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KNOWLEDGE MANAGEMENT AND WORKPLACE LEARNING – CHANGING PERSPECTIVES, ISSUES, AND UNDERSTANDINGS

Monica Kennedy
University of Canberra

ABSTRACT

Knowledge management discourse over the past decade reflects a critical shift in the understanding of knowledge within organizations. The developing sophistication with which knowledge is understood as “becoming” within individuals and collectives rather than “being” within information systems leads to learning that seeks to synergise humans and knowledge-enabling tools, and to redefine what it is to learn in post-information organizations.

INTRODUCTION

Knowledge management is evolving from its efficiency-driven past to embrace all four pillars of lifelong learning: learning to know, learning to do, learning to live together and with others, and learning to be (Delors Report, 1996 as cited in Burns, 2002). Generative change in knowledge-management theory has led to understandings that guide organizations through the creation, development, sharing, and institutionalisation of knowledge through knowledge-enabling tools, a focus on development of new knowledge through collective cognition, diversity in collectives and networks, and developing the whole person by

suggesting new freedoms in workplace learning opportunities.

The divide in knowledge-management theory over the past decade has had at its focus an ancient debate concerning the nature of knowledge itself. Is knowledge about truth? Is knowledge about understanding? This divide has been reflected in practice that has fallen either toward codification (digitisation of information for organizational members' access) or the personalisation of knowledge (retention of knowledge within organizational members, and sharing of knowledge between members). Recent theory seeks not only to recognise the value to organizations of both approaches to practice, but extends understandings of

knowledge management to recognise the value of collective cognition and its role in facilitating the emergence of knowledge within organizations.

Knowledge management now uses complexity theory to make sense of knowledge in its array of forms and flows. It provides a framework through which workplace learning practice can be considered as a factor which supports knowledge generation and transfer as well as knowledge application. This new perspective highlights the limitations of traditional workplace learning practice in facilitating generative learning and new knowledge. Through this perspective, current workplace learning practice can be seen as a limiter to organizational effectiveness in a complex and complicated world (Kurtz & Snowden, 2003).

This paper outlines the development of knowledge-management theory and practice over the past decade. It attempts to illustrate the ways in which advances in knowledge management might provide a base for new workplace learning theory based on complexity theory and the synthesis of people and knowledge-sharing tools.

KNOWLEDGE MANAGEMENT

Knowledge management is a widely diverse field. Core themes range from taxonomy, through learning, to records management and network analysis. What has persisted across these themes is the debate over the nature of knowledge itself. This core debate provides two overriding paradigms in knowledge-management theory and practice (Gloet & Berrell, 2003): knowledge as truth – explicit, codifiable, objective, and discrete from its creator; or knowledge as sense-making – tacit, personal, “embrained” (Lakomski, 2001), and constructed by the organizational member.

Debate is no less common or passionate today than it was 2000 years ago (Wiig, 1997). Indeed, current academic discussion expends enormous energy in attempting to clarify the truth or sense-making divide (M. W. McElroy, personal communication, November 12, 2003; D. J. Snowden, personal communication, November 12, 2003), and highlights core paradigmatic differences in approaches to managing knowledge. If knowledge is about “truth” then an information focus to knowledge management becomes critical. If knowledge is about “sense-

making” then tacit knowledge and learning predominate.

Organizations of all types, from knowledge-intensive organizations (such as pharmaceutical and informational-technology firms) through to those whose core business is more stable (such as schools and government departments) have had to learn more, more quickly, in order to improve organizational effectiveness and to maintain advantage in increasingly turbulent and competitive environments. Knowledge-management practice has been driven by “globalization, ubiquitous computing and the knowledge-centric view of the firm” (Prusak, 2001, p. 1003). New theory and practice is emerging in response to new forms of organization which are subject to prevalent, multidimensional and fast change (Burnes, Cooper, & West, 2003); increasing complexity and uncertainty; and the competitive advantage of other, innovating organizations (Loermans, 2002).

Initially, knowledge management was driven by practitioners looking to facilitate business process and outcomes through improvements derived from the “...perceived efficiencies of process engineering” (Snowden, 2002, p. 100) by codifying knowledge, and developing tools, for its effective capture and transfer.

Knowledge understood as an object led to an information-processing paradigm of knowledge management – the first age of knowledge management (Snowden, 2002). In this view, knowledge equates to data or information – a commodity to be harvested and stockpiled. It is “without” rather than within organizational members. It “sits with” the information-technology areas of the organization rather than with the human-resource development area. It relies on a process whereby “...it is extracted from the person who developed it, made independent of that person, and reused for various purposes” (Hansen, Nohria, & Tierney, 1999). Within this paradigm, information systems themselves – not the people – can become the stable structure of the organization (Applegate, et al. as cited in Malhotra 2002, p. 3).

It is unsurprising that a practice predicated on such a narrow interpretation of knowledge, and promulgated by vendors focused on tools rather than people, was an enormous failure (Storey & Barnett, 2000). The narrow information-systems

perspective neglected the role of the learner in the organization, their knowledge needs, and the value of their tacit knowledge.

By the mid-90s practitioners and scholars were clearly focused on a second generation in knowledge management which highlighted the value of “tacit” knowledge in organizations – knowledge embrained and embodied (Lakomski, 2001). With an obvious trend toward workplace mobility, strategies for facilitating the capture of intellectual capital through human-resource strategy became critical (Malhotra, 2002). With this shift in focus came a recognition of the value of individual knowledge within organizations, and strategies for the retention of embrained knowledge. Facilitation of its transfer through communities of practice in organizations became popular. Tools were focused on the networking of individuals for knowledge sharing as well as on providing knowledge repositories where knowledge elicited from individuals could be stored.

The next generation of knowledge management is evolving out of the recognition of the complexity and elusiveness of the phenomenon of knowledge; the value of its “tacit dimension”; the influence of political, structural and cultural organization environments; and the personal and sociological needs of individuals and collectives in knowledge genesis and learning.

The value of the new sciences in understanding organizations is emerging in a range of disciplines. Chaos theory, quantum mechanics, self-organizing systems, complexity theory, non-linear systems, and fractals are being used in rethinking organization, management, leadership, and knowledge management. Awareness of emergent order, however, has had little impact on organizational theory or practice until most recently (Kurtz & Snowden, 2003). When McElroy (2000) brought together the diverse fields of knowledge management and complexity theory – inspired by the novel work on adaptation and complexity by John Holland (1995) – it offered a new perspective for the consideration of the emergent, complex, and organic nature of knowledge in organizations. It provides a clear divergence from the engineering approach to organizations that has dominated management thinking and practice for the past hundred years.

The application of complexity theory to knowledge management has been developed by Snowden (2002) to become social-complexity theory. It reflects an interpretation of Holland’s (1995) mathematical approach to complexity that uses the metaphor provided by complexity rather than its mathematical model. Snowden’s social-complexity model highlights heuristics in un-ordered environments where self-organizing capacity dominates. The model stresses the human ability to operate in all domains of order and disorder – choosing approaches and strategies for management dependent on the context within which individuals and collectives operate. This model illustrates and integrates management and complexity theory into a holistic representation of domains for decision making.

The value of the driving metaphor of complexity theory to organizations is in the refocusing of theory and practice on the complex adaptive nature of systems within which knowledge arises. Through this understanding organizations adapt and evolve “organically” in response to a changing environment, and efficiency is seen as reductionist. In biological systems, latitude is important in allowing evolutionary capability (Snowden, 2003). Knowledge in this paradigm is emergent, arising from collectives of knowledge agents, and collectively resulting in organizational learning. Knowledge management becomes focused on managing boundaries and attractants for knowledge creation and development (knowledge “becoming”) as well as the management of knowledge which is, or becomes, knowable (knowledge “being”) (Bhatt, 2000).

Thinking about knowledge as naturally emergent in a complex, adaptive system focuses theory and practice on the search for knowledge “levers” (Holland, 1995), those triggers within the knowledge ecosystem which lead to generative, rather than adaptive, change – the focus being on innovation rather than replication of knowledge.

Strategies developed to elicit knowledge within this paradigm recognise it as complex, elusive, tacit, and valuable only when a problem arises. These strategies support an understanding of knowledge as rooted in acts of comprehension (Polanyi, 1967), rather than based on verifiable fact (Maddox, 1993).

IMPLICATIONS FOR WORKPLACE LEARNING

Snowden's Cynefin model provides an excellent framework for the investigation of appropriate learning approaches in knowledge ecosystems.

Workplace learning strategies commonly have a strong focus on the dimension of the known. Competency based training, with its roots in behaviourist theory, reinforces current skills in current processes that are explicit and stable (knowledge "being" rather than "becoming"). Australia's national training approach through competency-based training leads to reinforcement of current practice, stabilisation of knowledge through repetition, and reward based on replication. Competency-based training derives from "...an empirical analytic paradigm, which takes the view that reality is objective and that individuals and the world are separate, knowledge involves objectively proven facts and what cannot be legitimately quantified is not worth knowing" (Burns, 2002, p. 56) which is antithetic to generative learning and organic knowledge management in any domain other than the known. Learning of standard procedures and best practice through error avoidance supports the organization in institutionalising new knowledge generated and developed in the other domains.

Competency-based learning practice with its focus on single-loop learning (Argyris & Schon, 1996) and adaptation (Hedberg, 1980; Fiol & Lyles, 1985) continues to be directed at organizational members at operational levels in organizations. Across both public and private enterprise we see learners completing Certificate I-, II-, III-, and IV-level qualifications in pre-management roles. The focus on skills development in applying institutionalised knowledge in operation is fixed in the hierarchy. Training and qualifications based on the competency-based learning strategy dominates at lower levels in the hierarchy. As a result, opportunities for knowledge generation at the base of the organization are limited, and diversity is restricted.

The issue of diversity is an important one. Complex adaptive-systems theory provides a perspective that highlights the role of diversity

in evolution. Complexity theory implies that without access to diverse knowledge, learners will be unable to respond to the complexity within which they operate. Like a complex adaptive system, environmental change opens new niches within which diversity can emerge through opportunities for new interactions (Holland, 1995). In a continuous way, diversity provides opportunities that can result in increased diversity to respond to new environmental opportunities. In this way, diversity leads to the development of new knowledge through the interaction and relationships between individuals in diverse collectives.

In traditional practice, however, learners in peer groups are delivered training which reflects outmoded beliefs from the industrial model of organizations – training which assumes a clear relationship between cause and effect and facilitates repetition. If training is about repetition and reuse of static knowledge, it cannot provide the adaptability and flexibility required of a complex and complicated work and life environment. Tools in this domain support transfer of knowledge objects and assist in effecting standardisation of organizational outcomes rather than the creation, development, and communication of new knowledge.

The "knowable" domain reflects an understanding of knowledge as "being" although some analysis is necessary to find it. Second-generation knowledge management supports this level of knowledge. Within this paradigm focus is on human strategies for accessing expertise, knowledge retention, sharing, and the application of tacit knowledge to organizational problems through recognition of patterns from prior experience. The cognitive-Gestalt approach which underpins learning in this domain is seen in the myriad management-development and leadership programs available to organizational members in more senior roles. In this domain, managers are allowed the freedom to seek out experiential learning that is meaningful within a structured format and is supported by formal recognition. Learning in this domain commonly carries kudos attained from the selection for, and completion of, the learning program.

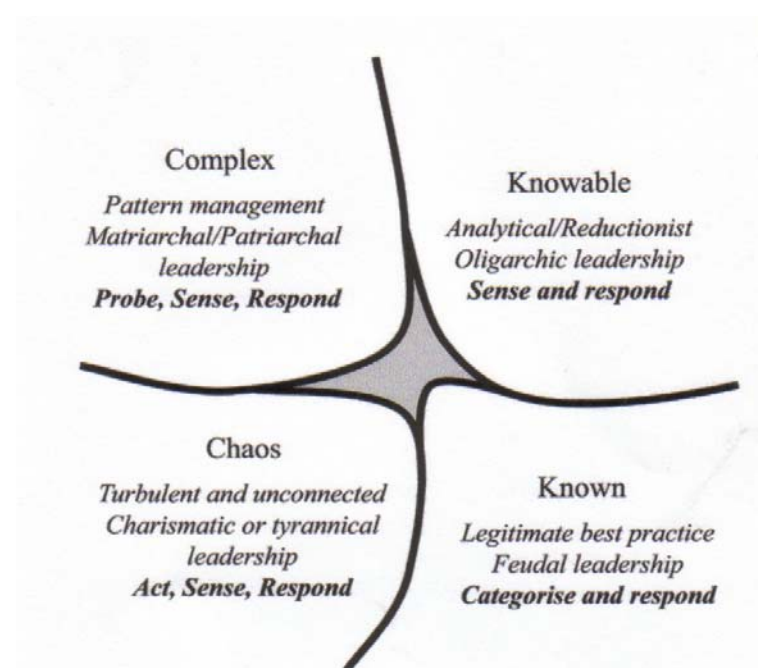


Figure 1. *Cyenfin: decision making* (Snowden, 2002, p. 106).¹

Learning within this domain supports “pattern entrainment” (Snowden, 2003), the habit of acting on “...past or perceived future patterns” (Klein, 1998 as cited in Snowden 2002, p. 107). Learning strategy in the domain of the knowable leans heavily on the application of past strategies in the solution of novel problems, which reinforces internal models (Holland, 1995) and leaves theory of action (Argyris & Schon, 1996) undisturbed. This learning is valuable in stable knowledge environments within which a relationship persists between cause and effect, but is ineffective in bringing about learning that leads to innovation. Snowden (2002) asserts that the disruption of patterns of entrainment is crucial to generative changes in knowledge. Tools in this domain support interactive networks and access to expertise, as well as the transfer of knowledge objects.

Latest knowledge management theory points to the critical nature of knowledge in the un-ordered domain of the complex. Within this domain, knowledge emerges through the interaction of agents at the edge of chaos. Knowledge here is “becoming”, and generative learning is vital. Knowledge here is emergent, social, collectively created, problem-centred, and just-in-time.

¹ From “Complex acts of knowing: paradox and descriptive self-awareness,” by D. J. Snowden, 2002, *Journal of Knowledge Management*, 6(2), p.100-111. Copyright 2002 by Emerald Group Publishing Limited. Reprinted with Permission.

Traditional workplace learning strategies do not support knowledge in this domain. Learning in this domain is focused on sense-making and the breaking of patterns of entrainment. Within this domain no repeatable relationship between cause and effect can be identified other than in retrospect (Snowden, 2003). In order to provide for complex environments, learning here must be phenomenological and humanistic. It must be heuristic, flexible, and mature. It must focus on individuals and need, and will not always be related to workplace problems. Knowledge in this domain will emerge through the interaction of diverse agents which are often at the edge of chaos. Learning is risky and uncomfortable, it is messy and difficult to measure. It must be tolerant of change and failure. It must derive from, but not limit itself to, past experience. It must be linked to the real world and lead to personal development and fulfilment. It must be collective, social, and lifelong. It will arise from individuals’ seeking of emotional fulfilment, and organizations will capitalise from their gaining of it. Using this paradigm individuals are free to follow their curiosity to within inches of disaster and to recover, within collectives. In this paradigm, learning will lead to innovation. Learning within the complex domain requires genuine reframing resulting from “...both semantic shift and shift in anchor” (Schein, 1999, p. 167). There are clear parallels between the capacities required for learning within the complex domain and the field of organizational learning. Both are predicated on cognitive

redefinition (Lakomski, 2001) or pattern entrainment (Snowden, 2003). Kurtz and Snowden (2003) assert that “the learning organization”, the practice-focused and prescriptive interpretation of organizational learning, sits within the knowable domain. Organizational learning, however, with its focus on those complex, large-scale behaviours that arise from aggregate interactions of less complex agents, supports the complex domain neatly.

Knowledge-management research has led to the development of a range of knowledge generation, elicitation, and sharing strategies (Snowden, 2002) that form a base for the development of valuable learning interventions in organizations. Approaches include storytelling, which provides rich texts for knowledge sharing, and encourages opportunities for narrative approaches in workplace learning. Kurtz and Snowden (2003) use narrative review, fable development, and alternative histories to facilitate “collective sense-making” (p. 12), the social constructivist perspective embodied in these approaches offering new weight to broadening understandings of workplace learning.

Like Revans’ (1978) action-learning strategies, new knowledge-management theory advocates the gathering of experts from diverse fields to challenge assumptions. Knowledge management’s addition of exposure to chaos in this process is seen as important in disrupting assumptions and moving organizations closer to a learning ecology (Snowden, 2002).

Critical to the success of these approaches, however, is the overriding principle of complexity; that order emerges through the complex interactions of agents in aggregate. This principle suggests that in contrast to traditional conceptions of ordered and stable environments – where directed, structured, and mandatory learning opportunities suffice – complex environments demand self-directed, fluid, diverse, and voluntary learning opportunities in order for new knowledge to emerge.

Critten (2003) asserts that “The lessons of complexity theory and knowledge management point to the primacy of ‘social’ rather than individual learning...” (p. 16). Snowden (2003) concurs, describing social adaptability as dependent on social knowledge of community

members and the critical nature of the relationship between social interaction and innovation.

Knowledge management’s contribution to learning through the development of knowledge-sharing tools has provided an opportunity for computers and people to work symbiotically in what Snowden (2003) refers to as this “co evolutionary period”. Social complexity demands a social constructivist perspective on learning, and knowledge management provides strategies and tools to help facilitate it.

CONCLUSION

Emerging knowledge-management theory points to the responsibility of organizations to provide workplace learning opportunities that stimulate new knowledge in a complex, complicated world. It provides a context for the synthesis of the human and the technical within organizations, and attempts to resolve the division between truth and sense-making in learning and knowing. Like knowledge in organizations, lifelong learning is an emergent construct (Leader 2003, p. 362) and emerging knowledge-management theory supports a focus on new approaches to workplace knowledge and learning through which lifelong learning is advanced.

Early phases in knowledge-management theory and practice have provided tools through which the known and the knowable are accessible to learners. The challenge for organizations now is to develop workplace contexts and practices that allow for collectives to explore the complex.

Knowledge management offers organizations a perspective on the complex nature of organizations, knowledge, and learning. It highlights the limitations of traditional workplace practice, reinforces the value of social learning, and provides “co evolutionary systems based on emergence through interaction of agent with tool” (Snowden, 2003) through which collective cognition can occur.

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