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# Knowledge Management in Inquiring Organizations

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*"To conceive of knowledge as a collection of information seems to rob the concept of all of its life... Knowledge resides in the user and not in the collection. It is how the user reacts to a collection of information that matters."* Churchman (1971, p. 10).

## Introduction

Churchman had clearly explicated that knowledge does not reside in the collection of information, and had underscored the importance of humans in the process of knowledge creation. Churchman's emphasis on the human nature of knowledge creation seems more pertinent now than it was twenty five years ago given the increasingly 'wicked' environment characterized by discontinuous change (Nadler & Shaw 1995) and "*wide range of potential surprise*" (Landau & Stout 1979). Such an environment defeats the traditional organizational response of *predicting* and *reacting* based on pre-programmed heuristics. Instead, it demands more *anticipatory* responses from the organization members who need to carry out the mandate of a faster cycle of knowledge-creation and action based on the new knowledge (Nadler & Shaw 1995).

However, most extant formulations of information technology (IT) enabled knowledge management seem to have ignored this point. Our observation is supported by a review of the extant literature on IT enabled knowledge management in scholarly research as well as the trade press (cf: Anthes 1991; Chorafas 1987; Gopal & Gagnon 1995; Maglitta 1996; Strapko 1990; Zeleny 1987). Based primarily upon a static and 'syntactic' notion of knowledge, they specify the *minutiae of machinery* while disregarding how people in organizations actually go about acquiring, sharing and creating new knowledge (Davenport 1994). By considering the meaning of knowledge as "unproblematic, predefined, and prepackaged" (Boland 1987), they ignore the human dimension of organizational knowledge creation. *Prepackaged* or *taken-for-granted* interpretation of knowledge works against the generation of multiple and contradictory viewpoints that are *necessary* for meeting the challenge posed by wicked environments: this may even hamper the firm's learning and adaptive capabilities (Gill 1995). The purpose of this paper is to address this critical aspect of knowledge creation and to suggest some potential lines of inquiry toward a framework that can provide the philosophical bases for the evaluation of organizational knowledge management systems.

Churchman had interpreted the viewpoints of philosophers Leibnitz, Locke, Kant, Hagel and Singer in the context of designing information systems. Mason & Mitroff (1973) had made preliminary suggestions for designing information systems based on Churchman's framework. Based on these works, Courtney et al. (1996) have developed their

perspective of inquiring organizations by viewing them as inquiring systems whose actions result in the creation of knowledge. The objective of this paper is to complement the work of Courtney et al. in developing an understanding of human capabilities *critical* for knowledge creation in inquiring organizations. Such capabilities have not been addressed in the original work on Churchmanian models.

A review of Churchman's inquiring systems, in context of the extant thinking on knowledge management, underscores the limitations of the dominant model of inquiring systems being used by today's organizations. The human aspects of knowledge creation are then discussed and the implications drawn for improved design of inquiring systems for knowledge management.

### **Inquiring Systems and Knowledge Management**

Increased realization of knowledge as the core competence (Prahalad & Hamel 1990), coupled with recent advances in information technology such as intranets and the World Wide Web, has increased organizational interest in the topic of knowledge management. Examples of known knowledge management initiatives include Anderson's Knowledge Xchange, Booz Allen & Hamilton's Knowledge On-Line, CAP Gemini's Knowledge Galaxy, Ernst & Young's Center for Business Knowledge and Monsanto's Knowledge Management Architecture.

Most such technology-based conceptualizations have been primarily based, however, upon heuristics -- embedded in procedure manuals, mathematical models or programmed logic -- that, arguably, capture the preferred solutions to the *given* repertoire of organization's problems. Following Churchman, such systems are best suited for:

- (a) well-structured problem situations for which there exists strong *consensual* position on the nature of the problem situation, and
- (b) well-structured problems for which there exists an analytic formulation with a solution.

Type (a) systems are classified as Lockean inquiry systems and type (b) systems are classified as Leibnitzian inquiry systems. Leibnitzian systems are closed systems without access to the external environment: they operate based on *given* axioms and may fall into competency traps based on diminishing returns from the 'tried and tested' heuristics embedded in the inquiry processes. In contrast, the Lockean systems are based on consensual agreement and aim to reduce equivocality embedded in the diverse interpretations of the world view. However, in absence of a consensus, these inquiry systems also tend to fail. The *convergent* and *consensus building* emphasis of these two kinds of inquiry systems is suited for stable and predictable organizational environments. However, wicked environment imposes the need for variety and complexity of the interpretations that are necessary for deciphering the multiple world views of the uncertain and unpredictable future.

The other two kinds of inquiry systems are particularly suited to such multiplicity of world views. Kantian inquiry systems attempt to give multiple *explicit* views of *complementary* nature and are best suited for moderate ill-structured problems. However, given that there is no explicit opposition to the multiple views, these systems may also be afflicted by competency traps characterized by *plurality* of *complementary* solutions. In contrast, Hegelian inquiry systems are based on a synthesis of *multiple completely antithetical* representations that are characterized by intense conflict because of the contrary underlying assumptions. Knowledge management systems based upon the Hegelian inquiry systems, would facilitate multiple and contradictory interpretations of the focal information. This process would ensure that the focal information is subjected to *continual* re-examination and modification given the changing reality. Continuously challenging the current 'company way,' such systems are expected to prevent the *core capabilities* of yesterday from becoming *core rigidities* of tomorrow (Leonard-Barton 1995).

Given the increasingly wicked nature of the organizational environment, there seems to be an imperative need for consideration of the Kantian and Hegelian models that can provide the multiple, diverse, and contradictory interpretations. Such systems, by generating multiple *semantic* views of the future characterized by increasingly rapid pace of discontinuous change, would facilitate *anticipation of surprise* (Kerr 1995) over prediction. They are most suited for dialectical inquiry based on dialogue: "meaning passing or moving through...a free flow of meaning between people..." (Bohm cited in Senge 1990). The underpinning discussion asserts the *critical role* of the individual and social processes that underlie the *creation of meaning* (Strombach 1986), without which dialectical inquiry would not be possible. Therein lies the crucial role of the humans in facilitating knowledge creation in inquiring organizations.

### **Human Aspects of New Knowledge Creation**

The dominant conception of IT enabled knowledge management is constrained by the very nature of the knowledge creation processes. Specifically, the extant mainstream notion of such inquiring systems has given sparse attention to:

the dynamic and continuously evolving nature of knowledge;

the tacit and explicit dimensions of knowledge creation;

the subjective, interpretative and meaning making bases of knowledge creation; and,

the constructive nature of knowledge creation.

These issues are not meant to be mutually exclusive or comprehensive, however they highlight some of the limitations inherent in the current techno-centric conceptualizations of knowledge management. These issues devolve from the wicked nature of the environment discussed earlier and are aimed at providing the underpinnings for the sustenance of an inquiring organization that is capable of not only continuous learning,

*but also* continuous unlearning (Hedberg 1981). The following discussion elaborates on these issues and suggests how the limitations in the current conceptualization may be addressed to some degree.

### **Dynamic and Continuously Evolving Nature of Knowledge**

Knowledge management solutions characterized by memorization of 'best practices' may tend to define the assumptions that are embedded not only in information databases, but also in the organization's strategy, reward systems and resource allocation systems. The *hardwiring* of such assumptions in organizational knowledge bases may lead to perceptual insensitivity (Hedberg et al. 1976) of the organization to the changing environment. Institutionalization of 'best practices' by embedding them in information technology might facilitate efficient handling of routine, 'linear,' and predictable situations during stable or incrementally changing environments. However, when this change is discontinuous, there is a persistent need for continuous renewal of the basic premises underlying the 'best practices' stored in organizational knowledge bases. The extant conceptualization of inquiring systems is devoid of such capabilities that are essential to the continuous learning *and* unlearning processes mandated by a continual and increasing pace of discontinuous change. A more proactive involvement of the human imagination and creativity (March 1971, Maslow 1965) is needed to facilitate greater internal diversity [of the organization] that can match the variety and complexity of the wicked environment.

### **Tacit and Explicit Dimensions of Knowledge Creation**

The current conception of IT-enabled knowledge management doesn't address the processing of tacit knowledge which is deeply rooted in an individual's action and experience, ideals, values, or emotions (Nonaka & Takeuchi 1995). Although tacit knowledge lies at the very basis of organizational knowledge creation, its nature renders it highly personal and hard to formalize and to communicate. Nonaka and Takeuchi (1995) have suggested that knowledge is created through four different modes: (1) *socialization* which involves conversion from tacit knowledge to tacit knowledge, (2) *externalization* which involves conversion from tacit knowledge to explicit knowledge, (3) *combination* which involves conversion from explicit knowledge to explicit knowledge, and (4) *internalization* which involves conversion from explicit knowledge to tacit knowledge. The dominant model of inquiring systems is limited in its ability to foster shared experience necessary for relating to others' thinking processes thus limiting its utility in *socialization*. It may, by virtue of its ability to convert tacit knowledge into explicit forms such as metaphors, analogies and models, have some utility in *externalization*. This utility is however restricted by its ability to support dialogue or collective reflection. The current model of inquiring systems, apparently, may have greater role in *combination* which involves combining different bodies of explicit knowledge, and *internalization* which involves knowledge transfer through verbalizing or diagramming into documents, manuals and stories. A more explicit recognition of tacit knowledge and related human aspects, such as ideals, values, or emotions, is necessary for developing a richer conceptualization of knowledge management.

## **Subjective, Interpretative and Meaning Making Bases of Knowledge Creation**

Wicked environments call for interpretation of new events and re-interpretation of extant practices. However, the dominant model of inquiring systems largely ignores the important construct of *meaning* (cf: Boland 1987) as well as its transient and ambiguous nature. 'Prepackaged' or 'taken-for-granted' interpretation of knowledge residing in the organizational memories works against the generation of multiple and contradictory viewpoints that are necessary for ill-structured environments. Simplification of contextual information for storage in IT-enabled repositories works against the retention of the complexity of multiple viewpoints. Institutionalization of definitions and interpretations of events and issues works against the exchanging and sharing of diverse perspectives. To an extent the current inquiring systems, based on their ability to communicate metaphors, analogies and stories by using multimedia technologies, may offer some representation and communication of meaning. However, a more human-centric view of knowledge creation is necessary to enable the interpretative, subjective and meaning-making nature of knowledge creation. Investing in multiple and diverse interpretations is expected to enable Kantian and Hegelian modes of inquiry and, thus, lessen oversimplification or premature decision closure.

### **Constructive Nature of Knowledge Creation**

The computational metaphor of knowledge management ignores the constructive nature of knowledge creation and instead assumes a pre-specified meaning of the memorized 'best practices,' devoid of ambiguity or contradiction. It ignores that the meaning of the focal information would not exist if human beings would not have created the objects and entities in them in the first place (Dewey 1933, Strombach 1986). The dominant model of inquiring systems downplays the constructive nature of knowledge creation and action. For most ill-structured situations, it is difficult to ensure a unique interpretation of 'best practices' residing in information repositories since knowledge is created *by the individuals* in the process of using that data. Even if pre-specified interpretations could be possible, they would be problematic when future solutions need to be either thought afresh or in discontinuation from past solutions. Interestingly, the constructive aspect of knowledge creation is also expected to enable multiple interpretations that can facilitate the organization's *anticipatory response* to discontinuous change.

Recent literature suggests that some IS researchers are paying increasing attention to explicitly addressing the human *meaning creation* issues in the context of designing inquiring systems. Illustrative examples include *distributed cognition systems* that assist individuals in making interpretations of their situation, reflecting on them, and engaging in dialogue about them with others (Boland et al. 1994) and *embedded application systems* (Käkölä 1995) that facilitate the users' interpretive flexibility of information systems.

## **Conclusions**

A review of existing conceptualizations of IT-enabled knowledge management suggests that sparse attention has been given to the human aspects of knowledge creation. Given the increasingly 'wicked' environments, this dominant model of organizational knowledge management systems is increasingly constrained by its Lockean and Leibnizian nature. It is suggested that Hegelian and Kantian systems are better suited for wicked environments. We discussed how the human aspects of knowledge creation are critical for sustaining such systems for facilitating inquiry based on divergence of meanings and perspectives. Implications were drawn for improving the design of inquiring systems for knowledge management in inquiring organizations. The discussion of the human capabilities underlying organizational knowledge creation for wicked environment is expected to contribute to the philosophical bases for the evaluation of organizational knowledge management systems.

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*References available upon request from the author*