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The New Knowledge Management: A Paradigm and Its Problems

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Changes in Knowledge Management

Knowledge Management has existed as an activity since the beginnings of consciousness about knowledge itself. As a disciplinary/professional field however, Knowledge Management (KM) originated during the late '80s and became prominent only with the rise of the Internet. Despite its tender age, changes in paradigms have already come to KM. The first KM paradigm I will call The Old Knowledge Management (TOKM), because it has been superceded by a number of competing paradigms which are variants of a broader orientation called Second Generation Knowledge Management (SGKM). The variant I favor and the one I'll discuss in most detail in this article is called The New Knowledge Management (TNKM), originated by my close collaborator and friend, Mark W. McElroy (2003), and myself.

These changes in KM are significant for Knowledge Technology (KT) because the reason why KT exists is to support Knowledge and KM processes of individuals and higher level systems such as groups, organizations, nations, and Supra-national entities. The measure of KT's success or failure is how well it supports these processes. So, the agenda of KT is ultimately set by our understanding of KM, which provides the basis for our evaluation of the utility of KT offerings in helping us to solve the business, knowledge, and KM processing problems we encounter in everyday life.

In this article I'll discuss: (1) TOKM, (2) SGKM and its variants, and (3) TNKM and the problem agenda it sets for KM. In a follow-up article for KT Web I'll present an assessment of KT from the perspective of TNKM and, the KT agenda suggested by TNKM. The terms: The Old Knowledge Management, Second Generation Knowledge Management, and The New Knowledge Management, are all due to Mark McElroy (See McElroy, 1999, 2003).

The Old Knowledge Management

The starting point for TOKM is the assumption that knowledge already exists in organizations and that it is used to support decisions. In TOKM "knowledge" sometimes means psychological belief, for example when people refer to the problem of intellectual capital walking out the door of an organization in the form of departing employees. But sometimes it connotes a kind of information, as when TOKM is frequently characterized as being "*all about getting the right information to the right people at the right time.*"

Let's agree to call the knowledge in the organization, both mental and recorded in cultural artifacts, the Distributed Organizational Knowledge Base (DOKB). Then we can say that the central problem *motivating* TOKM is refining the DOKB and its structure in order *"to get the right information to the right people at the right time".* The DOKB, further, is to be refined by capturing its mental knowledge, and then codifying, and sharing it in order to enhance individual performance in business processing. The conceptual pattern of TOKM is illustrated in Figure 1
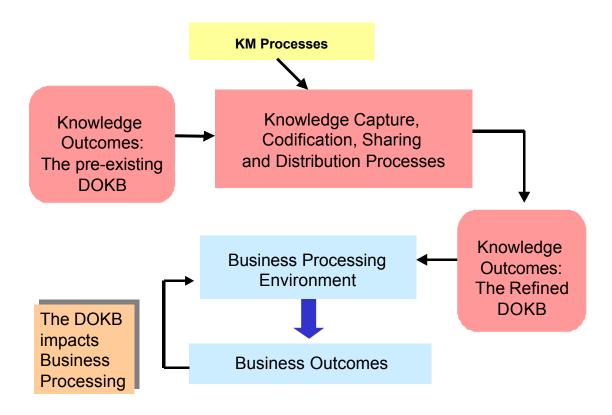
Figure 1 – The Old Knowledge Management

Both social and information technologies have evolved to serve TOKM's vision of what KM is about. In the social technology area, Communities of Practice (CoPs), Story-telling, and Knowledge Cafés have appeared to support interpersonal knowledge sharing and distribution. Meanwhile in the Information and "Knowledge" Technology areas: "Best Practices" and "Lessons Learned" databases, Enterprise Information Portals, Content Management, text mining and semantic networking, taxonomy generation, assessment/best practices capture, text abstracting and full-text indexing, search/retrieval, collaboration, and expertise location software, all support knowledge capture, codification, sharing, and distribution in some way.

All paradigms have problems they address, and TOKM is no exception. Unfortunately, those problems are not just interesting puzzles that may be solved sooner or later. Instead they are problems that are insoluble within the conceptual framework and exemplars supplied by TOKM. First, TOKM, because it begins by assuming that knowledge exists, doesn't account for how knowledge is created, or produced, or discovered. So under its assumptions, KM is only concerned with managing and facilitating the "supply" of pre-existing knowledge to decision makers, but has no concern with the "demand side" of knowledge processing (McElroy, 1999). Under TOKM, therefore, knowledge production, the heart of innovation, goes unmanaged.

Second, because TOKM doesn't concern itself with how knowledge is produced, it doesn't provide any way of telling when some formulation or belief changes from information to knowledge. That is, it doesn't answer the question: "How do we know knowledge when we see it?" (McElroy, 2003a, p. 1) So, TOKM can't track the production of knowledge and also can't clearly distinguish between the knowledge and information content of the DOKB. Under its guidance we never really know whether we are engaged in information management or KM, information distribution, or knowledge distribution, and information sharing or knowledge sharing. In the end we can't really tell whether KM or knowledge processing is effective or ineffective. For how can we evaluate how effective they are, if we don't even know whether what we're doing is KM, or knowledge processing, or information management, or information processing?

Third, TOKM also doesn't distinguish clearly between knowledge processing and KM. Under its guidance the "management" of efforts to produce and integrate knowledge in organizations is often confused with "knowledge processing" itself. So again, TOKM leaves us navigating without a rudder. If we can't distinguish KM from knowledge processing, we can't very well evaluate the impact of KM on knowledge processing. Since KM's role even under TOKM is to enhance knowledge processing, we have another problem that is insoluble within the TOKM paradigm. A paradigm for management that fails to provide the means to evaluate the success of activities performed under its guidance is not a paradigm for management, knowledge or any other kind, at all.

TOKM's problems permeate KM efforts that operate within this paradigm. We can see the consequences in the social and information/"knowledge" technologies we find in the field.

What makes story-telling a knowledge technology? A story-teller provides a stream of information to others. Is the story "knowledge"? Not necessarily, for the story may be a lie, and if it is not a lie, because the story-teller believes the claims made in the story, these claims may still not be knowledge in the sense that they have survived previous testing and application. Nor may we view story-telling as a knowledge technology because it necessarily elicits knowledge in those who hear and understand stories. Stories may elicit responses in listeners, but whether these responses include new knowledge or not is problematic and must be determined empirically. But one can't very well make such a determination without being able to distinguish between knowledge and information in the first place.

What is true for story-telling is also true for every one of the social and information/"knowledge" technologies mentioned earlier, and many others left unmentioned. Do CoPs distinguish between knowledge and information and provide a way of telling us when knowledge is created? Are Best Practices databases filled with information or knowledge. Do content management systems distinguish information content from knowledge content? Do taxonomy generation applications produce information taxonomies or knowledge taxonomies? Since all of these techniques have arisen in the context of TOKM, they share its inability to distinguish knowledge from information. Also, their support for knowledge processing and KM is restricted to those activities that overlap between information processing and management on the one hand, and knowledge processing and management on the other.

Second Generation Knowledge Management

SGKM is not itself a paradigm, but a conceptual orientation that is shared by many competing paradigms. Deep disagreements in implementing SGKM are rife, and experience has not yet resulted in concentration on even a few of the existing paradigms, much less on selection of a single dominant alternative.

SGKM is distinguished from TOKM by the assumption that knowledge not only exists, but is continuously created by human agents in response to the adaptive needs of organizations. It immediately follows from this that KM is not just a matter of managing the processes that capture, codify, share, and distribute knowledge, but also is responsible for "managing" knowledge production (variously described as knowledge-making, knowledge creation, or knowledge discovery). That is, KM is concerned with managing the processes that fulfill the "demand" for knowledge, as well as its "supply."

SGKM is further distinguished by a very abstract Knowledge Life Cycle (KLC) notion. There are many versions of the KLC that have appeared in the KM literature, as a Google search on "knowledge life cycle" readily shows. The many different versions all seem to share the idea that knowledge is created in response to organizational need, transferred or shared among organizational agents and then used in decision making. There is a fair amount of agreement then, on a three-stage "cycle": Knowledge Production, Knowledge Transfer and Knowledge Use.

From my point of view, there are three variants of SGKM that currently have the most development behind them: the Knowledge Creation (my name for it) paradigm, developed by Ikujiro Nonaka along with a number of co-authors (at various times, Takeuchi, Nishiguchi, von Krogh, and Ichijo, Konno and Toyama); IBM's Cynefin paradigm developed by David Snowden and his team at IBM; and The New Knowledge Management paradigm developed primarily by Mark McElroy and myself at KMCI, Macroinnovation Associates, and Executive Information Systems.

I don't have the space here to discuss the Knowledge Creation and Cynefin paradigms, so I'll refer you to: (1) *Key Issues in The New Knowledge Management*, KMCI Press/Butterworth-Heinemann, 2003, Chapter 4, by Mark McElroy and myself for a comprehensive critique of Cynefin, and to both this book (see various pages identified in the index), and (2) the first excerpt of *The Open Enterprise: Building Business Architectures for Openness and Sustainable Innovation*, KMCI Online Press, 2003a, (http://www.dkms.com/white_papers.html), for critiques of the Nonaka-Takeuchi SECI model and their theory of knowledge creation. Key works, by Snowden , and Nonaka and his collaborators, presenting their views include: Snowden, 1999, 2000, and 2002, Nonaka and Takeuchi, 1995, Von Krogh, Ichijo, and Nonaka, 2000, Nonaka and Nishiguchi, 2001, Nonaka, Konno and Toyama, 2001).

The New Knowledge Management and Its Problems

It is said that the superiority of a new paradigm is demonstrated by an increase in the breadth and depth of the problems it suggests and addresses successfully, compared with those suggested and addressed by the old paradigm. I'll outline TNKM for you by identifying its components and the problems they address.

TNKM is a complex of epistemology, ontology, conceptual frameworks, methodological frameworks, methods, and a normative model called The Open Enterprise. In my view, TNKM is much broader in scope than either the Knowledge Creation or Cynefin paradigms, though I won't have the space to demonstrate that here, and suggest that you verify it for yourself by learning about all three paradigms beginning with the references I've provided.

KMCI (www.kmci.org), Macroinnovation Associates (www.macroinnovation.com), and Executive Information Systems (www.dkms.com) have been gradually developing TNKM's various components over the last five years. They are:

1) Evolutionary epistemology/ontology including realism, critical rationalism, anti-justificationism, anti-founationalism, ant-relativism, pluralist ontology, a unified theory of knowledge distinguishing biological, mental, and cultural knowledge, and a normative theory of knowledge production emphasizing fair comparison of competing alternative knowledge claims. **Problems addressed: What is knowledge and how do you distinguish it from information? How can we tell when information becomes knowledge? How can we perform fair comparisons of competing knowledge claims to create knowledge?**

2) A Complex Adaptive Systems social network framework emphasizing self-organization and emergence in knowledge processing. **Problems addressed: Why is it that knowledge can't be commanded into existence? What is the backdrop of the *social* processes of KM, knowledge production, integration, and use and where does knowledge fit into this context? Can the growth of knowledge be predicted?**

3) A decision framework emphasizing knowledge use, an incentive system psychological theory of motivation, as well as single-loop and double-loop learning (from Argyris and Schön) with an extension of the double-loop leaning framework through synthesis with Popper's tetradic schema for problem solving. **Problems addressed: How do intelligent agents solve problems, learn, and produce knowledge they can use? What is the character of mental knowledge? Is it tacit, implicit, explicit? Situationally tied? Predispositional?**

4) An extension of the decision framework into a three-tier business processing/knowledge processing/KM processing framework (illustrated in Figure 2) expressing the viewpoint of SGKM, including the assumption that knowledge processing and KM are social processes, and making clear that knowledge production is a response to problem recognition. **Problem addressed: Can we provide a foundation for analyzing the impact of KM by making clear what KM is and what it is not?**
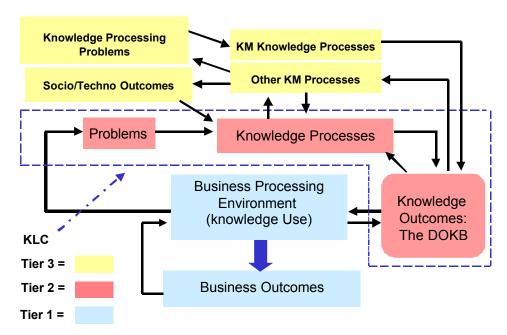
Figure 2 -- TNKM Three-tier Model

5) A specification of the KLC idea in terms of problem recognition, four sub-processes of knowledge production (information acquisition, individual and group learning, knowledge claim formulation, knowledge claim evaluation), and four sub-processes of knowledge integration (knowledge and information broadcasting, searching and retrieving, teaching, and sharing). Knowledge claim evaluation is the sub-process in the KLC whose outcome (See Figure 3) allows us to distinguish knowledge from information in the DOKB. **Problems addressed: How can we usefully specify the KLC framework to set the stage for auditing and analysis of knowledge production and knowledge integration? How can we tell when information becomes knowledge? How can we perform fair comparisons of competing knowledge claims to create knowledge?**
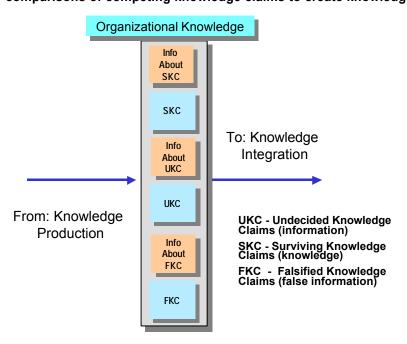

Figure 3 – Organizational Knowledge

6) A specification of types of KM activities in KM processing based on Henry Mintzberg's (1973) work and the TNKM KLC framework. The nine types of activities include: symbolic representation, leadership, building external relationships with others practicing KM, producing knowledge about the KLC and KM, integrating knowledge about the KLC and KM, crisis handling, changing knowledge processing rules, negotiating for resources with representatives of other organizational processes, and resource allocation for knowledge processes and for other KM processes. When these are combined with the categories of the KLC viewed as targets and with other criteria a detailed segmentation of KM activities is produced. **Problems addressed: How should we segment KM activities in a way that will be useful for impact analysis?**

7) A framework for KM Metrics based on the KLC framework and its sub-processes. **Problems addressed: Can we specify KM metrics for KM and knowledge processing and how do these relate to business outcomes and metrics?**

8) A revised Intellectual Capital framework including the newly introduced concept 'Social Innovation Capital'. **Problems addressed: How can we reconstruct measurements of corporate capital to more faithfully approximate market value?**

9) A method of measuring KM benefits using ratio scales normalizing economic and non-economic benefits. **Problem addressed: How can we develop comprehensive evaluations of KM Impact in terms of both economic and non-economic benefits and comparisons of the two on a common scale of measurement?**

10) A method for measuring "truthlikeness". **Problem addressed: How can we compare competing knowledge claims in terms of their relative closeness of approach to the truth?**

11) An outline for KM Process Methodology. **Problem addressed: How can we specify phases and work flows for guiding KM project implementation iteratively and incrementally?**

12) A Conceptual framework for Sustainable Innovation. **Problem addressed: What is sustainable innovation and how can we conceptualize it in terms of our TNKM paradigm?**

13) A New Knowledge Conversion Model. **Problem addressed: How can we fix the conceptual inadequacies in the popular Nonaka SECI model of knowledge conversion and formulate an alternative model in agreement with TNKM?**

14) The Open Enterprise: a Normative Model for Knowledge Management. **Problem addressed: What should be the comprehensive goal of KM policies and programs seeking to maximize transparency and sustainable innovation? How can we change organizations so that all participants may contribute to problem solving and adaptation, while still maintaining the authority and integrity of management? How can we change organizations to minimize problems of corporate malfeasance and corruption? How can we change organizations to maximize transparency and accountability while still maintaining corporate competitiveness and integrity? How can KM enable transitions from other organizational configurations to The Open Enterprise?**

15) The Enterprise Knowledge Portal vision and specification. **Problems addressed: How can we support KM and knowledge processing activities, including fair comparison of competing knowledge claims and a DOKB that distinguishes knowledge from information through Knowledge Technology? How can we support all of the sub-processes of knowledge production and knowledge integration? How can we better support knowledge use once knowledge has been integrated into the DOKB?**

16) The patent-pending Policy Synchronization Method™ (PSM). **Problem addressed: How can we enhance knowledge processing and innovation in a self-organizing system in which these are emergent, unpredictable, phenomena, not subject to direct command-and-control methods of management?**

You can find out more about all of the above components from one or more of the following sources McElroy, 2003, 2003a, McElroy and Cavaleri, 2000), Firestone 2003, 2003a, Firestone and McElroy, 2003, Firestone and McElroy, 2003a, Firestone and McElroy, 2003b, and the various papers at www.dkms.com, www.macroinnovation.com, and www.kmci.org.

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