to this."

For many projects, members of this 'tradition' who had spread throughout the company remained the only gatekeepers to the most sought-after network of experiential, praxis-driven, meaningful material in the organization. Rooted in

process, this activity was so valuable because it was based on what had actually worked in a delimited, mutually understood context, was always current, and was readily meaningful to others who shared the same strongly defined set of cultural and communicative expectations.

This endurance and envied effectiveness of A1 Software's 'Bardic Tradition' – really an ongoing process - is striking compared to the company's other, more recent KM initiatives, which stripped out progressive amounts of context. Instead, those forms of 'knowledge' initiative which were considered successful were those which relied on human interactants, often mediated by ICTs. As we shall argue below, in such cases, communicating individuals shared information, which combined in relation to other, non-explicit contextual ingredients, to generate meaning. Meaning was not separated from the sphere of human interaction, or context, in which it had been generated; the function of ICTs was to facilitate appropriate networks within which such interaction could occur. Ironically, such networks - pre-existing, and free - were actually the closest that A1 had come to having a 'knowledge management' system.

Of course, the number of employees who were party to the 'Bardic Tradition' was limited and this particular network was non-replicable within the wider organization: individuals were either ex-Data1 employees or they were not. In the next section, we thus seek to improve our understanding of the nature of context, so that this can then be applied to the generation of similar, rich context, and therefore meaning and value, within other organizations. This is achieved by developing a clearer picture of the relationship between the interaction of knowing individuals and the context which is always latent within, and transformed by, this process.

UNPACKING CONTEXT

The relationship between knowing and context: revisiting Blackler's typology

We have argued that, in seeking to cultivate similar 'Bardic Traditions', organizations need to develop a greater understanding of the dynamics underlying this kind of effective inter-subjective interaction. As implied by the A1 example, if the types of inter-subjectively defined knowing discussed in this paper are valuable because they generate meaning, and if such meaning is achieved through its continual relation to context, then the problematic of knowing is intimately connected with the ongoing generation of context; one cannot be considered separately from the other. Moreover, since knowing is a continually emergent process, it follows that both meaning (the 'outcome' of knowing) and context (the relationally situated ingredients through which knowing occurs) are also both processes. The implication is that conceptions of either meaning or context as stable objects, generaliseable across organizations, are likely to prove inaccurate. In seeking to generate value from investments in knowledge management, it would thus appear important for organizations to develop their conceptual understanding of the relationship between knowing and context.

A good place to start developing such an understanding is the acknowledgement that, if knowing is to occupy the foreground of our analysis, then context must

therefore literally comprise everything else: all the 'background' inputs, both shared and non-shareable, required for this process to occur. Crucially, we argue that the more such contextual inputs that are acknowledged within an organization, the richer the context which is likely to be generated, and we see A1's Bardic Tradition as an example of the successful maintenance of such rich context. We seek to identify these contextual inputs through a re-working of Blackler's (1995) typology of previously existing approaches to knowledge, from which he advocates a move to the activity-based concept of knowing. We have chosen Blackler's categorization since, unlike the various theories of practice discussed at the beginning, Blackler's typology succeeds uniquely in progressing beyond the simple 'objective/subjective' dichotomy common within the literature, to distinguish between *types* of objective and subjective phenomena. As we show below, his summary of common images of knowledge as embrained, embodied, encultured, embedded, and encoded can usefully be reconceptualised as *inputs* to emergent context in the sense in which we have just defined the term. We argue that all of these contextual inputs – some shared, others non-shareable – relationally combine in knowing – by which they are themselves altered - to generate meaning, and thus that KM initiatives which 'strip out' certain of these inputs, such as A1's 'knowledge repository', reduce the contextual richness from which meaning is generated. We believe that it is therefore important to take up Blackler's call to start to address the relationships between these elements, but not by discarding them, as Blackler himself does, along with the concept of knowledge. Reconceptualised as components of, or inputs to, a temporary configuration of shared and non-shared context, they begin to throw light on the relational dynamics of knowing, comprising ingredients to context which is *always generated in the individual*, as shown in Figure 1:

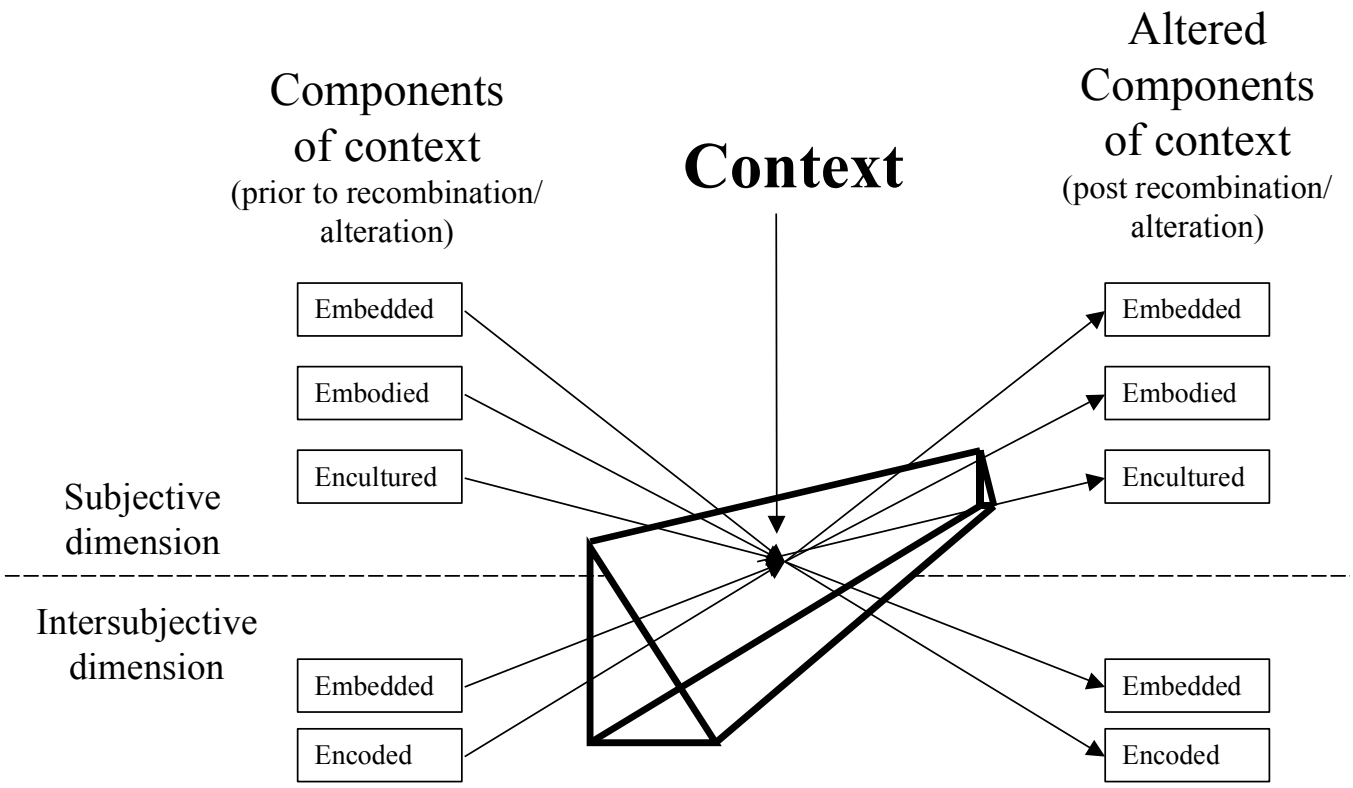

Figure 1: Relationship between 'historical', contextual components, and context

Figure 1 makes use of Blackler's five categories to address the confusion regarding context which was identified from the literature in the first part of the paper. In this view, context is seen as a performative prism, in which shared and non-shared, historically pre-existent, *components* of experience fuse completely in a unique configuration, or context, to a particular experience-in-activity. In turn, such a unique fusion has historical consequences, in that all such components can be altered by the interaction (e.g. altered memories, attitudes, skills, routines, or written material), in which altered form they will combine with other ingredients as inputs to the next 'snapshot' prism of experience. Figure 1 is also clear about the location of context: in the human mind, where subjective and intersubjective dimensions meet. In this way, a precise definition of context becomes possible: of its emergent nature; its temporal (historical) positioning in relation to phenomena for which it is often mistaken; its location – in experience-in-action; and its composition - from shared and non-shared components. Such a definition supports

> "The etymology of the word 'context' (which) suggests a derivation from the Latin verb *texere,* 'to weave'. The related Latin verb *contexere* carries the meaning of 'to weave together', 'to interweave', 'to join together' or 'to compose'" (Dilley 1999, p.4).

Below, we thus resurrect Blackler's five images of knowledge – ranging in nature from personal to shared - and develop these, reconceived as historical components of emergent context. Table 1 summarises the various contextual components:

Contextual component	Nature of interaction
Embrained	Latent 'mental potential'
Embodied	Historically developed filters and routines
Encultured	Convergent expectations about likely intentions of others within a 'culture', or group
Embedded	Organizational alignments coalescing around encultured context
Encoded	Explicit, symbolic forms, which derive meaning from their relational configuration with the other types of context, above

Table 1: Summary of contextual components

Embrained Contextual components

First, Blackler identifies 'embrained knowledge' as "knowledge that is dependent on conceptual skills and cognitive abilities" (1995, p.1023), citing Fiol and Lyles' (1985) emphasis on peoples' higher level abilities to develop complex rules and to understand complex causations. Redefined as an embrained component to a unique configuration of context for the process of knowing, this category is a good place to emphasise the way in which knowing consists of the relational patterning of various components of context within the *individual mind*. Thus individuals' physiological predispositions and aptitudes come to affect the relational patterning of context that is likely to form. This latent 'mental potential' can therefore itself be considered a type of contextual component, since it is an ingredient to knowing – although always expressed in relation to the other forms of context discussed below (Chisholm, 1992). Such mental predispositions and aptitudes are more than the speculation of psychologists; neurophysiological evidence for variations in the signal-handling capacities of the brain, particularly from studies of people with brain injuries, is now well established (Cotterill, 1998). Although our limited exposure to A1 would not have allowed us to make observations regarding the embrained contextual differences between A1's employees (indeed, we are sure that this would not have been encouraged by the employees themselves!), we believe it likely that some awareness of these differences would have existed within, for example, A1's personnel department. The investment by many organizations in the practice of 'psychometric' testing of employees would suggest that they might share this view.

Embodied Contextual components

The second category identified by Blackler is 'embodied knowledge', defined as "action oriented and…likely to be only partly explicit" (1995, p.1024). To illustrate this knowledge type, Blackler cites Zuboff (1988), who talks of such knowledge as

depending on "peoples' physical presence, on sentient and sensory information, physical cues and face-to-face discussions". We noted how, within the A1 environment, forms of face-to-face interaction ('mentor' relationships, communities of practice, special interest groups, informal interactions) were considered by all respondents to be the most successful type of KM initiative, highlighting the importance of the continuous 'repair work' (Suchman, 1987) - or attentiveness to the avoidance of interactional breakdown resulting from straying outside the boundaries of encultured expectations - required to maintain the contextual currency to sustain meaningful interaction.

Embodied contextual components are perhaps best perceived as the physiological filters and developed sensorimotor routines (important for the development of skills) through which each individual sustains such physical interaction with the world. This has been emphasized by several writers including Merleau-Ponty (1963), Bateson (1972), Maturana and Varela (1987), and Holland (1985). Importantly, however, what emerges from these and other writers (see Worthman, 1992; Mingers, 2001) is a sense that, although there are physiological limitations on perception (two individuals may perceive different light or sound frequencies, for example), and differences in the way in which these are dealt with by the brain (here we have in mind embrained components to context), such subjective factors are only *activated in dialogue with the external world.* In Holland's words: "the human being lives in the world by means of behaviour that controls perception…Physiology both equips and limits culture, and culture both equips and limits the individual" (1985, p.145). Physiologically embodied processes are therefore always relationally situated, in the sense that they are only invoked through our interaction with the world, and are already affected by our prior activities.

To summarise thus far, Blackler's concepts of 'embrained' and 'embodied' knowledge have pointed us to physiologically located components of context which are always present in, and affected by, other contextual ingredients within knowing, and which therefore have an important part to play in the generation of meaning. A similar dialectical relationship also characterises the development of cultural frames of reference within which individuals develop convergent understandings, to which we now turn.

Encultured contextual components

Blackler's third knowledge category is 'encultured knowledge'. Possibly the most analytically problematic, this category is defined as "the process of achieving shared understandings" (1995, p.1024). Blackler cites Orr's (1990) account of maintenance technicians and Nonaka's (1991, 1994)'s 'knowledge-creating' organizations as examples of the way in which this has been discussed in the literature. In redefining this 'encultured' category in a contextual sense, however, it is necessary to emphasise a different aspect: the *historical* "processes of socialization and acculturation"(1995, p.1024) through which such shared understandings are reached, and to re-emphasise that it is *knowing individuals* who are achieving such understandings, not groups. Encultured understandings are developed through repeated social process and are thus relational, social phenomena – yet the understandings themselves consist in the convergent expectations of the individuals of whom social process represents the sum.

In sharing stories, therefore, Orr's technicians were generating meaning by comparing what they heard with their own, historically developed, conceptions of what was meaningful or relevant (Sperber and Wilson, 1986) within that particular community – which were themselves the 'residue' of historically previous knowing events comprising all five components of context. However, the exact meaning experienced by each individual was always created each time via a unique configuration of contextual ingredients, and was therefore not only non-shareable, but also *varied each time*, for each individual.

Although communally experienced, organizational culture therefore resides in the sum of individuals' relational understandings at any one point in time. This was certainly the case with A1's 'Bardic Tradition', which had no 'official' recognition, or physical existence at all within the organization. It was simply a set of relational understandings amongst its members, understandings which were continually invoked and modified by members by combining them with the other four contextual ingredients discussed here, in the process of knowing. Like Orr's technicians, those who were party to the 'Bardic Tradition' were able to engage in knowing within a frequently updated, rich interactional environment, which maintained the perceived relevance of the community. We believe that this explains why the 'Bardic Tradition' was so powerful within A1.

Over historical time, intersubjective communication between groups of individuals is likely to result in the emergence of similar behaviours between participants; the desire to generate organizational value from this insight lies behind the cultivation of so-called 'communities of practice' (Lave and Wenger, 1991). Note that we are not talking merely about shared forms, or 'encoded' contextual components (addressed below), but about increasingly convergent *individual anticipations to, and reactions to*, shared forms (for example, Orr's stories) – in other words, participants are likely over time to develop increasingly similar expectations about what – and how something – is meaningful within repeated intersubjective (or inter-*relational*) exchanges. As in the case of embodied contextual ingredients, such expectations both condition, and emerge from, inter-relational activity:

> "'[S] meant something by x' is (roughly) equivalent to '[S] intended the utterance of x to produce some effect in an audience by means of the recognition of this intention'"(Grice 1957, p.58).

Intersubjectively formed expectations about the *likely intentions of others* are thus a powerful (encultured) contextual ingredient to the 'sense-giving and sense-reading' (Polanyi, 1969) process of knowing. This explains the high degree of attention which has been paid in the literature to the way in which such expectations form and operate. Thus what we term encultured contextual components have been conceptualized in a number of similar ways, including Bourdieu's habitus (1988), Goffman's frames (1974), Lave and Wenger's communities of practice (1991), Holland's figured worlds (1998), Schank and Abelson's scripts (1977), Kant's schema (1933), and Leontiev's activity (see Wertsch, 1981). The following description of a schema usefully encapsulates the dialectical operation of encultured contextual components, while also

illustrating their relational interaction with the 'sensory surfaces' of embrained and embodied ingredients to context:

> "A schema is that portion of the entire perpetual cycle which is internal to the perceiver, modifiable by experience, and somehow specific to what is being perceived. The schema accepts information as it becomes available at sensory surfaces and is changed by that information; it directs movements and exploratory activities that make more information available, by which it is further modified"(Neisser, 1976, in Cotterill, 1998, p.352).

As no more than the relational arrangement at any one time of the convergent understandings and expectations of a group of individuals, encultured contextual components thus emerge as a remarkably strong influence on the intersubjective relevance and richness with which individuals *know*. The envy with which members of the 'Bardic Tradition' were regarded by those within A1 who were not party to the advantages of such effective relational dynamics, emerged strongly from our study. Some of the theoretical formulations listed above - in particular the writings of Bourdieu - have proved effective ways to theorise about the influence of power and exclusion on the process of knowing, showing these to be important encultured factors (Bourdieu, 1988), as well as more obviously embedded, in the sense to which we now turn.

Embedded contextual components

The fourth knowledge category identified by Blackler is embedded knowledge. This is "analyzable in systems terms, in the relationships between, for example, technologies, roles, formal procedures, and emergent routines" (1995, p.1024), and appears to refer to visible organizational alignments which form around the type of intersubjectively experienced contextual components described above. Viewed as organizationally embedded ingredients to the context of knowing, this category enables a useful distinction to be made between forms of encultured component (which, as we have seen, reside in peoples' heads) and the relational arrangement of explicit organizational components (technology, routines, procedures, hierarchies, etc.) that *results* from these, thus opening up the conceptual possibility of discussing the interrelationship between the two. Within A1, examples of embedded contextual component included the corporate 'yellow pages' which had formed around communities of practice, CASE tools, customiseable document templates, and regular, targeted technology bulletins.

However, as in all the other four forms of contextual components, it is important to stress that such a view of embedded components is composed of the *relational arrangement between* such elements, rather than any one single item. Thus, for example, technology-in-use ('just' the CASE software, or 'just' the template files) divorced from its relational arrangement with other embedded contextual factors such as organizational hierarchy, adequate budget, quality control framework, etc, would not have been effective. Organizations seeking to improve, for example, their best practices, IT provision, or hierarchical organization should always therefore adjust these systemically in relation to the other identifiable components of embedded

context, and realize that embedded organizational forms are in turn only expressed in knowing in relation to a temporary configuration of embrained, embodied, encultured, and encoded context. To do otherwise is, once again, to clutch at empty forms, when a key source of organizational value derives, in fact, from a relational process.

Encoded contextual components

The final, and most 'explicit', treatment of 'knowledge' which Blackler identifies in the literature is encoded: "information conveyed by signs and symbols"(1995, p.1025). As objects which are passed between individuals in intersubjective communication, such forms are usually the focus of conscious attention and thus are most often mistaken as the actual objective of communication, hence the common use of the term 'knowledge' to denote a shareable form of value (e.g. 'knowledge assets'). However, it has been argued that, viewed from an activity standpoint, there is really no such thing as 'knowledge', but rather a continual, emergent process – knowing – which derives from the continual realignment of relationally activated components of context.

Moreover, we have seen that the process of knowing, from which meaning derives, is composed not just of symbolic interaction, but rather from a unique and situated relational patterning of embrained, embodied, encultured, embedded, *and* encoded components of context. This explains why no two people can share the same meaning: because meaning is derived in relation to context, which in turn derives from the unique and temporary configuration of shared and non-shared contextual components that is generated in the heads of physiologically and biographically unique individuals; therefore the relational patterning can never be the same. Encoded contextual ingredients therefore remain meaningless unless animated in relation to other, *equally important*, types of context. For this reason, 'encoded contextual component' is a useful categorization, since it emphasises the demotion of the importance of explicit forms relative to other inputs to knowing, describing it as just another type of contextual input.

By ignoring the critical relational importance of non-encoded contextual ingredients, Nonaka's knowledge spiral, in which individuals' historical understandings are supposedly transformed into forms which can be shared by everyone, therefore misses its objective. This is because in venerating the false idol of 'knowledge', Nonaka not only fails to comprehend knowing (the true location of organizational value), but merely fastens on certain of its contextual components, believing these instead to be the main event. Organizations seeking to recreate his 'knowledge spiral' thus run the risk of replicating Nonaka's conceptual error, and grasping vainly at empty forms. As an illustration, one has only to imagine the attendant loss of meaning that would have accompanied any attempt to impose Nonaka's 'knowledge spiral' on Orr's technicians, whose network would be shorn of the emergent, rich context required for knowing. We argue that the above insights go far in explaining the perceived failure, documented earlier, of A1's various attempts to build knowledge repositories. In setting out to collect employees' tacit knowledge' and archive this as 'explicit knowledge' that could somehow be shared across the organization, Al's IS department was fastening on McDermott's "residue of thinking":

empty symbols, removed from the systemic, relational interplay through which they had once derived meaning and organizational value.

IMPLICATIONS AND CONCLUSION

Analysing context

Whilst therefore endorsing Blackler's call for a focus on knowing*,* we believe that he appears in his 1995 paper to be attempting to supplant a set of quantitative categories – types of knowledge – with a set of qualitative attributes – his, in our view correct, conception of knowing as mediated, situated, provisional, pragmatic and contested. Instead, whilst we would make no claim that such categories are normatively 'complete', we have argued Blackler's five images of knowledge continue to have conceptual relevance in drawing our attention to the combined, relational context of which knowing is comprised. This is because organizations need to understand both sets of categories - the nature of knowing and the types of contextual input required for this to occur – in order to address the way in which relational interaction between the two generates meaning. But how might organizations best attempt to operationalise these insights?

In the above discussion, we hope to have shown the critical importance of some form of analysis of context in addressing the generation of meaning by people within organizations. We thus argue that such a contextual analysis is necessary if organizations are to avoid the mistakes of the past and ensure better targetting of their investments in methodologies, best practice, application software, special interest groups, and other forms of support for shared organizational endeavour so as to support the various contextual inputs required for the creation of rich context, and avoid the comparative meaninglessness of KM initiatives founded on 'weak' context, where just a single contextual component is supported. That the performance of some form of contextual analysis should be important in developing any organizational strategy is not so much of a new assertion as it may seem, since planning the change curve associated with any reasonably sized implementation of organizational change already incorporates explicit considerations of the types of contextual component we have discussed. For example, organizational redesign and training needs analysis reflect elements of embrained and embodied components; business process analysis, together with change management, communication planning and communities of practice, reflect considerations of encultured components; systems and applications architecture, methodologies, CASE tools, and other sedimentations of organizational routines are all considerations of embedded components, and data analysis and architecture, documentation of best practice and organizational routines, and other areas of the mapping, design or documentation of explicit symbols are all aspects of encoded components.

It might be said, therefore, that such considerations already form a part of the planning and management of organizational change; however, the important insight here is that these do not usually occur at present in a *relational* fashion; i.e. the various contextual components are not considered simultaneously. If organizations are to

generate value from their often considerable investment in internal initiatives, they must ensure that such initiatives are able to support the creation of meaningful activity, by knowing individuals. We have argued that this occurs through a systemic and relational process, where five contextual components must interact. However, in the commercial experience of the authors of this paper, most organizations' change planning and management activity is likely to reveal two important differences in this regard. First, the various types of initiative are not considered in a relational fashion such that the interaction between the five types of component is explicitly discussed; and second, it is almost invariably embedded and encoded elements which receive the majority of analytical attention and investment.

We argue that such approaches to organizational change are therefore focusing on redundant forms – weak context - rather than the valuable, relational processes required for the generation of rich context. To counteract this natural tendency (we have argued that encoded contextual components tend to be privileged due to their visible, focal position in our consciousness), we suggest the inclusion of a contextual analysis exercise as an integral component of the planning of any major change initiative, which would ensure that the relational interdependence between the various types of initiative receives explicit attention. To take a particular example, contextual analysis would provide a structured way to relationally approach the procurement and organizational implementation of, say, a customer relationship management (CRM) application. Under most existing systems procurement methodologies, information about the required data and technical performance criteria is first gathered, and then this is combined with analyses of cost, risk and other interdependencies to create a requirements specification, from which the information systems department can then either custom-build or approach the market for an application vendor. Note the emphasis at all times on embedded and encoded contextual elements of knowing, which are taken to be the actual object of value.

In contrast, the inclusion of a contextual analysis would reframe this process to include a consideration of the types of aptitudes and skillsets required to make use of the CRM (for example, a willingness to document information, attention to detail, analytical ability – all embrained and embodied); the organizational culture required for people to interact with the CRM and to find it useful (for example, willingness to share personal customer intelligence, and to engage in dialogue with others about ways to optimize the use of the data – all encultured contextual components); the sorts of software tools, techniques, methodologies, routines and best practice that would best support these activities (embedded contextual components), and the raw data required to develop the sorts of indicators and reports that would be meaningful to people within the above process (encoded contextual components). *All these factors would be considered simultaneously – i.e. relationally to one another.* This is in contrast to the majority of organizational change programmes where, if such aspects are addressed in their entirety (which is very rare), this usually occurs *post hoc* in the form of attempts to adapt an already existing initiative into an organization. We believe that as a result of such analysis the requirements specification thus produced might look rather different, and look to broader indicators for its measurement of value.

Conclusion

In this paper, we have attempted to show in various ways the limitations of approaches to 'knowledge management' which pay insufficient attention to the context within which meaningful activity is generated. In framing a much-needed dialogue about the generation of meaning within organizations, however, the 'knowledge management' debate has nonetheless performed a valuable function, for it has shown that *all* organizations should concern themselves less with the management of 'knowledge' as with the cultivation of knowing. However, this debate has also highlighted a current confusion within sociological and organizational circles about the nature and location of the context against which knowing occurs. We have used a theory-of-practice perspective to propose a solution to some of these questions, showing the pivotal importance of acknowledging the various components of context in generating meaningful interaction between organizational workers. It is hoped that an improvement in organizations' understanding of their own contexts - possibly achieved via the inclusion of contextual analysis within a structured change methodology - will encourage a celebration of the diverse as well as the uniform, and the relational as well as the unitary, for it is surely their meaningful interaction in practice which generates the value they seek from their strategic initiatives.

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