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CONNECTING KNOWLEDGE MANAGEMENT AND EXPERIENTIAL LEARNING TO GAIN NEW INSIGHTS AND RESEARCH PERSPECTIVES

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ABSTRACT

There is a growing sense that knowledge management, to be most effective, must address questions of knowledge creation and innovation in organisational contexts. Therefore, knowledge management needs to develop more sophisticated and epistemological orientations towards knowledge, (1) realising how knowledge is socially embedded and constructed and (2) how individuals acquire this knowledge, i.e., how they learn. In short, we conceive the frontier of knowledge management, managing knowing, as the result of the dynamics of socially constructed environments. Our project calls for an interdisciplinary approach, bridging epistemologies, and for including insights from other fields into IS. We look at experiential learning, which has been studied in depth in the field of social psychology, as a way of enlarging our understanding of knowledge management. By connecting experiential learning and managing knowing, we see more clearly the conceptual issues at the frontiers of knowledge management. Finally, we describe a research agenda incorporating this methodology to explore the questions surrounding experiential learning in a world going digital.

The fixed person for the fixed duties, who in older societies was such a godsend, in the future will be a public danger

A.N. Whitehead

1. INTRODUCTION

Currently, there is a growing sense that knowledge management [KM], to be most effective, must address questions of knowledge management and innovation in organisational contexts (Blackler, 1995; Grant, 1996; Roos and von Krogh, 1996; Spender, 1996). KM, to realise its potential, needs to develop more sophisticated and epistemological orientations towards knowledge. Developing KM has two frontiers: (1) realising how knowledge is socially embedded and constructed and (2) how individuals acquire this knowledge, i.e., how they learn. In short, we conceive the frontier of KM, managing knowing, as the result of the dynamics of socially constructed environments. The distinction between *knowledge management*, more mechanistic and rooted in monist epistemology, and *managing knowing*, more dynamics and consistent with social constructivism, is fundamental to this analysis. Experiential learning theory [ELT] has a similar perspective on knowledge in terms of how people acquire knowledge, that is, how they learn. Experiential learning is an effective, robust theory for understanding and modelling how people learn in socially constructed

environments. Experiential learning in practice is often recognised for its emphasis on holism, humanistic processes, and self-reflection; however, these are not the most crucial features for our analysis. We want to move ELT beyond its familiar setting on ropes courses and in outdoor education. ELT understands learners and knowledge as socially embedded; the most basic formulation is that the learner develops through a dialectic engaging of active experience and reflective integration of that experience. Thus, we can say that KM and ELT are converging on similar fundamental theoretical and practical trajectories. This trajectory embraces two main ideas. First, the plurality of knowledge in contrast to an essentialist (or monist) epistemology and that this knowledge varies across time, space, and social location. In addition, the equivocality and fundamental subjectivity of language makes a monist epistemology increasingly problematic. The second idea is a focus on knowledge as the outcome of dialectic processes between the individual and the social system. These two main similarities result in the need for more interpretative and critical methodologies alongside the standard positivist ones to better describe and unpack what happens during IS implementation to achieve knowledge management.

The similarities in their epistemological stances make synthesising KM and experiential learning possible. The possibilities for synthesis to redirect IS research in the areas of ICT implementation, knowledge innovation, and communities of practice make the synthesis worthwhile (Nissen, Klein and Hirschheim, 1991; Galliers, 1993; Harvey and Myers, 1995; Orlikowski, 1996). Therefore, we argue that as KM advances towards managing knowing, experiential learning offers crucial and valuable insights regarding how individual agents learn in dynamic, co-evolving systems. *Our point is that KM of the environment is managing knowing and that this, in essence, is an experiential learning process.* This paper aims to deepen our current understanding of how learning happens in a world of digital media and virtual spaces where managing knowing moves to the forefront of management's agenda.

This paper consists of four sections. First, we establish our conceptual framework. To accomplish this, we will review the work done unpacking knowledge as a black box. Second, we will make clear our methodological stances based on the particularities of knowledge and knowing wherein these are conceived of as a process and not merely a substance. Knowledge as a dialectical process is the creative tension we inherit from the literature of social constructivism (Berger and Luckman, 1966; Polanyi, 1966; Kogut and Zander, 1996). In the third section we introduce experiential learning, which has been studied in depth in the field of social psychology, as a constellation of concepts that can advance the knowledge management frontiers. We will present the possibilities for synthesising experiential learning and ICT. Finally, we will describe a research agenda incorporating appropriate methodologies to explore the questions surrounding experiential learning in a world going digital.

2. HOW KM GOT WHERE IT IS

In a network society we face an emergent informational economy (Castells, 1996). Furthermore, the network society and informational economy are mutually contingent, with information and communications technology being the most common mediating factor in their relationship. This society-economy relationship shapes the structure and dynamics of the knowledge-based organisation. Taken together these three, the informational economy, network society, and their attendant knowledge-based organisation result in the axiomatic, common sense notion, that growth is the outcome of technology dynamism and knowledge innovation. KM is the array of conceptual schemas and management initiatives that have arisen to face the challenges of these dynamic times and their new common sense about the nature of organisational action and effectiveness. However, often picking up on older debates, KM compasses two divergent approaches. The standard, mechanistic approach to KM is typified by the effort to identify, store, and distribute knowledge, usually in the form of documents (Ruggles, 1997; Alavi and Leidner, 1999; Liebowitz, 2000; Schwartz, Civitini and Brasethvik, 2000). Here the implication is that knowledge has more to do with raw information than applied knowledge. Managing knowing, on the other hand, is the conscious effort to identify what knowledge is and how it is manipulated and generated by the organization. To manage knowing is to realize knowing as a complex process grounded in organisation dynamics. The shift from nouns (knowledge management) to gerunds (managing knowing) reflects the difference in viewpoint (Weick, 1979).

KM typically focuses on collecting documents and reports spread throughout a company and its various departments and digitising them for more systematic access. Once the knowledge is collected, the functional question arises: how de we organise this welt of documentation? Various kinds of knowledge storage and indexing projects constitute the bulk of KM efforts. For example, Davenport et al. (1998) examined 31 KM projects, looking at the following categories: creating knowledge repositories, improving knowledge access, managing knowledge as an asset, and enhancing the knowledge environment. Only the final category, enhancing the knowledge environment, directly relates to managing knowing. In addition, it was the least observed type of project in this study.

Compared to the mechanicistic version, managing knowing focuses on knowledge production as an emergent property of a dynamic organisation. As ICT become more ubiquitous, they may be applied beyond pure storing and indexing, and what gets labelled the "soft" or "messy" side of knowledge and information systems appears as a new issue for research. From the humanities perspective, the contextual, constructivist understanding of knowledge and individuals is perhaps more familiar than it is to the valiant computer and technology specialists who, in advancing KM beyond mechanistic, cybernetic activity, "rediscovered" the complexities surrounding human activity. The practical need to understand how knowledge effects decision-making, the nature of innovation, and how the organisational environment relates to knowledge led KM efforts quickly into the rarefied realm of epistemology: What is knowledge? How is knowledge created? In essence, attempts to manage knowing led scholars, engineers, managers, and the like into being amateur philosophers, to doing epistemology in living colour.

3. TOWARDS MANAGING KNOWING: IDEAS AND METHODS

The standard version of KM fails in its attempt to describe and analyse managing knowing for two reasons. First, because its own epistemology considers knowledge as an unequivocal, uniform, and singular substance. Second, its technological determinism ignores the most salient features of the knowledge environment: its socially embedded and dynamic nature. Moving beyond these limitations has produced several candidates for modelling what knowledge in organisations actually is (Kogut and Zander, 1996).

A first point of departure from the standard account, widely studied in recent years (Polanyi, 1966; Nonaka and Takeuchi, 1995; Spender, 1996), is between the tacit and the explicit dimension of knowledge. It may be summarised in Polanyi's observation that people know more than they can say, or, total knowledge less explicit knowledge is tacit knowledge. A second point of departure is the difference between group and individual level knowledge (Spender, 1995; Kogut and Zander, 1996; Andreu and Sieber, 2000) While some find this philosophically disturbing, arguing that knowledge can only exist in the individual mind because of the nature of consciousness, we believe the work done in identifying routines as group knowledge adequate to move beyond these criticisms (Leavitt and March, 1988; Nelson and Winter, 1982). The final ingredient is praxis, or, the notion of knowledge-in-action (Bourdieu 1979, 1990; Coleman 1986; Nohria and Berkley 1994). The ideas incorporated into praxis are from older debates, but have been quickly adopted. Knowledge and learning, in order to be useful for an organization, must impact action. This means that knowledge development and deployment has to contribute to the organisation's day-to-day functioning, and hence it is necessary to center attention on knowledge for action, much in the line of Duncan and Weiss's (1979) conception of knowledge and Argyris and Schön's (1978) conception of learning. Praxis is more than just relevance however. Cook and Brown (1999) consider that much research shows a knowledge-action gap that ignores the importance of practice. They claim that "there is more epistemic work being done in what we know how to do than can be accounted for solely in terms of the knowledge we possess. So, in addition to talking about the four distinct forms of knowledge, we *also* want to be able to speak about the epistemic work done being done by human action itself—that is, about what is *part of practice* as well as what is possessed in the head" (Cook, and Brown, 1999: p. 382). Epistemic work is the process of making real the internal constructions defined as personal knowledge. Knowledge, as we have seen above, is actually a plurality of knowledge types. Praxis, then, is the lived reality of putting knowledge into action. Building from the knowledge plurality of Spender (1998), Cook and Brown describe this interplay between

knowledge and praxis as bridging epistemologies because praxis bridges knowledge types that are incommensurable at levels removed from specific milieux.

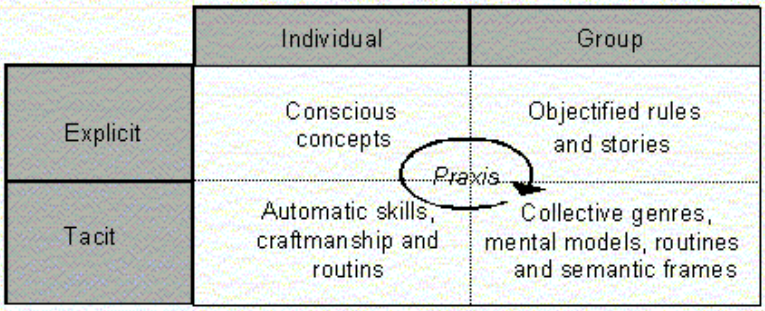

Figure 1: Pluralistic epistemology and praxis (adapted from Spender (1998) and Cook and Brown (1999))

This schema (see Figure 1) is effective because it captures the two key issues running throughout managing knowing as an experiential learning process: what is the nature of knowledge in organisational contexts (socially embedded) and how do agents acquire this knowledge (transactions between individual and group). The schema is relevant also because it makes clear that knowledge and praxis are not exclusive. Individual actions as structured by organisations constitute the dialectic of knowledge and praxis.

Understanding knowledge in this way has some tricky methodological implications. Although several different classifications of research paradigms have been made, we focus on those proposed by Orlikowski and Baroudi (1991), following Chua (1986), distinguishing between positivist, interpretive and critical studies. Positivist studies are premised on the key idea that the social world exists externally and that its properties should be measured through objective methods rather than being inferred subjectively through sensation, reflection and intuition. Here, it is assumed that the observer is independent of what is being observed and that the choice of what to study and how to stud y it can be determined objectively. Furthermore, positivist research considers that the aim of social science should be the identification of causal explanations and fundamental laws that explain regularities in human behaviour and can be measured and observed. Thus, phenomena are typically investigated with structured instrumentation in order to increase predictive understanding of the phenomena.

On the other hand, interpretive studies' initial point is that reality is socially constructed rather than objectively determined, thus adopting a relativist point of view of reality (Berger and Luckman, 1966). The researcher is considered part of what is being observed, and science is driven by human interests (Habermas, 1971; Kuhn, 1962). Research focus is on meaning rather than on facts and the understanding of processes and evolution appears to be a central theme of interest. Thus, phenomena are typically investigated adopting unstructured instruments in order to increase understanding and "insight" (Orlikowski and Yates, 1994; Boland and Schultze, 1996, Scarborough, 1996). Thus, theorists within the interpretive paradigm tend to share a common perspective in that their primary concern is to understand the subjective experience of individuals. Their theories are constructed from the standpoint of the individual actor as opposed to the observer of action; they view social reality as a process, as an extension of human consciousness and subjective experience.

Finally, critical studies occupies something of a middle position between the other two as regards ontology. Compared to the sometimes malleable constructionism of the one, and the naïve objectivism of the other, critical approaches take perceived reality to reflect real structures of power and domination. Perceived reality has been shaped over time by a series of social, political, cultural and economic factors that have crystallised themselves into a series of structures that are now perceived to be "real, natural, and immutable". They aim to critique the existing status quo through the exposure of what are believed to be deep-seated, structural

contradictions within social systems and thereby transform these alienating and restrictive social conditions. Thus, critical research focuses on oppositions, conflicts and contradictions in modern society. It is seeking to be emancipating, i.e. it should help to eliminate the causes of alienation and domination (Myers, 1997, Hassard 1995) and implies an active involvement of the researcher in the social system of interest. Table 1 summarises the main features of each of the three paradigms.

	Positivism	Interpretivism	Critical Theory
Epistemology	• Objective • Dualistic • Finding fundamental laws / true or probably true	• Subjectivist • Pluralist • Transactional created findings	• Subjectivist • Transactional • Value-mediated findings
Ontology	• Realism / nonothetic (shared) meaning system • Naive • Critical	• Relativism / • Unique meaning system	• Realism - mediated interest structures. • Historical
Methodology	• Experimental • Verification/ falsification of hypotheses • Mainly quantitative methods	• Hermeneutical/ dialectical • Mostly qualitative methods.	• Dialogic / dialectical • Action research
IS research examples	• Benbasat, Goldstein and Mead (1987) • McGrath and Hollingshead (1994)	• Boland (1991) • Orlikowski (1992) • Walsham (1993)	• Checkland (1991) • Hammer and Champy (1993)

Table 1: Ontology, epistemology and methodology in different research paradigms

The knowledge plurality, as described by Spender (1996), with its social embeddedness and its dynamic nature begs the adoption of an interpretive research of KM, much in the line of Kogut and Zander‘s constructivism (1996). In addition, adopting the position that knowledge-in-action is more useful for organisations than knowledge alone, we follow Cook and Brown‘s (1999) assertion that bridging epistemologies constitute the generative dance that sustains and enhances organisations. The action of knowledge-in-action is understood here as the dialectic between current knowledge and intent. The dialectic is the lived experiences of the moment that bridge the incommensurabilities of knowledge.

In sum, we consider that research into managing knowing requires moving past, without wholly abandoning, positivistic approaches by using interpretative and critical approaches. The benefit of such methodological amplification is reinforced by examining the links between managing knowing and experiential learning.

4. MANAGING KNOWLEDGE NEEDS EQUALLY DYNAMIC AND DIALECTICAL PEDAGOGY

The incommensurablity of the various types of knowledge is the most important aspect of pluralist epistemology for our argument. From this perspective, the organisation exists to resolve the knowledge problem of incommensurable kinds of knowing. Therefore, in directing coherent action, the organisation creates and recreates communities of practice whose resolution of knowledge problems is necessarily particularistic and path-dependent. This is the meaning of socially embedded knowledge. As a pluralistic epistemology focuses our attention on the multiplicity and variability of modes of knowing it is reasonable to wonder that learning is not as straightforward as often assumed. Just as knowledge can not be a black box, nor can learning. Our approach calls for an equally processual and dynamic model of learning.

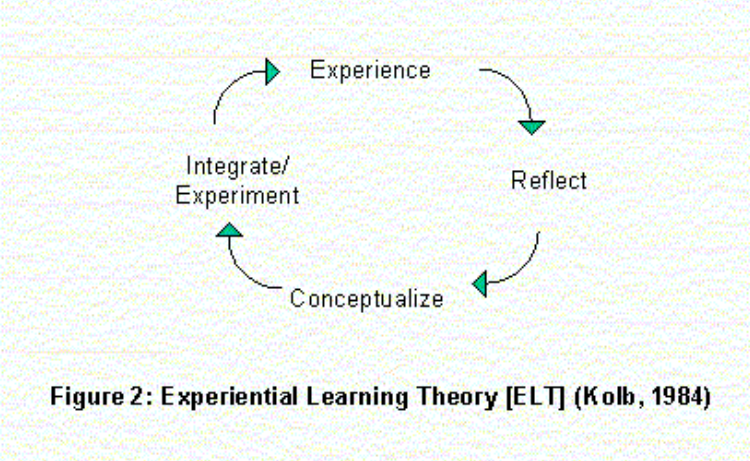

Figure 2: Experiential Learning Theory [ELT] (Kolb, 1984)

Experiential learning offers such a dynamic model (see Figure 2). Experiential learning is sufficiently dynamic at two levels. One, it defines the learning process as an oscillation cycle between tacit and explicit knowing. Two, movement through the cycle is a transaction of productive inquiry, which means that learning is a transaction between a conscious agent and the knowledge embedded in her social context. Immediately, we see the natural connection between experiential education's core concerns and the knowledge managing frontiers.

Recalling that Cook and Brown described praxis as the activity that, once in motion, bridges various knowledge types, we can now see that the ELT cycles is the view we get when we zoom in on the praxis loop (Figure 1). Experiential learning is the epistemic work that develops practices that allow the generative dance between what knowing and what is known.

The theory is the result of the unrelated contributions of the philosopher/educator Dewey, the social psychologist Lewin, and the developmental psychologist Piaget (Kolb, 1984). Direct experience which is variously unsettling, engrossing, challenging, and goal-oriented is followed by reflection on the experience and then finally integration of the lessons learned in reflection back in to the individual and/or the group norms and sense-making. The various stages in the cycle reflect the implicit realisation of experiential learning that there are different modes of knowing. In addition, as the experiential learning process moves through time, there is also the implicit assumption that the learner is operating on the basis of previous accumulated knowledge.

The ideas that connect ELT and managing knowing are three-fold. First, there is plurality and variability of knowledge. Second, language meaning is equivocal; the sign and the signified are loosely connected (Foucault 1970; Derrida 1978; Harvey 1990; Rorty 1989). Third, knowing and learning are rooted in dialectics. To connect ELT and managing knowing, we start with the cycling from experience to reflection in experiential learning. Here we see the same oscillation between tacit and explicit knowledge that is so important in managing knowing. Direct experiences are not simply passive moments: experiences are engagements with the primarily tacit world of actions. This is consistent with the Deweyean understanding that philosophy should study life as lived experiences and that experiences are first and foremost felt, aesthetic moments that only become objectified and theorised in moments of reflection (Dewey 1938). The cycling and dialectical transactions between learner and surroundings also enable problems of language to be circumvented.

For other key connecting variable, group or individual, knowledge has a more ambiguous relationship to experiential learning. Whether the experiential learning cycle applies to individuals or groups is an open-ended question. In fact, to distinguish them we introduce two terms: apprenticing and organisational learning (Senge, 1990; Lave and Wenger, 1991; Garvin, 1993). These are categories derived from current practice among consultants; yet, conceptually they aid in resolving some of the ambiguity of the group/individual dimension. To this end, experiential learning at the individual level is apprenticeship and at the group level it is organisational learning.

Too hard of a line between the two can not be drawn, however, because clearly individuals learn in group contexts and organisations are composed of individual learners coordinated by organizational routines and social constructions of language or identity. Nonetheless, the ELT cycle has applications for both individual learning through modifying tacit skills or mental models or schemas. Meanwhile, the cycle resonates with much of the work done in organisational learning and change with its focus on routines, whether defined broadly or narrowly (Argyris and Schön, 1978; Leavitt and March, 1988; Wenger, 1998).

5. THRESHOLD OF NEW PHENOMENON: ELT IN DIGITAL AGE

Since organisations are relying on ICT more and more, and since managing knowing is the critical strategy for many organisations, we must ask what is the relationship between ICT and managing knowing. Or, since managing knowing is an experiential learning process, what is the relationship between ICT and experiential learning? We rely here on an inventory of current applications and issues raised by the IS implementation literature. By scratching the surface of how ICT applications affect the knowledge environment, how they affect experiential learning, we aim to identify the practices and their salient features that invite research and inquiry.

As we discussed above, the ICT impact may be categorised as supplementing or superceding experiential learning. In supplementing, the ICT is used to extend and structure the reflection and conceptualisation stages. In superceding, ICT enables action locales—virtual spaces. Our discussion of experiential learning offers the apprentice and organisational learning categories as useful categories for imagining experiential learning applications. Apprenticing is about individual knowledge and praxis while organisational change is about group knowledge and praxis. Both categories encompass the explicit and tacit. So, apprenticing is about tacit skills and mental models as well as explicit conceptualisations and schemas. Likewise, organisational learning is about tacit routines or explicit legitimations, be they genres, `war stories´, or cultural norms. Again, experiential learning, like action research, is often focused on explicating the tacit and then tacifying the abstract. Put together, ICT and experiential learning produce the following arrangement (Figure 3) of experiential learning in a digital world. Of course, in any of these quadrants, the ICT application applies to any aspect of the experiential learning cycle (experience – reflection – conceptualisation - experimentation). Some applications may use the same technology architecture, but they are grouped according to their relevant arena of use.

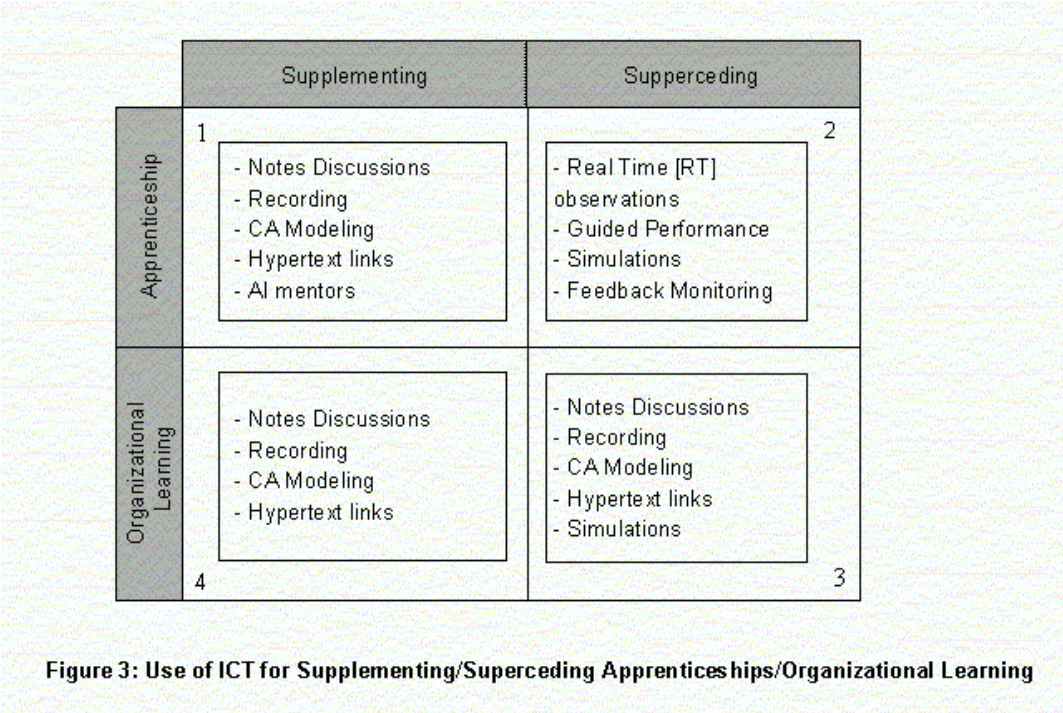

Figure 3: Use of ICT for Supplementing/Superceding Apprenticeships/Organizational Learning

Supplementing Apprenticeships

In this quadrant, familiar technology like notes applications can be used to extend the reflection and conceptualisation stages. This can be combined with hypertexts so that the electronic exchanges may be tied to other resources, including other notes forums, with the aim of deepening and objectifying the responses to particular peripheral participation experiences (Brown et al. 1989). Computer-assisted modelling (CAM) can be used after experiences to enhance reflection on particular experiences. For example, a new product's prototype is built; afterwards, the expert and apprentice designers use CAM to stay focused on salient design issues. Or, recent advances in manufacturing with printers allows tangible objects to be made instantly and without the mediating influence of die-and-mould technologies (The Economist, 2001). The potential to access tangible models easily would enable faster experiential learning cycles both to develop products and designers. Recording and playback technologies can be used to supplement and improve the reflection stage of defining "what happened." The most elaborated form of supplementing would connect apprentice learners to AI mentors who would facilitate the learner's reflection and conceptualisation stages. In addition, to maintain the distinctiveness of apprenticing, the AI mentor would have to be very flexible and adaptable so as to approximate the give-and-take collaboration of real apprenticing.

Superceding Apprenticeship

In quadrant 2 we see the possibilities for virtual experiences that serve as the basis for apprenticing. Simulations are an attempt to provide realistic, i.e. tacitly grounded, experiences to learners through purely virtual media. The flight simulator is the most famous example. Real time observations, with interactivity, are the equivalent of watching master artisans at work. Guided performance is the apprentice performing with the electronically mediated input from a mentor. Feedback monitoring uses the power of diagnostics with the sophistication of software to provide information for reflection and integration either directly or through a mentor. The slow-developing virtual reality applications are the best potential source for this type of experiential learning.

Superceding Organizational Learning

In quadrant 3 the focus is on virtual experiences that initiate group experiential learning changes. Whether the groups are pre-existing or only interact virtually is open-ended. Again, simulations could be used with groups; these might be similar to the classic team problem-solving challenges of experiential education like climbing over a wall without ropes, "blind" trust walks, etc A simulation of what a team does normally probably offers little hope of engaging the team members in an experiential learning cycle. On the other hand, a simulation of climbing Everest may be very engaging at the time, but will the ideas about group features at explicit or tacit levels carry over into normal actions? Second, leadership in the form of structuring activity and settling conflicts emerges quickly in the classic problems and is usually rooted in personality issues, gender, and group history. How would group leadership emerge in a simulation? Notes software, hypertext links, recording technologies, and CA modelling would have similar applications as in apprenticing models. Here, the discussion or mutual experience is the beginning of an experiential learning cycle and not only part of the reflection and conceptualisation stages. One issue is the extent to which simultaneous, real time communication can be achieved because lagged, linear, text driven communication will be very limited in its ability to effect tacit knowledge either to identify or to embed it. Obviously, the potential to identify, manipulate and embed tacit knowledge is the key to transfer of learning from the heightened awareness around the experience into group knowledge that is access for group praxis.

Supplementing Organizational Learning

Here we arrive at the range of applications that supplement organisational learning. Of course, the ability to achieve robust communication with notes software, video conferencing, et al is as significant here as for

superceding applications. Reflection, conceptualisation and integration stages are the keys to objectifying and embedding various kinds of knowledge. Without this capability, the ICT applications for organisational type experiential learning will be limited. Furthermore, there are issues of transparency and trust in effective organisational learning. When a group is removed from "ordinary" circumstances, when they conduct discussions in a circle, when there is a sense of isolation, it is easier to trust colleagues and start to take the necessary learning risks. In a virtual space, the potential for "private" discussions could undermine requisite trust levels. Also, the potential of outsiders to monitor and record, especially those with supervisory power, could undermine requisite trust levels. Hence, while an open question, the possibility for teams that exclusively function in virtual spaces using digital communication to effectively identify and change routines seems unlikely. Retailers without brick-and-mortar operations have had difficulty succeeding, and in a similar sense, organisations without a brick-and-mortar existence and appropriate organisational context seem unlikely to succeed in organisational learning. The power of ICT means that teams can communicate and interact "anytime and anywhere;" to leverage this temporal and geographic freedom requires a particular organisational ambience. The organisation is placing a lot of trust in these teams. Often ignored is the darker side of ICT applications: "anytime, anywhere" may also apply to monitoring and rigid control systems. The dark side of the network society with its dissipated identity and organisational structures is the growth of the surveillance society.

6. CONCLUSION

We have argued that as KM pushed its frontiers, practitioners and IS scholars opened a Pandora's box of deep epistemological questions about the nature of knowledge and knowledge acquisition. Despite the instrumental concerns about organisational effectiveness or profitability that initiated KM, like Pandora's box, the epistemological questions can not be simply put away or ignored. To address them, and to resolve them, requires exploring new disciplines or theories. Experiential learning, with its reliance on pluralistic, constructed knowledge and learning dialectics, helps KM grapple with the core issues of managing the knowledge environment. To advance this progress, we suggest our synthesis of yields new, robust questions for empirical research. Furthermore, the synthesis here also demonstrates the need to utilise an array of methodologies to adequately research at the frontier of managing knowing.

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