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Abstract

Under the influence of Enlightenment epistemological thought, the social sciences have exhibited a distinct tendency to prefer deterministic explanations of social phenomena. In so doing, social scientists of the *'foundational'* school have sought objective knowledge of social phenomena by eliminating the subjective intrusions of concerned actors (Hekman, 1986)[1]. However, as Bruner (1990; p. 118) points out *"…there are no causes to be grasped with certainty where the act of meaning is concerned."* It is clear that *'foundationalist'* views of knowledge have come to dominate the information systems (IS) field in that they influence extant perspectives on knowledge management and on the posited role of IT in creating, capturing, and diffusing knowledge in social and organisational contexts. In order to address what many would consider to be a deficiency in such thinking, this paper offers an *'antifoundationalist'* perspective that considers knowledge as being simultaneously *'situated'* and *'distributed'* and which recognizes its role shaping social action within *'contexts of practice'*. Insights drawn from this short essay are addressed to academics and practitioners in the IS field in order to illustrate the considerable difficulties inherent in representing individual knowledge and of the viability of isolating, capturing and managing knowledge in organisational contexts.

What Knowledge is and What it is Not

The point of departure for the present treatise on the concept of 'knowledge' is a definition that is in good standing within the IS field and which is congruent with extant perspectives across the social sciences (see Grant, 1996, for example). In their book *Working Knowledge*, Davenport and Prusak (1998; p.3) posit that:

> Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organisations, it often becomes embedded not only in documents and repositories but also in organisational routines, processes, practices and norms.

While this definition is, on the surface, all-embracing and without contradiction is does, however, possess certain weaknesses that can only be illustrated by a consideration of taken-for-granted issues of ontology. The core issue here revolves around describing the relationships that exist between the individual and his social world, between the knowing social actor and social groupings and contexts in which he or she participates. In terms of the present essay, this task begins with a brief consideration of the constructivist, '*antifoundational*' philosophies of Martin Heidegger and Hans Georg Gadamer in order to sketch out the ontological basis of knowledge.

An Ontological Perspective on Knowledge

In response to the question 'What is knowledge and What is it not? we argue that knowledge cannot ever become *"embedded … in documents and repositories [and] also in organisational routines, processes, practices and norms."* Why? Precisely because it is impossible to isolate and represent objectively *"a fluid mix of framed experience, values, contextual information, and expert insight."* Certainly, as Bruner (1990) points out, a person's knowledge resides not only in his head, but also in the notes, underlined book passages, manuals and guides he consults, and in the computer-based data he has access to. It is clear, however, that these are sources of personal *information* only for the actor who has painstakingly sought out, collated, and put into context the *data* contained in each personal artifact. Contextual, temporally based *data* makes the transition to *knowledge* only when an actor interprets it in order to inform his or her understanding of some phenomenon or other. All this is indicative of the 'situated' and 'distributed' nature of knowledge: But how does it relate to the social context and ground of knowledge?

As part of the interpretive process that characterizes all understanding, meaning is attributed to data within the context of the actor's constantly evolving *'lived experience'* and under the sway of a *'tradition'* (Gadamer, 1975). Gadamer (1975) and Heidegger (1976) illustrate that the 'lived experience' of social actors arises out of the web of encounters and dialogues that characterize individual existence or *'Being-in-the-world'*. The concept of *'lived experience'* describes the relationship between social actors and other beings that populate the tradition or culture in which they are embedded (in a Heideggerian

sense, the term *being* refers not only to other humans but all social phenomena). In delineating the constitution of *'lived experience'*, Heidegger (1976) points out social actors are *'thrown'* in to a *'life-world'* where their existence has, from the outset, been *'tuned'* or *'situated'* to be a specific existence with other beings, within a specific tradition, and with a specific history. However, in order to cope with their *'thrownness'* social actors come ready equipped with a *'foreknowledge'* or, in Gadamerian terms, a *'prejudice'*-laden *'effective-historical consciousness'*, that enables them to interpret, make sense of and partake in their social world. *'Foreknowledge'* is, in many ways, knowledge of the 'ready-to-hand' (*Zuhanden*) that constitute an actor's *'life world'*. Thus, the *'ready-to-hand'* possess a degree of familiarity that effectively sees them dissolved into the unreflective background of the actor's daily existence. If, however, something happens that results in a *'breakdown'* in understanding, social phenomena become the object of 'theoretical' reasoning and acquire the ontological status of being *'present-at-hand'* (i.e. a *Vorhanden*) until the *'breakdown'* has been repaired. As Gadamer illustrates, social actors must give recognition to the influence that *'effective-historical consciousness'* exerts if they are to work out their *'prejudices'*. The process of *'working out'* prejudices and of repairing *'breakdowns'* in understanding is governed by what Gadamer called the hermeneutic *'circle of understanding'*. Here, the *'whole'* that constitutes a phenomenon is apprehended by the cyclical interpretation of its constituent *'parts'* as they relate to each other and to the *'whole.'* In so doing, an actor interprets relevant data as *'present-at-hand'* using a form of question and answer called the dialectic (Socratic, Hegelian and Analytic-Reductionist—see Butler, 1998). Thus, the actors' understanding of constituent *'parts'* will be consolidated, and in so doing the horizons or perspectives of interpreter and interpreted will gradually fuse. Thus, in repairing *'breakdowns'* a *'fusion of horizons'* (of understanding) takes place between interpreter and interpreted. The pivotal role of language in the interpretive process of understanding is has been noted by Gadamer (1975). Accordingly, Bruner (1990) argues that institutional contexts are socially constructed through the narratives of constituent actors. Thus, over time and through highly complex and ill-defined social processes constituted by a polyphonic dialectic evolves the shared understanding that constitutes culture and tradition. Finally, it is clear from Gadamer (1975) that the authoritative impulse to conform, as indicated by the existence of Heidegger's *das Man*, is testimony to the resilience of a shared 'world view' among actors in institutional contexts. This brief ontological view of knowledge has profound implications for those who examine the nature of knowledge and its diffusion in institutional contexts as will be seen in the following sub-section.

IT and the Social Construction of Knowledge

If the key to understanding social action lies in explicating the influence of shared '*weltanschauungen*', '*lived experience'*, and *'tradition'*, as socially embedded institutional knowledge, then the representation of such knowledge must be the goal of all who propose to manage it. However, the impossibility of this task is underlined by Dreyfus (1998) who cites Husserl's exasperation at trying to give a detailed account of the experience of the everyday lives of social actors. Husserl (1960) termed social actors' representations of their experiential knowledge the *noema*. However, after devoting his life's work to its delineation he concluded in the face of the *noema*'s "*huge concreteness*" that the "*tremendous complication*" in its representation made it an impossible task (Husserl, 1969; p. 244 and p. 246). Significantly, Minsky (1981) commented on the enormity of attempting to represent common-sense experiential knowledge using computer-based systems. This point is underscored by Bruner (1990; p.5) who argues that:

> Information processing cannot deal with anything beyond well-defined and arbitrary entries that can enter into specific relationships that are strictly governed by a program of elementary operations.

Thus, in Bruner's *Acts of Meaning* the message is clear: the experiential knowledge and skills of social actors cannot readily, if ever, be embedded in information systems (see Boland, 1987). However this is not surprising as Dreyfus (1998) notes that philosophers from Socrates to Husserl have wrestled with the problem of knowledge representation without much success. Nevertheless, additional arguments are adduced to convince the skeptical.

The socially constructed nature of knowledge is indicated by Berger and Luckmann (1967: p. 65) who posit that:

> The primary knowledge about institutional order is knowledge on the pretheoretical level. It is the sum total of 'what everyone knows' about a social world, an assemblage of maxims, morals, proverbial nuggets of wisdom, values and beliefs, myths and so forth, the theoretical integration of which requires considerable intellectual fortitude in itself, as the long line of heroic integrators from Homer to the latest sociological system-builders testify.

This point is indicative of the nature of organisational reality; it is also congruent with the perspectives of Heidegger and Gadamer as articulated previously. Hence, pretheoretical knowledge, as the articulated (*present-at-hand*) and unarticulated (*ready-to-hand*) components of Aristotelian '*phronesis'* (experiential 'self-knowledge') and '*techne'* ('skills-based' knowledge), plays a formative

role in establishing canonical modes of behavior (habitualised social action or organisational routines, if you will) and in the transmission of social behaviors among actor networks (Gadamer, 1975; Dunne, 1993). To underscore this, Dreyfus (1998; p. 285) turns to Heidegger to argue that *"the everyday context which forms the background of communications is not a belief system or a set of rules or principles…but is rather a set of social skills, a kind of know-how, any aspect of which makes sense only on the rest of the shared social background."* What then of the IS researchers and practitioners who assume that it is possible to describe and codify social contexts as objective facts and who therefore consider unproblematic the transfer of knowledge in organisations? Dreyfus (*ibid.*, p. 283) again draws on Heidegger to reject the notion that *"the shared world presupposed in communication could be represented as an explicit and formalized set of facts."* All this implies that social knowledge cannot be objectified and exist outside the 'heads' of knowers: furthermore, it renders fruitless any attempt to codify it objectively. It also casts doubt on those who speak authoritatively about knowledge transfer mechanisms and who ignore the social contexts that gives rise to such knowledge.

Aristotle and Individual Knowledge

In Book 6 of *Nicomachean Ethics*, Aristotle focuses on practical and technical reason—*phronesis* and *techne.* The importance and relevance of this work to any treatment of knowledge is underscored by Dunne (1993). Hence, an understanding of *phronesis* and *techne* is essential to the present project as it brings into sharp focus the situated nature of individual knowledge and, as Gadamer (1975) illustrates, adds to the ontological description already offered. To begin, it must be noted that in reading the *Ethics* in the context of the *Metaphysics* one is led to conclude that both *phronesis* and *techne* are, ultimately, forms of practical knowledge. However, in the *Ethics* Aristotle distinguishes between *praxis* and *poiesis*. The conduct of social affairs in a thoughtful and competent manner Aristotle refers to as *praxis.* This involves the application of *phronesis,* that is, a social actor's experientially based 'self-knowledge'. *Poiesis*, on the other hand, Aristotle involves the activities of 'making' or 'production'. Here *techne* is the kind of knowledge possessed by the expert craftsmen and involves the understanding and application of the principles governing the production of social phenomena—both tangible and intangible. It is important to note that Dunne (1993) in his extensive treatment of the topic interprets *phronesis* as being practical knowledge and *techne* as being skills-based knowledge. However, on page 244 he states, in regard to *poiesis* and *praxis*, that *"To these two specifically different modes of activity, techne and phronesis correspond, respectively, as two rational powers which give us two quite distinct modes of practical knowledge."* Thus, a social actor's 'self-knowledge' (*phronesis*) is a synthesis of his temporal experience of social phenomena with an ability to perform practical actions in relation to such phenomena. According to Gadamer's (1975) interpretation of Aristotle's *phronesis,* experiential or 'self-knowledge' cannot be learned or forgotten; it is ethical and moral in character and, as such, it is the supreme influence on an individual's actions. It is clear that skill-based knowledge (*techne*) and theoretical knowledge (as *theoria, sophia,* or *episteme*) are informed by the 'self-knowledge' (*phronesis*) of relevant social actors. In so doing, 'self-knowledge' embraces, as Gadamer indicates, both the means and ends of social action. Because of its unique constitution, 'self-knowledge' does not often lend itself to linguistic expression. The same could be said of '*techne'*, which provides the expert or craftsman with an understanding of the why and the wherefore, the how and with-what of the production process. Thus, *techne,* in providing a rational plan of action, also embraces both the means and ends of production activities.

Implications of Phronesis and Techne for the IS Field

This essay argues that an understanding of *phronesis* and *techne* as the two primordial components of individual knowledge is vital for researchers and practitioners in the IS field. Yet studies on systems development and the emergent area of knowledge management pay scant attention to the ontological ground of knowledge. Consider the assertion by Checkland and Holwell (1998: p. 39) that *"the* ***core*** *concern of the IS field [is] the orderly provision of data and information within an organisational using IT"*—clearly this involves the development of IS and their use. So what of the posited role for IT in the management of knowledge? Can *phronesis* and *techne* be embedded in IT? And can such systems account for all contingencies in their application? As Orr (1990) illustrated in his study of photocopier repair technicians, the attempted codification of a fairly well defined '*techne'* proved a failure; here *phronesis* proved the more influential of the two types of individual knowledge. Why? Because of the contextual nature of the Heideggerian 'breakdowns' encountered and the experiential knowledge of the repairmen, some of which was vicariously acquired through the Brunerian narratives they engaged in while constructing their 'community of knowing'. How then can IT capture adequately the experiential and interpretive nature of the *phronesis* required for this type of problem solving? As Dreyfus (1998) concludes, the answer to this question is it cannot. Consider also the IT-enabled '*techne'* of processing a business transaction. Here, the experiential knowledge of the operator plays a major role in dictating the questions posed and details taken in efficiently executing a

transaction, irrespective of the routinized features and activities embedded in the system. Why? Because information systems are 'closed' in the sense that they cannot ever capture all aspects of a business problem domain. In different spheres of organizational activity, the data required to resolve a *'breakdown'* might be of a more comprehensive nature (e.g. a report or narrative aimed at informing task-based problem solving), while targeting a problem solving '*techne'*. In this scenario the context-dependent experiential knowledge of both the author and the recipient(s) will be of especial import and will depend on the actors' unarticulated, shared social background. If, for example, the author and recipient belong to a particular socially constructed 'community of practice' (Brown and Duguid, 1991), then each will participate in a shared tradition with similar *phronetic* and *technic* backgrounds. However, even with this shared background, Boland and Tenkasi (1995) indicate that the support available from conventional systems will be limited to well-defined user needs. Given all that has been said here it is doubtful that the futuristic 'electronic communication forums' suggested by Boland and Tenkasi will be anymore successful than their data processing predecessors in supporting knowledge transfer and management within 'communities of knowing', despite shared *phronetic* and *technic* backgrounds.

Echoing Dunne (1993), practical knowledge (*phronesis* and *techne*) is a fruit that can grow on the fertile soil of individual experience; however, experience of the world occurs within a web of social relationships, and individual knowledge develops within the historical context of a tradition under the influence of significant others. But does all this imply for the IS field? Consider, for example, that extant perspectives on IT competencies chiefly operate from resource-based view of the firm, which is positivist in its orientation and focuses on the outcomes of the application of capabilities rather than the process by which they come into being. Resultant theories are not therefore sensitive to the type of ontological issues described herein and, accordingly, fail to capture the social and historical nature of individual knowledge in institutional contexts. On this point, future studies on the development and application of IT competencies should, we believe, take an interpretive stance and focus on how *phronesis* and *techne* are developed and applied in institutional contexts and not just on outcomes.

Conclusions

This paper joins calls within the IS field for a reassessment of its position on the important topic of knowledge. True, the fundamental ideas presented herein are not new, but the manner of their presentation and argument is. In any event, given the recent feeding frenzy on the topic of knowledge and the unquestioning acceptance of the nostrums proposed by some of those championing the cause, a timely injection of commonsense is called for. To recap, this paper's main argument is that knowledge of social phenomena defies objectification and representation. Institutional knowledge does not therefore exist as an objective phenomenon outside of the heads of the knowers: but what of information? Having illustrated why knowledge cannot be represented, a question is raised as to the status of information. Following a constructivist logic, Introna (1997) points out that information is 'hermeneutic understanding' and is acquired through an interpretive process by an 'already-knowing' individual. Hence, if information too is abstract and ambiguous in its depiction, data is all that can be represented, stored, transferred and manipulated by IT. Again it must be emphasized that the primary mode of informing is the narrative: as such narratives serve to define the canonical, and help construct and maintain institutionalised patterns of behaviour; but, narratives, written or oral, consist of data, not knowledge or information—hence, the need for dialogue and dialectic. Therefore, if IT is to be utilized to give voice to organizational narratives, then it must be recognized that it will be a conduit for data only. And because gaps in comprehension will always exist, no matter how sophisticated the technology and its power of representation, IT must enable a dialectic to take place between social actors and the phenomena they wish to understand. These points are reflected in the capabilities of the latest generation of Internet/Intranet-enabled knowledge management applications (see the ServiceWare Inc.[2] product suite, for example). Although the vendors of such products argue that they are capturing the knowledge of customers, employees, and domain experts, the inputs to and outputs from such applications tend to be well-defined and constitute significant abstractions from the *phronesis* and *techne* of social actors (again in the form of data). Hence, considerable interpretation is required, and while knowledge base inference engines are limited in this respect, human beings are well adapted to this process, even though their interpretations of phenomena rarely concur with those of other actors, except in situations where the data in question is well delimited. That such systems are of limited value in helping social actors communicate and repair the 'breakdowns' they encounter is not at issue; they do not, however, help social actors manage knowledge in organisation.

In conclusion, it is unfortunate that in order to help make sense of what is a complex, socially constructed world, academics and practitioners have created 'cartoon' explanations of the realities they perceive—and the concept of knowledge is here included, as data has been accorded the status of knowledge. There is nothing wrong with this, it's how ordinary people unreflectively make sense of their world, but it is not the foundation on which a science should rest.

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[1] This is not a universal rejection of 'foundational' thought as such. Take, for example, the foundational philosophy of Hegel which greatly influenced the work of 'anti-foundational' philosophers such as Heidegger and Gadamer, especially in relation to the role of the dialectic in understanding (Gadamer, 1976). Also, in the social sciences, Karl Mannheim drew on Hegel's philosophy to inform his perspective on the sociology of knowledge. Of particular relevance here, however, is that the author of this paper has integrated Hegel's dialectic into his hermeneutic method for interpretive research in information systems (see Butler, 1998).

[2] A ServiceWare Inc. white paper on the knowledge replication tools this company produces and markets can be found at: HTTP://www.serviceware.com/pdf/knowledgereplication.pdf.