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INTEGRATING KNOWLEDGE MANAGEMENT PRACTICES THROUGH A PROBLEM-SOLVING FRAMEWORK

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KNOWLEDGE MANAGEMENT

INTEGRATING KNOWLEDGE MANAGEMENT PRACTICES THROUGH A PROBLEM-SOLVING FRAMEWORK

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ABSTRACT

Organizations increasingly focus their efforts on knowledge management practices to foster the creation, sharing and integration of knowledge. This paper proposes a framework for classifying practices for managing knowledge based on their roles in problem solving. By integrating these practices through three value-added processes (identification, preservation and distribution), organizations improve their ability to learn and adapt to changing environments. Innovative business models that include these knowledge management processes should help organizations prosper in the face of rapid, complex change.

Key Words: knowledge management; problem solving; organizational learning; knowledge management systems

I. INTRODUCTION

Few managers or academics would disagree with the idea that organizations must learn about their changing environment and adapt to it or risk becoming irrelevant and unprofitable. This article focuses on two key challenges in organizational learning and adaptation, namely the creation of new knowledge and its transfer between employees. The knowledge management literature describes a wide range of practices that address these challenges, and we propose a framework for classifying these practices based on their roles in problem-solving processes. We believe that this framework is of significant value for managers as a tool for integrating knowledge management efforts, and for researchers as a way to ground recent knowledge management literature in a well-established theory base.

This article proceeds as follows. First, we argue that problem-solving is an appropriate lens for examining the contribution of knowledge to organizational performance. Next, we specify the knowledge management framework in detail, and provide examples from the literature that substantiate each class of practices. Lastly, we propose a set of value-adding processes that integrate these practices, and identify dysfunctional processes that may undermine them.

II. KNOWLEDGE AND PROBLEM-SOLVING

Organizations are awash in stimuli; identifying salient stimuli, interpreting their meaning and responding appropriately are fundamental problem-solving activities. Problem solving is essentially the same activity as understanding [Popper, 1972]. Individuals who are engaged in problem-solving are attempting to better understand some set of phenomena -- that is, they are creating new knowledge that enables them to recommend a course of action that will improve organizational performance. Problems and opportunities are tightly linked; a

solution to a problem becomes an opportunity for improvement. Regardless of whether or not the solution is successful, simply by attempting to solve the problem an organization refines its understanding of its environment, increases its absorptive capacity [Cohen and Levinthal, 1990] and improves its ability to react to future stimuli.

Problem solving therefore improves the stock of knowledge held by individuals in an organization, allowing the organization as a whole to adapt better to its environment. The effectiveness of problem-solving efforts is limited, however, by the existing stock of knowledge that is available to the organization. Knowledge is thus both an input to problem-solving processes and their output. A primary goal of knowledge management is to ensure that the new knowledge generated in one episode of problem-solving becomes an input to the next related episode.

All firms engage in some form of knowledge management practices, either deliberately or unconsciously, formally or informally. The contribution that a knowledge management practice makes towards problem solving should be an important consideration for managers who are seeking to integrate knowledge management efforts across their organizations. While others advanced frameworks that categorize knowledge management practices based on the characteristics of the knowledge (e.g. [Nonaka and Takeuchi, 1995; Boisot, 1998]), we believe that managers care more about the ways in which knowledge creates value than about the varieties of knowledge that exist. We agree with Nahapiet and Ghoshal [1998], who argue that all organizationally useful knowledge has both tacit and explicit dimensions and that the same generic processes underlie all forms of knowledge conversion. Rather than emphasizing the *content* of organizational knowledge management practices, we focus on their *purpose* in contributing to organizational performance and effectiveness.

III. A KNOWLEDGE MANAGEMENT FRAMEWORK

We created a categorization system for knowledge management practices by examining their contribution to problem solving. The two axes of the Knowledge Management Framework shown in Figure 1 are well grounded in empirical literature, and together they yield four useful categories of knowledge management practices. We believe that this framework not only forms a useful tool for managers thinking about knowledge management, but also provides an important conceptual link between the emerging body of knowledge management literature and the established literature on decision making and problem solving.[1] The following sections describe first the two axes, and then each of the four cells individually.

		Class of Problem	
		New or Unique	Previously Solved
Process Supported	Problem Recognition	Encouraging Serendipity (1)	Raising Awareness (4)
	Problem Solving	Knowledge Creation (2)	Knowledge Acquisition (3)

Figure 1. The Knowledge Management Framework

AXIS 1: PROCESS SUPPORTED

Decision-making theory has strong roots in Simon's *intelligence-design-choice* model of the decision making process [Simon, 1960]. The *intelligence*

[1] An empirical validation of the framework can be found in Gray (forthcoming).

phase describes an individual's search for conditions that indicate the need for a decision. In the *design* phase, different possible courses of actions are developed and analyzed. This phase is followed by the *choice* phase, where one alternative is selected for implementation. Kiesler and Sproull [1982] describe a similar process of *noticing, interpreting,* and *incorporating* stimuli. Berthon, Pitt, and Morris [1988] elaborate on *problem perception* (similar to Simon's *intelligence* phase), which they suggest includes processes of *scanning*, *noticing*, and *constructing meaning* about environmental change. Mintzberg, Raisinghani and Théorêt [1976] also propose an iterative, multi-stage decision-making process that begins with an *identification* phase that is conceptually close to Simon's *intelligence* phase.

What is striking about these models of decision-making and problem-solving is the common starting point; most theorists agree on an initial problem identification phase, but there is considerable divergence in opinion beyond this point. Vandenbosch and Higgins [1996] explicitly argue for a split between *scanning* and *focused search* in the use of executive information systems, and others also pay particular attention only to environmental scanning (e.g. [El Sawy and Pauchant, 1988]; [Zmud, 1990]). We believe that the widely accepted difference between problem recognition and the remainder of problem solving is an important distinction for assessing the purpose of knowledge management practices. In particular, it is a descriptive difference and does not make normative suggestions about how decision-making should be carried out (as Simon's model does).

We therefore employ the distinction between recognizing the existence of a problem (or opportunity) on the one hand, and taking actions to solve a problem (or exploit an opportunity) on the other, as the basis of the Process Supported axis. The top two cells deal with practices that help individuals recognize problems, while the bottom two cover organizational practices that help individuals solve problems. This dichotomy corresponds to the concept of

"information-processing modes" [Schneider and Shiffrin, 1977], which posits two different ways that individuals direct their attention (automatic and controlled). *Problem recognition* corresponds to the "automatic" or "default" processing mode, when no focused search for solutions exists; individuals' attention is spread across a variety of inputs, making it difficult for them to distinguish an issue from its environmental background. Organizations can improve problem recognition through practices that improve the contrast between the issue and its background. *Problem solving*, by contrast, corresponds closely to the "controlled" processing mode, reflecting individuals' conscious and focused control of attention as they actively seek to understand particular problems and opportunities. Organizations can help individuals solve problems by developing practices that improve their likelihood of finding the solution they seek.

AXIS 2: CLASS OF PROBLEM

The horizontal axis of the framework distinguishes between knowledge management practices that help individuals identify and resolve new or unique problems and those that deal with previously solved problems. Though this distinction may seem at first to have parallels with the literature on structured vs. unstructured problems, we believe that the uniqueness of a problem is unrelated to its degree of structure. The same knowledge management practices could apply to both structured and unstructured problems. This axis does not is not concerned with whether or not rules exist for how to address a problem, but rather with organizational practices that support the transfer of existing knowledge or the creation of new knowledge. It is important to remember that the framework categorizes organizational practices, not organizational problems. The fact that many problems require both the generation of some new knowledge and the application of some pre-existing ideas does not change the fact that an organization must support practices to address both elements.

Cells 1 and 2 correspond to knowledge generation practices as employees discover and resolve *new or unique* problems or opportunities, while cells 3 and 4 encapsulate traditional knowledge-sharing practices used to generate awareness of and propagate knowledge about *previously solved* problems or issues. This dichotomy corresponds to the contrast between "routine" and "non-routine" problems [Earl and Hopwood, 1980]: new knowledge must be created to solve novel, non-routine problems, while existing knowledge can often be used to solve routine, previously solved problems. Other authors draw similar distinctions; for instance, Maier [1945] contrasts "productive" with "reproductive" problem-solving strategies, and Mintzberg et al. [1976] discuss the difference between searching for ready-made solutions and developing custom solutions.

CELL 1: ENCOURAGING SERENDIPITY

Cell 1 represents knowledge management practices that encourage employees to discover new problems and opportunities by exposing themselves to new information and ideas. Such activities include forms of environmental scanning [Huber, 1991], passive searches [Mintzberg et al., 1976] and noticing [Starbuck and Milliken, 1988]. Organizational knowledge management practices appearing in this category therefore encourage these behaviours by creating a setting in which novel combinations of ideas and information become possible. Examples of activities that encourage unpredictable creative blending and exchange include talk rooms and knowledge fairs, described by Davenport and Prusak as follows:

> "[A]t Dai-Ichi Pharmaceuticals, there are rooms with green tea and attractive lighting that researchers are expected to visit for twenty minutes or so as a normal part of their workday. No meetings are held in the talk rooms; there are no organized discussions. The expectation is that the researchers will chat about their current work with whomever they find

and that these more or less random conversations will create value for the firm." [Davenport and Prusak, 1998, p. 92]

"Several organizations have held knowledge fairs at which knowledge sellers display their expertise and buyers can search for what they need or serendipitously find knowledge that they did not know they needed but can use. Like a trade show or farmers' market, a knowledge fair is a temporary gathering of sellers that attracts potential buyers…. Perhaps the most frequently heard comment was, 'I didn't know we had people doing *that*!'" [Davenport and Prusak, 1998, p. 46; emphasis in original]

CELL 2: KNOWLEDGE CREATION

In cell 2, organizations support the active creation of knowledge by employees who are aware of a new problem or opportunity, and who are developing novel solutions. These kinds of knowledge generation practices foster creativity and innovation, as described in Leonard-Barton [1995], Nonaka and Takeuchi [1995] and Wilkström and Normann [1994]. Examples include cross-functional product development teams [Wheelwright and Clark, 1992] and communities of practice. Wenger and Snyder [2000] provide an excellent description of such practices:

"[Companies] use cross-functional teams, customer- or product-focused business units, and work groups… to capture and spread ideas and know-how. In many cases, these ways of organizing are very effective, and no one would argue for their demise… but a new organizational form is emerging that promises to complement existing structures and radically galvanize knowledge sharing, learning and change. It's called the community of practice…. [These are] groups of people informally bound together by shared expertise and passion for a joint enterprise…. Inevitably, people in communities of practice share their experiences and knowledge in free-flowing, creative ways that foster new approaches to problems." [Wenger and Snyder, 2000, p. 139]

CELL 3: KNOWLEDGE ACQUISITION

In cell 3, organizations engage in practices that capture and retain knowledge, making it available to employees who are seeking solutions to previously solved problems. When the cost of capturing knowledge in an explicit format is too high, organizations may prefer instead to create directories of individuals and their associated knowledge. These practices include the creation of knowledge repositories, databases of lessons learned through post-project reviews, and knowledge maps, as described by Skyrme [1999]:

> "A common approach to managing organizational memory is to capture in explicit form the most important knowledge and enter it into knowledge databases…. Examples of knowledge databases include… customer histories… best practices… products and technologies… [and] bid boilerplates. Explicit knowledge bases, however, typically contain less than 10 percent of an organization's memory. Therefore, other approaches are used to make it easier to access the minds of experts. A common example is an on-line directory of expertise, often called Yellow Pages, because [it is] structured by skill and discipline, not department." [Skyrme, 1999, p. 56–57]

CELL 4: RAISING AWARENESS

Lastly, in cell 4, organizations help employees realize they may be facing problems or opportunities the organization addressed previously and for which solutions already exist. Examples of such practices provided by Allee [1997] include mentoring programs, training and peer review processes:

> "Soft systems skills and group processes… facilitate informal exchange, fostering common problem-solving skills and language. Mentoring programs, too, are beginning to grow beyond their uses in career development to address transfer of expertise…. Training is evolving into

'just in time' multi-media modules that can be delivered right to the workstation." [Allee, 1997, p. 306]

Figure 2 summarizes these examples of knowledge management practices.

(1) Encouraging Serendipity o Environmental scanning o Talk rooms o Knowledge fairs	**(4) Raising Awareness** o Mentoring o Peer review o Structured training
(2) Knowledge Creation o Experimentation o New product development teams o Communities of practice	**(3) Knowledge Acquisition** o Post project reviews o Knowledge repositories o Knowledge maps

Figure 2. Sample Knowledge Management Practices

IV. KNOWLEDGE MANAGEMENT PROCESSES

The four categories of knowledge management practices discussed above define individual mechanisms organizations use to identify environmental change and adapt to it. Although these practices are important elements of innovative business models, we believe that their value increases when the outputs of one practice become inputs to others, through processes that span the junctions of adjacent cells in Figure 1. Three effective knowledge management processes are discussed in the next subsection, followed by two dysfunctional processes.

Connecting practices together may be difficult when responsibility for different practices rests with different functional groups; in such a case, managers may not consider practices to be relevant to each other, and thus may not actively manage them as parts of a whole. For example, the human

resources department may be responsible for training, while an information systems group or the functional group requesting a knowledge management system may oversee the creation of knowledge repositories. Product and process innovation may be associated with an R&D group, while responsibility for identifying new problems and opportunities may be distributed to a variety of levels or not actively managed at all. Linking these processes together may therefore require a redistribution of responsibility to ensure that practices are viewed as part of a systematic knowledge management effort.

EFFECTIVE PROCESSES

The classification system described above underscores substantive differences among various knowledge management practices. Understanding these differences allows managers to develop and deploy processes and systems that explicitly seek to integrate organizational knowledge management practices. We believe that companies will create greater business value by developing knowledge management *processes* that link existing knowledge management *practices*. Three such processes — identification, preservation and distribution — are described below.

Identification

An employee's recognition of a new problem or opportunity can be wasted if it is not captured so that it can be evaluated, prioritized and analyzed in light of other organizational knowledge (Figure 3). When organizations deal with this process in a casual manner, they can lose important ideas. A formal identification process manages the flow of the recognized opportunities and problems identified in cell 1 to cell 2. An organization benefits when it systematically brings to light previously unrecognized problems and new opportunities. The identification process reveals gaps in organizational knowledge, allows managers and team leaders to evaluate these gaps, and ultimately can trigger knowledge creation.

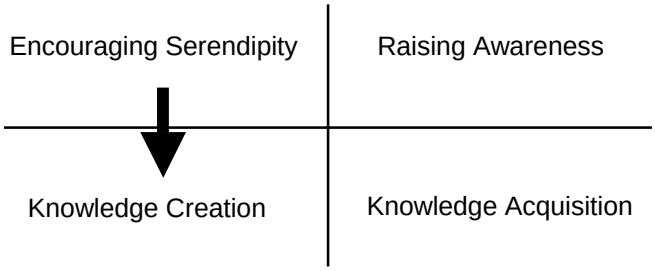

Figure 3. The Identification Process

Such a record of new issues and opportunities can form the basis of a coherent program of experimentation and discovery, which may also involve systematic efforts to analyze and prioritize ideas and issues. Hargadon [1998] provides an example of this type of linking activity in his description of knowledge brokers, who are systematically exposed to a wide variety of issues and problems, and create value by recognizing opportunities to innovate based on their learning from other industries:

> "Because of their access to a broader range of industries, knowledge brokers typically hold a broader range of ideas than firms working in one or a few industries…. The learning activities of knowledge brokers provide them with an inventory of potentially valuable ideas that help define and solve the problems that clients face." [Hargadon, 1998, p. 218]

Preservation

Knowledge gains value as it is shared; the original "knower" can both give it away and keep it [Davenport and Prusak, 1998]. Organizations can assist in this process by recording explicit knowledge in some form of organizational memory [Stein and Zwass, 1995] after employees create it (Figure 4). In the case of highly tacit knowledge that cannot easily be recorded, organizations can develop systems for tracking its existence. A systematic approach to evaluating, classifying, recording and tracking newly created knowledge is at the heart of the

preservation process. Organizational performance can be improved through processes that move knowledge created in cell 2 into cell 3 (Figure 4).

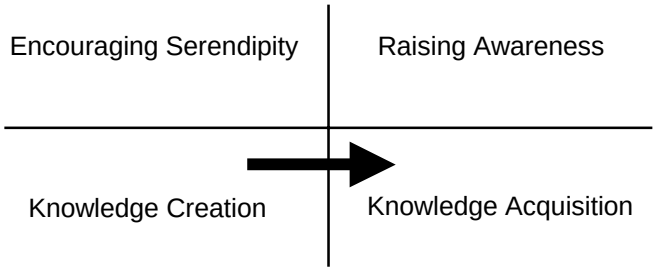

Figure 4. The Preservation Process

New roles, responsibilities and processes are required to ensure the successful preservation of knowledge in organizational memory. As part of their responsibilities, employees may be formally required to record new knowledge in a variety of ways. It is the responsibility of the organization to provide resources and incentives to ensure its knowledge base is current, accurate, relevant and comprehensive, and to refocus the knowledge base as needs change. For example, a knowledge management system designer may be required to develop flexible systems that can evolve over time. New positions may also be required for editors and knowledge base administrators who have a solid understanding of the knowledge being stored in a particular repository, and who can classify, index and keep that knowledge current [Davenport, De Long and Beers, 1998]. Developing the appropriate skill sets and creating the processes needed to preserve the value of a knowledge base represent major organizational challenges.

Distribution

This process (Figure 5) involves sharing knowledge that is recorded in the organizational memory (cell 3) with appropriate organization members who are likely to benefit from it but are not aware of any specific need (cell 4). At the organizational level, this corresponds to processes that periodically extract newly

recorded knowledge, package it, target appropriate recipient groups, and ensure that it is distributed to them.

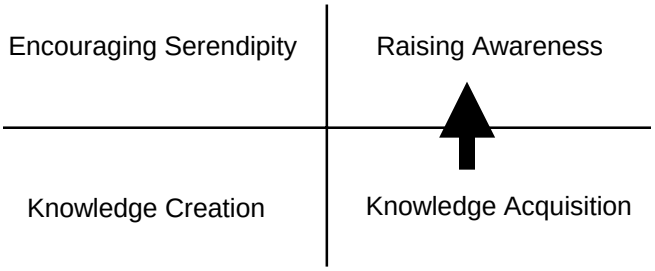

Figure 5. The Distribution Process

This process is key to leveraging the value of organizational knowledge; fine-tuning it is likely to involve a difficult balance of delivering enough knowledge but not too much. Employees may ignore distribution systems if they receive more information than they can handle or if the content is not directly applicable to them. On the other hand, if knowledge is processed or refined to facilitate its distribution, it may lose some of its specific, prescriptive value or become too latent for the receiver to grasp.

DYSFUNCTIONAL PROCESSES

A variety of organizational processes represent less-than-ideal uses of resources. We believe that a secondary goal associated with the design and implementation of coordinated knowledge management processes is to minimize the likelihood that individuals will engage in dysfunctional activities that, while seeming useful at the time, do not support organizational knowledge management. Dysfunctional processes are typically not officially endorsed, formally documented processes, yet they still arise when there is no clear definition of the right way to do things and no clearly available tools to support proper knowledge management.

Examples of dysfunctional processes include “re-inventing the wheel” and “memory loss.” Individuals who become aware of a common problem and subsequently bypass the organizational knowledge base in their search for answers are using resources inefficiently (Figure 6).

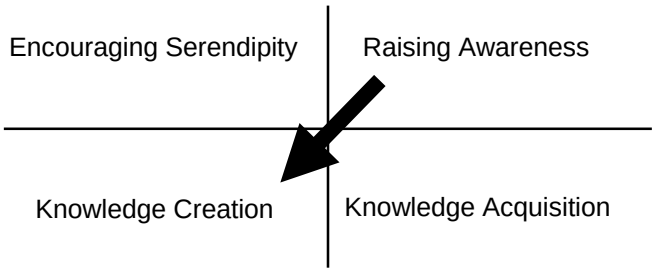

Figure 6. Re-inventing the Wheel

Knowledge that is created but not stored in organizational memory, that is simply forgotten or passed on to learners directly without being recorded, represents a waste of resources when future problem solvers have to re-solve old problems (Figure 7). Similarly, awareness of problems or opportunities that are not subsequently pursued results in memory loss.

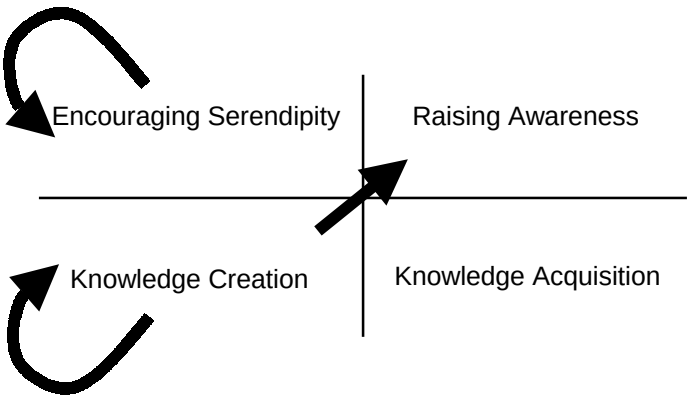

Figure 7. Memory Loss

V. CONCLUSIONS

Individuals create value for organizations by solving problems, discovering opportunities, prioritizing issues, and recording and sharing the resulting knowledge. We presented a framework that managers can use to assess existing knowledge management practices and identify blockages or gaps in the flow of knowledge. We have further proposed a set of processes that can be used to link isolated knowledge management practices and create an organizational knowledge infrastructure that supports a variety of knowledge-sharing activities. Information technology in the form of knowledge management systems are key features of many knowledge management practices and enablers of linking processes [Alavi and Leidner, 1999].

The flow of organizational knowledge naturally touches many individuals, groups and functional areas. The idea that knowledge management practices can add significant value by being appropriately linked suggests the importance of cross-functional and boundary-spanning processes and roles. Similar to the way that cross-functional teams improve new product development, boundary-spanning knowledge flows can make organizations more efficient and effective. Innovative business models that are designed to include these knowledge management processes will help organizations prosper in the face of rapid, complex change. Properly implemented, such an approach ensures a flexible organization capable of ongoing adaptation, sustained learning and thus enhanced performance.

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REFERENCES

Alavi, M. and D. E. Leidner (1999) "Knowledge Management Systems: Issues, Challenges and Benefits", *Communications of the AIS*, (1)

Allee, V. (1997) *The Knowledge Evolution: Expanding Organizational Intelligence,* Boston: Butterworth-Heinemann

Berthon, P. R., L. F. Pitt, and M. H. Morris (1998) "The Impact of Individual and Organizational Factors on Problem Perception", *Journal of Business Research*, (42), pp. 25–38

Boisot, M. H. (1998) *Knowledge Assets*, New York: Oxford University Press

Cohen, W. M. and D. A. Levinthal (1990) "Absorptive Capacity: A New Perspective on Learning and Innovation", *Administrative Science Quarterly*, (35), pp. 128–152

Davenport, T. H., D. W. De Long, and M. C. Beers (1998) "Successful Knowledge Management Projects", *Sloan Management Review*, (39)2, pp. 43–57

Davenport, T. H. and L. Prusak (1998) *Working Knowledge: How Organizations Manage What They Know*, Boston: Harvard Business School Press

Earl, M. J. and A. G. Hopwood (1980) "From Management Information to Information Management" in Lucas, H. C., F. Land, T. Lincoln and K. Supper (eds.) *The Information Systems Environment,* Amsterdam: North-Holland Publishing, pp. 3-13

El Sawy, O. A. and T. C. Pauchant (1988) "Triggers, Templates and Twitches in the Tracking of Emerging Strategic Issues", *Strategic Management Journal*, (9)5, pp. 455–473

Gray, P.H. (forthcoming) "A Problem Solving Perspective On Knowledge Management Practices", *Decision Support Systems* (31)1-2

Hargadon, A. B. (1998) "Firms as Knowledge Brokers: Lessons in Pursuing Continuous Innovation", *California Management Review*, (40)3, pp. 209–227

Huber, G. P. (1991) "Organizational Learning: The Contributing Processes and the Literatures", *Organization Science*, (2)1, pp. 88–115

Kiesler, S. and L. Sproull (1982) "Managerial Response to Changing Environments: Perspectives on Problem Sensing from Social Cognition", *Administrative Science Quarterly,* (27)4, pp. 548-570.

Leonard-Barton, D. (1995) *Wellsprings of Knowledge,* Boston: Harvard Business School Press

Maier, N.R.F. (1945) "Reasoning in Humans: III. The Mechanisms of Equivalent Stimuli and of Reasoning", *Journal of Experimental Psychology*, (35)

Mintzberg, H., D. Raisinghani, and A. Théorêt (1976) "The Structure of Un-structured Decision Processes", *Administrative Science Quarterly*, (21), pp. 246–275

Nahapiet, J. and S. Ghoshal (1998) "Social Capital, Intellectual Capital, and the Organizational Advantage", *Academy of Management Review, (*23)2, pp. 242–266

Nonaka, I. and H. Takeuchi (1995) *The Knowledge-Creating Company,* New York: Oxford University Press

Popper, K. R. (1972) *Objective Knowledge: An Evolutionary Approach,* Oxford: Clarendon Press

Schneider, W. and R. M. Shiffrin (1977) "Controlled and Automatic Human Information Processing I: Detection, Search and Attention", *Psychological Review*, (84), pp. 1–66

Simon, H. A. (1960) *The New Science of Management Decision*, New York: Harper and Brothers

Skyrme, D. (1999) *Knowledge Networking: Creating the Collaborative Enterprise,* Oxford: Butterworth-Heinemann

Starbuck, W. H. and F. J. Milliken (1988) "Executives' Perceptual Filters: What They Notice and How They Make Sense" in D. C. Hambrick (ed.) *The Executive Effect: Concept and Methods for Studying Top Managers,* Greenwich, CT: JAI, pp. 35–66

Stein, E. W. and V. Zwass (1995) “Actualizing Organizational Memory with Information Systems”, *Information Systems Research* (6)2, pp. 85-117

Vandenbosch, B. and C. Higgins (1996) "Information Acquisition and Mental Models: An Investigation into the Relationship Between Behaviour and Learning", Information Systems Research (7)2, pp. 198-214.

Wenger, E. C. and W. M. Snyder (2000) "Communities of Practice: The Organizational Frontier", *Harvard Business Review*, (Jan-Feb), pp. 139–145

Wheelwright, S. C. and K. B. Clark (1992) *Revolutionizing Product Development: Quantum Leaps in Speed, Efficiency and Quality*, New York: Free Press

Wilkström, S. and R. Normann (1994) *Knowledge and Value: A New Perspective on Corporate Transformation,* London: Routledge

Zmud, R.W. (1990) "Opportunities for Strategic Information Management Through New Information Technology" in Fulk, J. and C. Steinfeld (eds.) *Organizations and Communication Technology,* Newbury Park: Sage Publications, pp. 95-116

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