The Partnership Between Organizational Learning and Knowledge Management

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Introduction

Learning and knowledge go hand in hand. It took several hundred years for the most advanced nations of the world to move from agricultural to industrial to information-driven economies that continue to challenge organizations to improve performance. During the past decade the new field of knowledge management (KM) has generated excitement and achieved increased visibility for its potential to leverage the newly recognized asset we call knowledge and by doing so, bootstrap organizational effectiveness. During this same decade, the notion emerged that organizations can learn and from that learning create competencies that lead to competitive advantage and agility.

Since KM is a relatively new field, there is still a lot of trial and error learning taking place. Nevertheless, KM has developed a number of successful processes and demonstrated its value to many firms as they struggle to understand and respond to threats and opportunities rising from a turbulent environment. Some examples of successful KM processes are knowledge acquisition, knowledge sharing and knowledge audits. While individual and organizational learning have long been recognized as essential in a changing environment, the concept of organizational learning in support of knowledge management is new. This paper focuses on that relationship. As in most new fields of inquiry, there is little agreement on the meaning of key concepts and terms in knowledge management. After suggesting useful working definitions for some of the basic concepts such as knowledge, knowledge management and organizational learning, we then address organizational learning in a KM context and the role that learning plays in contributing to long-term organizational performance.

Working Definitions

Data, Information & Knowledge. To gain insight into the relationship of organizational learning and knowledge management, it is useful to start with a careful interpretation of knowledge. We are in close agreement with Sveiby when he takes knowledge to be the capacity to act. (Sveiby, 1997) For us, knowledge is best understood as the capacity to take *effective* action, with the recognition that capacity includes both potential and actual ability. Knowledge can therefore be in a persons mind and/or in their implementation of the right action in a given situation. That is, the action is effective when it produces the anticipated and desired results. Many of the ideas normally considered to make up knowledge (data, information, facts, truths, concepts, theories, judgment, intuition, insight, experience, predictability etc.) contribute to creating the understanding and ability needed to take effective action. This means that knowledge exists only in, and can be created by, the human mind. Since individuals, teams and organizations all may have the capacity to take effective action, they can all possess knowledge. Teams and organizations may have collective knowledge (both potential and actual) and therefore be capable of taking actions that an individual could not take.

While knowledge emphasizes understanding and sense making (the "why and how"), information is more awareness of something (the "who and what"). Similar to Davenport and

Prusak, we consider information a message meant to inform and communicate to a receiver. Information can be stored, manipulated and shared through hard and soft networks. (Davenport and Prusack, 1998). Data can be understood as raw numbers, markers or indicators and may provide the "where and when." Admittedly these distinctions are imperfect, albeit useful.

Knowledge Management. Knowledge management is the systematic process of creating, maintaining and nurturing an organization to make the best use of its individual and collective knowledge to achieve the corporate mission, broadly viewed as sustainable competitive advantage or achieving high performance. The goal is for an organization to become aware of its knowledge, individually and collectively, and to shape itself so that it makes the most effective and efficient use of the knowledge it has or can obtain. By management we do not mean control in the sense of strong authority and direction. This style of management fails with knowledge because no one can control another person's mind--where the knowledge is. Instead, managers must first set examples through leadership, management and personal behavior. Then they must strive to create and nurture a culture and an infrastructure that stimulates workers to create, use and share their knowledge and that also supports their freedom to act effectively over a broad range of situations. When an organization lives in a turbulent, unpredictable, and challenging world, it must also be a learning organization, capable of handling change, uncertainty and complexity. That is, the culture and infrastructure must be such that individuals and groups of individuals can and will continuously question their beliefs in order to create and apply their new knowledge to achieve desired goals and objectives.

Organizational Learning. The term organizational learning may refer to individual learning within the organization, the entire organization learning as a collective body, or anywhere in between these extremes. However, most organizational learning refers to team or organizational level learning. Of course, individual learning, or learning in small or large groups or as an entire organization may be needed for the firm to possess the requisite knowledge to take effective action. From a knowledge management perspective, all levels of learning are important and all must be nurtured and made a natural part of culture. To date, most of the KM emphasis has been put on locating, creating and sharing knowledge. For this reason, we consider organizational learning to refer to the capacity of the organization to acquire the knowledge necessary to survive and compete in its environment. However, there is an important distinction between individual learning and team/organizational level learning. Individual learning is a cognitive or behavioral activity between an individual and their environment, whereas in teams and organizations learning is a collective process dependent upon relationships and interactions among individuals such that learning occurs primarily through the interaction of the participants.

While individual learning is achieved by study, observation, cognition, experience, practice and developing effective mental models in the mind, organizational learning, being primarily a social versus a cognitive activity, occurs when groups learn to interact, share their knowledge and act collectively in a manner that maximizes their combined capacity and ability to understand and take effective action.

Organizational learning requires a sharing of language, meaning, objectives and standards that are significantly different from individual learning. When the organization learns, it generates a social synergy that creates knowledge, adding value to the firm's knowledge workers and to its overall performance. When such a capability becomes embedded within the organization's culture, the organization may have what is called a core competency. These are

usually unique to each organization and can rarely be replicated by other firms. The knowledge behind a core competency is built up over time through experiences and successes and rests more in the relationships and spirit among the knowledge workers that is the sum of each workers knowledge.

Since individuals create organizations, it is they who establish the standards, processes, and relationships that enable team and organizational learning. But organizational learning is more than the sum of the parts of individual learning. For example, when individuals leave, effective KM will enable the organization to retain its corporate knowledge, that is the knowledge that comes from the experience, cooperation and collaboration of its employees.

Some of the specific ways that organizations learn include: Single-Loop, Double-Loop, Deutero, and strategic learning. Single-loop learning (SLL) occurs when mistakes are detected and corrected, and then organizations carry on with their present policies and goals. Double-loop learning (DLL) occurs when, in addition to detection and correction of errors, the organization is involved in the questioning and modification of existing norms, procedures, policies, and objectives. DLL involves changing the organization's knowledge base or organization-specific competencies or routines. (Argyris and Schon, 1978)

Deutero-learning (DL) occurs when organizations learn how to carry out single-loop and double-loop learning. DDL and DL are concerned with the why and how to change the organization, while SLL is concerned with accepting change without questioning underlying assumptions and core beliefs. SLL may prevent DLL from occurring. In order to encourage the deeper learning, organizations must move away from mechanistic structures and adopt flexible and organic structures. This requires a new philosophy of management, which encourages openness, self-reflection, and the acceptance of error and uncertainty. Adopting a bottoms-up or participatory approach can encourage DLL. There's often a difference between what people say (espoused theory) and what they practice (theory in use).

Strategic learning is defined as "the process by which an organization makes sense of its environment in ways that broaden the range of objectives it can pursue or the range of resources and actions available to it for processing their objectives." (Mason, 1993)

The Common Ground

In an organization where understanding and the ability to take effective actions are major challenges because of the organization's environment or the nature of its work, both knowledge management and organizational learning become critical factors in its long-term survival. In fact, these two fields are so important that they must become embedded within the organizational philosophy and culture such that they are continuous, widespread and mostly invisible. That is, such that they are found in the habits, norms and expectations of the workforce, managers and leaders of the organization. To the extent that such an ideal can be achieved, knowledge management and organizational learning will be interdependent and inseparable, but not identical. To understand this relationship we explore a number of characteristics of organizational learning and knowledge management and see how they naturally complement and reinforce each other.

In the current and future environment of business, the major challenge relates to finding, creating or developing *understanding and meaning* of the complex events and situations arising from an uncertain, complicated and rapidly changing world. This, of course, is also the goal of much higher-level learning. When major paradigm shifts occur in an organization's environment, or within its own strategy or vision, the organization may face its ultimate challenge: Finding a new self-image, giving up current doctrine and replacing strongly held beliefs with ones that more accurately represent the new reality. Thomas Kuhn, Chris Argyris and others have noted the great difficulty organizations have when confronted with the need to rethink their basic assumptions and beliefs because of rapid shifts in their landscape. This is precisely where organizational learning is put to its greatest test and where knowledge management finds its reason for being. It is not easy to share knowledge; but it is even harder to give up old practices and beliefs that have worked well in the past. As noted above, this requires double-loop learning, something that is particularly difficult for senior knowledge workers. KM, focusing on organizational mission, strategy and vision, should be able to detect changes in the outside world. Organizational learning, then, has the challenge of identifying the new learning that will succeed and of replacing the old knowledge with the new.

Ideally, one would like to embed organizational learning within a knowledge management program in support of KM processes. To achieve this there would need to be a knowledge network of workers, managers and leaders supported by an infrastructure of technology and processes, with an organizational structure of collaborating teams and a culture of learning and sharing. This combination would significantly improve the organizations ability to change its learning (and unlearning) rate. The goal would be to provide rapid internal adjustment, agility, and effective external influence over the environment.

Organizational memory can be made of both hard data (such as numbers, facts, figures, rules, reports and other documents and rules) and soft information and knowledge (such as expertise, experiences, anecdotes, critical incidents, stories, artifacts, context information, details about strategic decisions, and tacit knowledge). Most firms have information systems such as inventory control, budgetary, and administrative systems that store and retrieve hard data or facts, but many do not capture the softer information. Ideas generated by employees in the course of their work are often quickly forgotten, yet they can be captured through explicit narratives stored electronically for future reference.

Firms are increasingly focusing on the concept of organizational learning to increase their competitive advantage, innovation, and effectiveness. Organizational learning is accelerated when a firm, through knowledge management, creates a common knowledge repository, identifies and codifies competencies and routines, including acquiring, storing, interpreting, and manipulating information from within and external to the organization. Knowledge management, through knowledge sharing processes, leverages both individual and organizational learning. By improving the quality and speed of communication and the understanding of problems and changes surrounding the organization, organizational learning and knowledge management jointly increase the quality of decisions of the organization and the effectiveness of their implementation.

Organizations learn to increase their adaptability and efficiency during times of change. Learning is a dynamic process that manifests itself in the continually changing nature of organizations, as exemplified by innovation, collaboration, culture shifts and high morale,

especially during times of uncertainty and external challenge. Both knowledge management and organizational learning use knowledge generation and knowledge sharing as foundation elements. To be successful, these capabilities require a high level of attention to human factors: roles and responsibilities, experience, motivation, self-image, respect and trust, honesty and integrity and the quality of interpersonal relationships throughout the firm. Since much of our knowledge is tacit, existing within our memories and unconscious mind and not easily articulated, its development and sharing is very much a social process. (Nonaka and Takeuchi, 1995)

In today's rapidly changing, erratic and increasingly complex environment, knowledge creation, acquisition and application through continuous learning are likely to be the only solution to survival and excellence. Organizational learning is contingent upon a number of factors such as leadership, structure, strategy, environment, technology, and culture. Knowledge management hopes to create and nurture these same factors to make optimum use of the organization's knowledge. Looking at several of these factors will allow us to see the close relationship between knowledge management and organizational learning.

***Structure*.** Structure represents the set of arrangements among the resources of the organization. The resources may be people, facilities, technological, financial or conceptual. How these resources are related to each other, and especially their influence on human culture and human relationships, influences a firm's self-image, its beliefs about the external world and its ability to learn and change. Whether a firm lives in denial of external change or embraces that change and, through learning, strives to adapt or influence those changes is heavily influenced by both structure and culture. The increasing emphasis of many firms on information management rather that classical capital management can be seen from Strassman's estimate that "corporations throughout the developed world are devoting between four and ten times the resources to information management than are deployed for industrial-age capital management."

Hierarchical, controlling structures by their very nature tend to prefer stability and minimize the learning and close collaboration needed to meet significant change or paradigm shifts. Loose structures (even hierarchical) that have a culture of sharing and collaboration can often facilitate learning and allow the freedom to change. However, they must also have clear direction and coordination, otherwise the resulting actions will be diverse and the lack of focus may make them unable to support major organizational objectives. Organizational learning can occur for all the wrong reasons, but it may be incapable of providing value to the firm. Here is where a knowledge management effort that creates and manages a structure to correlate the learning and concomitantly focus the application of that learning can pay big dividends. KM can do this by integrating corporate strategy, vision and structure, using knowledge as the common denominator and corporate vision as the guidepost. However, too much limitation on knowledge focus can create an inability to respond to surprises and major environmental paradigm shifts.

Unless deliberately provoked, most organizational structures tend to become rigid over time. To prevent such rigor mortis, and to keep the workforce flexible and open to personal and professional change, organizational learning and knowledge management need to encourage and make use of flexible and changing structures, at the same time retaining the capacity to focus and correlate local knowledge and activities. Policies such as moving people around to broaden their experience and revitalize their challenges, continuously bringing new people into the organization at all levels and deliberately changing organizational relationships will catalyze and

perpetuate both individual and organizational learning. Encouraging open communications, getting both managers and workers to constantly challenge basic assumptions and supporting prudent risk taking and team collaboration will encourage a culture that nourishes and updates the organization's knowledge, ergo its effectiveness. From a measurement view, the only true measure of effectiveness of organizational learning and knowledge management is how well the organization meets its current and strategic objectives—the true bottom line of the firm. This will require a line of sight from the organization's policies, decisions and actions to its organizational learning and knowledge management efforts to its overall performance.

***Strategy*.** Strategic applications of information systems for knowledge acquisition can take two forms: Capabilities for assimilating knowledge from the outside (such as competitive intelligence systems acquiring information about other companies in the same industry) and capabilities for creating new knowledge from the reinterpretation and reformulation of existing and newly acquired information (such as executive information systems or decision-support systems). They can also be environmental scanning and notification systems and intelligent and adaptive filters.

Learning is stimulated both by environmental changes and internal factors in a complex and iterative manner. An organization's strategy influences learning by providing a limit, or focus to decision-making and a framework for perceiving and interpreting the environment. In turn, the strategic options chosen will depend on the unique history, culture, and learning capacity of the organization. Such causal loops are widespread within organizations, demonstrating why it is so difficult to change organizational behavior and mindset. Knowledge management, by providing a systems-wide perspective that can affect all parts of the firm, may initiate change in the perception of knowledge and learning and in their role in improving organizational performance. By making multiple changes throughout a firm, it is possible, but never certain, that the above-mentioned closed causal loops can be modified in such a way that employee behavior becomes redirected toward learning and knowledge application. For example, a knowledge management effort might change the technology, the communication networks, the physical spaces, the questions asked by policy makers and the expectations of employees—all changed in a way that would encourage and facilitate learning, collaboration and the awareness and respect for knowledge and its role in the organization.

***Technology*.** The influence of information systems, in particular, can be considered two-fold: Direct influence and indirect influence. Information systems can indirectly influence organizational learning by affecting contextual factors such as structure and environment, which in turn influence learning. They can also directly influence the organizational learning process. The introduction of information systems flattens the structure of the organization and promotes greater dissemination of information to all individuals. Through the internet, intranets, communities of practice, communities of interest, groupware etc. anyone in the corporation can talk to anyone else, almost at any time. These open, informal networks and multi-paths serve to partially equalize positional influence and emphasize the value of information and knowledge. These equalizers, if used effectively, will facilitate the evolution of the organization's culture toward learning and knowledge management objectives. The information technology should be low-cost, support low-friction information and knowledge transfer and, over time, become an invisible part of the infrastructure.

Through the increased availability of information and the sharing of that information, the organization becomes more informed, flexible and organic. Information systems go beyond automating to "informating." In an informated organization, the focus of control shifts from managers to workers, who are now empowered with all the information required for their effective performance. A number of current technology trends will help the organizational discernment and discrimination problem. Discernment and discrimination are elements of the organizations filtering process. Discernment is the ability to differentiate the meaning and value among multidimensional concepts; and discrimination is the ability to choose those things upon which the organization needs to focus.

Technology is moving beyond expert systems (which make logical inferences based on a fixed set of rules) to systems that combine the use of embedded textual information with human cognition and inference to maximize the decision-making and interpretation processes needed to understand and act upon messy, complex situations. Technologies such as network publishing on the Internet and the information superhighway can facilitate the creation of organizational repositories. These repositories not only capture formal documents such as training manuals, employee handbooks, training material, etc., but also informal experience such as tacit know-how, expertise, experiences, stories, etc., often ignored in organizations. The use of such information systems to support and enhance organizational memory (and learning) by improving the precision, recall, completeness, accuracy, feedback and review of informal knowledge complements well the human contribution to decision making—creativity, rational thinking, intuition, emotion and social synergy.

Leadership. The essential function of leadership is to provide direction, build an organization's culture and shape its evolution. Leaders must shape the design of the organization's structure and policies to best fulfill its corporate mission. To do this, they must model desired behavior, communicate the organizations vision and strategy and insist on effective implementation of requisite policies and procedures. Organizational learning also requires commitment from executives for a long-term process with adequate budget and resources. Organizational culture (beliefs, ideologies, values and norms) and the amount of resources (money, facilities, people and ideas) heavily influence the quality and quantity of learning.

Environment. Learning organizations treat competition as a means of learning, since competition enables organizations to compare their own performance with others in the industry and learn from that exercise. Through knowledge sharing, learning results as the organization interacts with its environment. Knowledge management looks at the external environment as a source of knowledge and as a testing ground for its understanding and interpretation of itself and the outside world. As part of a major feedback loop, the environment presents a standard for measuring the organizations learning, unfortunately, it can also be a harsh taskmaster for organizational mistakes.

Points of Intersection

Having addressed the broad areas of structure, strategy, technology and the environment, we now look at a number of specific areas where knowledge management and organizational learning intersect.

Individual Learning and KM. Organizational learning is greatly dependent upon individual learning and the competency of the workforce. If the firm has a culture and leadership conducive to organizational learning, chances are that that same environment will also support individual learning. It is not so clear that KM facilitates individual learning since to date many KM efforts have emphasized technology and knowledge sharing rather than individual development. However, the culture of KM closely matches that needed for individual learning. Borrowing heavily from adult learning expert Malcolm Knowles, the main characteristics of adult learners are summarized below. (Knowles, 1998)

Adults want to learn more that just data and facts, they are interested in understanding "the why and how" of their information. Since most adults are not closely supervised, they see themselves as autonomous and self-directing. This same self-image becomes particularly strong when they are in a learning environment. Feeling that only they know how best they understand something, they do not want to be told what they need to know and how to learn it in a pedagogical manner, they want to take ownership for their learning. Adults use their prior experience and their mental models to make sense of new information and knowledge. This may prove beneficial or detrimental, depending on the validity of these past experiences. Spending much of their time solving problems at work, adults tend to prefer practical, goal-oriented problem solving in a realistic context versus textbook solutions. Preferably, these problems should relate directly to their current work and interests. Comfortable with work-place conversations, they tend to prefer learning through group discussions and dialogue rather than self-study.

From these learning characteristics it seems that a successful knowledge management program could provide many of the conditions desired by knowledge workers, and by doing so greatly leverage learning throughout the organization. For example, KM builds a culture of knowledge sharing and open communication, both leading to an environment conducive to adult learning. Communities of practice, teams, knowledge repositories, intermediaries, yellow pages etc all support the autonomous worker to meet their own learning needs. A somewhat surprising payoff from KM is the awareness and instantiation of the importance and payoff of learning and knowledge in the minds of the organization's knowledge workers.

Learning and Communities of Practice. Communities of practice accelerate learning. The practice of COPs denotes a group with the same work focus, and therefore a group that has much in common in their every-day work life, including a common language. The community part of COPs denotes a group that has a relationship built on trust and a focus on the open sharing of ideas and best practices. In COPs the creating, learning, sharing and using of knowledge are almost indivisible. John Seely Brown and Paul Duguid explained this phenomena: "… talk without the work, communication without practice is if not unintelligible, at least unusable. Become a member of a community, engage in its practices, and you can acquire and make use of its knowledge and information. Remain an outsider, and these will remain indigestible." (Brown and Duguid, 2000)

Etienne Wenger, a thought leader in communities of practice and formerly of the Institute for Research on Learning, found that group was important to both what people learn and how they learn. Within the group setting of claims processors, Wenger discovered that knowledge, traveling on the back of practice, was readily shared (Wenger, 1998). This same pattern was found from shop floors to professional fields, where scientists, doctors, architects, or lawyers,

after years of classroom training, learn their craft with professional mentors. "Here, they form learning communities capable of generating, sharing, and deploying highly esoteric knowledge." (Brown and Duguid, 2000)

Communities can facilitate both single-loop and double-loop learning. Single loop learning occurs when problems are solved by changing actions or strategies for achieving a desired result without changing the underlying theory or assumptions about those actions. Focusing on a particular field, communities provide a thought test bed for creating and sharing better ways of taking actions, developing new processes, tools and methods, and the application of new management ideas. This is *single-loop learning*. (Argyris, Putnam and McLain Smith, 1985)

But the open exchange of ideas and interactions among members of the community may challenge the basic theory and belief about how the system works. In other words, when problems arise and never seem to be solved, the underlying theory of how the system works may be wrong. Or when the environment changes, the system must change to continue to meet its responsibilities. When this occurs, an entirely new understanding of the system's structure and what makes it behave the way it does must be reviewed and a new theory developed. This is *double-loop learning*. It is the most difficult of all because it requires groups of people to change their understanding of their theory of success, to break through their defensive routines to accept and believe that a new theory of action is right and will work.

This is where communities have an advantage. Communities encourage the exchange of ideas, assumptions, and theories that open their members to new ways of seeing situations. The continuous, rapid feedback system of a community provides the opportunity to tie discussions and dialogues to decision results, generating new ways of understanding the system. Within the trusting framework of communities, individuals can observe other's results and rethink their assumptions and theories.

The value of learning in general, and double-loop learning in particular, will be to speed up the acceptance and application of new ideas, techniques, methods and tools that provide themselves in the workplace. Of equal importance is the full acceptance of new ways of doing business that change roles and relationships among organizations and individuals. Relationships among manager-employee, colleague-colleague, community-community members, government-industry, headquarters-field activities, buyers-users will all change in one form or another**.** How effective these changes will be depends on the beliefs and actions of the individuals in each area. Learning and change are the primary forces for success because they are absolutely essential for adaptation, experimentation, and innovation. In today's world, every decade and every year we find new technologies, new rules and new environments which demand new perspectives, new insights and new actions.

***Learning and Systems Thinking*.** Systems Thinking and System Dynamics facilitate both individual and organizational learning. Systems Thinking, according to Peter Senge, is an approach to understanding complex systems (such as organizations) that have many elements and relationships. (Senge, 1990) Systems Dynamics is the technical side of systems thinking that provides the analytical techniques and the software for computer programming of the fundamental causal relationships within an organization that are identified by informed knowledge workers. Systems Thinking provides a conceptual process and a visual way of

describing multiple causality relationships that include both positive and negative feedback loops, as well as time delays and nonlinear influences.

Systems Thinking encourages groups to dialogue and develop a common understanding of a complex problem within the organization and thereby, learn from each other and become better able to make decisions and implement them. Systems Thinking also helps restructure views of reality by identifying and challenging prevailing mental models and fundamental assumptions and by promoting double loop learning. In the process of understanding how organizations work, Systems Thinking encourages exploration of multiple viewpoints to any problem through dialogue and discussion. It is via such knowledge sharing and creation processes that knowledge management and organizational learning benefit each other.

There is another interpretation of Systems Thinking: Being aware of what systems are, what characterizes them and their general properties. Perspective and viewpoint are often critical to solving problems and understanding situations. A systems perspective permits one to see the organization, external threats or internal processes as systems with boundaries, elements, relationships, and networks of influence that provide insight and understanding of how the system works and how it will respond to a specific action. Learning by using the system perspective greatly facilitates the development of knowledge of both individuals and groups. It also puts each situation in its true place relative to other systems, permitting more effective priority setting and prediction of knowledge application.

The best organizational learning is distributed throughout the firm such that from a backdrop of continuous learning to meet routine challenges, pockets and processes can arise to anticipate and meet fundamental threats and opportunities that challenge the organization. This means that learning must be local and distributed, and it must be both continuous and episodic. These demands may strain knowledge workers and their managers, since they require living with change and uncertainty relative to both what needs to be learned, how fast it must be learned, and how to apply such new knowledge. This highlights the difference between learning and knowledge processes. While there are generic knowledge processes such as knowledge creation, sharing, and storing that may be described in general with some assurance, successful learning processes are mostly local and depend upon the history, nature, local culture and leadership of the firm, and on the learning styles and recent experience of both its knowledge workers and the teams they make up. Knowledge managers must be sensitive to the locality of effective learning and to the unpredictable nature of many learning situations.

A fundamental requisite to learning is the attitude and motivation of the individual knowledge worker. While knowledge managers may influence individual attitude and motivation, the amount of such influence is limited. Given this limitation, what knowledge managers can do is to support individual learning and organizational learning through the effective nurturing of culture, infrastructure, technology, policies and personal behavior. In today's changing, uncertain and complex business environment, knowledge organizations must be learning organizations and knowledge managers must therefore recognize and accept the responsibility of building and maintaining an organization that treats learning as a key success factor that consists of the normal KM areas of concern and the individual and group needs and capabilities of knowledge workers as they relate to learning, changing, risk taking, innovation and courage.

Learning and Flow. Organizations flourish with the flow of data, information and knowledge, the flow of people across and in and out of the organization; and flow in terms of the optimal human experience.

In a learning-centric organization, learning and knowledge that is core to the business of the organization is captured and shared. The more learning is valued in the organization, the better the core knowledge flows and is built upon through innovation, mission performance, and the creation of new knowledge. While each individual is important to this process, it is the continuous flow of knowledge and learning among people that generates organizational learning. This continuous flow is facilitated through the movement of people in and out of networks; communities of practice and workgroups as they change jobs, change their priorities and interests, and grow in new areas of thought. Even better than teams, this fluid movement of people in and out of communities of practice and networks creates diversity of perspectives and ideas, bringing together new combinations of knowledge and learning that offer ever increasing opportunities for discovering better ways of doing their jobs and achieving their organizational mission.

Considerable work is emerging on the science of knowledge flow within organizations. Nonaka considers knowledge flow through four steps. Since he states new knowledge is created only by individuals and is necessarily tacit in nature, this flow occurs through a process of *socialization*, with members of a community sharing their experiences and perspectives. (Nonaka, 1994) A second flow occurs through *externalization*, where the use of metaphors, stories and dialogue leads to the articulation of tacit knowledge, converting it to explicit knowledge. A third flow occurs through *combination*, where community members interact with other groups across the organization. A fourth flow occurs through *internalization*, where individuals throughout the organization learn by doing and perhaps even through listening to stories are able to create knowledge, usually in tacit form. When all four of these processes coexist, they produce knowledge spirals which result in accelerated organizational learning. (Nonaka and Takeuchi, 1995)

Optimal flow is a psychological state identified by Csikszentmihalyi as one in which an individual, while actively performing some task, looses track of time and easily and naturally makes use of all of their experience and knowledge to achieve some goal. Within an organization, these three forms of flow can work together to activate and accelerate both creativity and cohesion of action. High personal productivity, useful dialogue and knowledge sharing, when coupled with new employees having different perspectives and asking challenging questions, will create an organizational synergy that moves the knowledge-based organization to achieve its best performance.

Although flow and knowledge spirals are knowledge management concepts, one can easily appreciate their power to support and facilitate organizational learning. Although learning is inherently an individual experience, that experience can be significantly influenced to help the individual and the organization learn and create knowledge.

The Learning Continuum.

John Seely Brown and Paul Duguid view learning as a social phenomenon. (Brown and Duguid, 2000) Certainly looking at “social” as of, relating to, or occupied with matters affecting

interactions, discourse and human welfare, we agree fully. The social phenomenon of learning is not only among individuals, but among any individual and the environment, whether that environment consists of people, places, processes or things; whether it is silent or active; whether it is defined in terms of the individual with a negative or positive influence.

We have focused on, and talked about the importance of both learning and knowledge management throughout this paper. Indeed, knowledge on the subjects of organizational learning and knowledge management has become increasingly important as a point of focus for the business world driven by the development of the Internet and virtual worldwide access to the exponentially increasing amount of data and information. Since knowledge is situationally dependent, i.e., what is understood as knowledge relates to some specific domain, situation and context, a changing environment insinuates changing knowledge needs. Learning is the individual and organizational process for creating new knowledge to meet changing environments.

Figure 1 explores the learning continuum from an individual or organization highly interactive with its environment, in the flow state, to an individual or organization whose thinking and actions have become locked, or static, and therefore continuously diminishes in effectiveness as the environment changes. For ease of explanation, the model will be discussed in terms of organizational learning. As an organization realizes the value of a product or process, it tends to freeze that process or product in time. This occurs for a number of reasons such as the need to train, limited funding, or temporary success. Perceived competitive advantage also causes a locking in as new products/processes move into a mature phase where the focus is on sales and/or implementation. If the organization has healthy feedback loops in place and responded to, the organization moves in and out of learning cycles to periodically develop and produce new versions of the product/process.

The organization just described sits in the middle of the learning continuum as it markets and implements its process/product, and moves down along the continuum as it receives feedback from its environment, learns from that feedback, and creates an improved version of its product/process. The innovative development environment, discussed in case studies of Apple Computer, lays further down along the learning continuum. (Drucker, 1985) The Apple organization was highly open and interactive with its environment, with minimal locking in of products/processes. The furthest learning point along this continuum represents the state of Flow introduced by Csikszentmihalyi, where there is a fluid exchange among the environment, the organization and individuals within that organization. In the Flow state, autotelic work, work whose purpose lies within the individual and is done for its own sake, is both a goal and a reality.

Moving upward along the continuum, still using an organizational scenario, the organization is achieving enough continuing success with its product/process that it does not recognize the need for change and remains locked into that product/process. In fact, in a large customer base, this success may continue for a number of years (dependent on how rapidly the organization's areas of focus is changing) as front-runners move on to new and better processes and products, followers move in behind them to continue purchasing/using the offered product/process. However, over time, the product/process will diminish in value and the market will look to new ideas and products/processes for satisfaction. When this happens it is usually too late to catch up with alert and more nimble competitors who have continued growing themselves and their products/processes.

Another way to use the learning continuum model is to reflect on the fit between individuals and the organization within which they work. If an organization is locked into a product/process and in the distribution mode, it would be difficult for an individual who operates near a state of flow to flourish. In like manner, for an individual who has locked onto a specific set of beliefs and work habits, it would be difficult to succeed in a learning organization that fluctuates and bounces in response to the environment.

Taking a systems view of relationships among organizations and the people who work within those organizations, to succeed in organizational structures built on the bureaucratic model, it is necessary to have the ability to solidify ideas and slowly work them into the system. Simultaneously, to respond to the fluctuating environment, it is necessary to have the ability to be open to interact with that environment, and learn from it. This points to the need for individuals and organizations to develop a capability to move in and out of learning modes, although that movement along the continuum will be burdened by capacity and culture. Still, the ideal condition is the ability of individuals and organizations to choose where to function on the continuum at a specific time and in a specific situation. It must be noted, however, that there is a limit to the amount of flexibility an individual or organization can achieve. The further an individual or organization moves to either end of the continuum, and the longer he/she/it remains in that mode, achieving a comfort level, the more difficult it becomes to move away from that comfort level, the irony of a learner being unable to learn how to learn. In all things there is a balance, a region within which movement assures strength and stability.

On the other hand, while an organization (or individual) is in an increased learning mode, there is also increased risk and vulnerability. This is due to the large amount of interaction with the environment that provides both negative and positive data and information, and the increased need for greater discernment and discretion. In organizational terms, this may be thought of as the need for increased discrimination capability in a world with porous and permeable boundaries, where a large amount of data and information flows into the organization and much of it is irrelevant or false. *What* the organization learns may be more important than how fast it learns. In fact, an organization may become saturated with learning and fall into the trap of always trying something new without discerning the learning that is applicable to its immediate needs.

The selection and validation competency (discretion and discernment) developed by a high quality knowledge organization can focus learning in the right directions to reduce error signals, confusion and wasted effort. Recall that knowledge is the capacity to take *effective* action. The word effective is significant because of the inundation of possibilities and the chaotic nature of events in the environment of many extant firms. To learn to take effective action means to learn only the right things, to unlearn those things that prohibit the right actions and not to fall prey to educated incapacity. This is the realm of learning in the knowledge organization.

Final Thoughts

As uncertainty and complexity increase in the future, and decisions become more challenging, individual, team and organizational learning, coupled with a strong knowledge management program offers the best capability an organization can have to change, adapt and influence its environment in a way that maximizes its performance over time. Within the

organization, focused, flexible and friendly communities will help knowledge workers continually learn and change. By combining the strengths of organizational learning and knowledge management, smart organizations will create cultures, structures, and leadership styles that enable them to scan, perceive, evaluate, anticipate and take effective action on new, ambiguous, unexpected and complex threats and opportunities. Achieving such an ideal is as challenging as it is productive.

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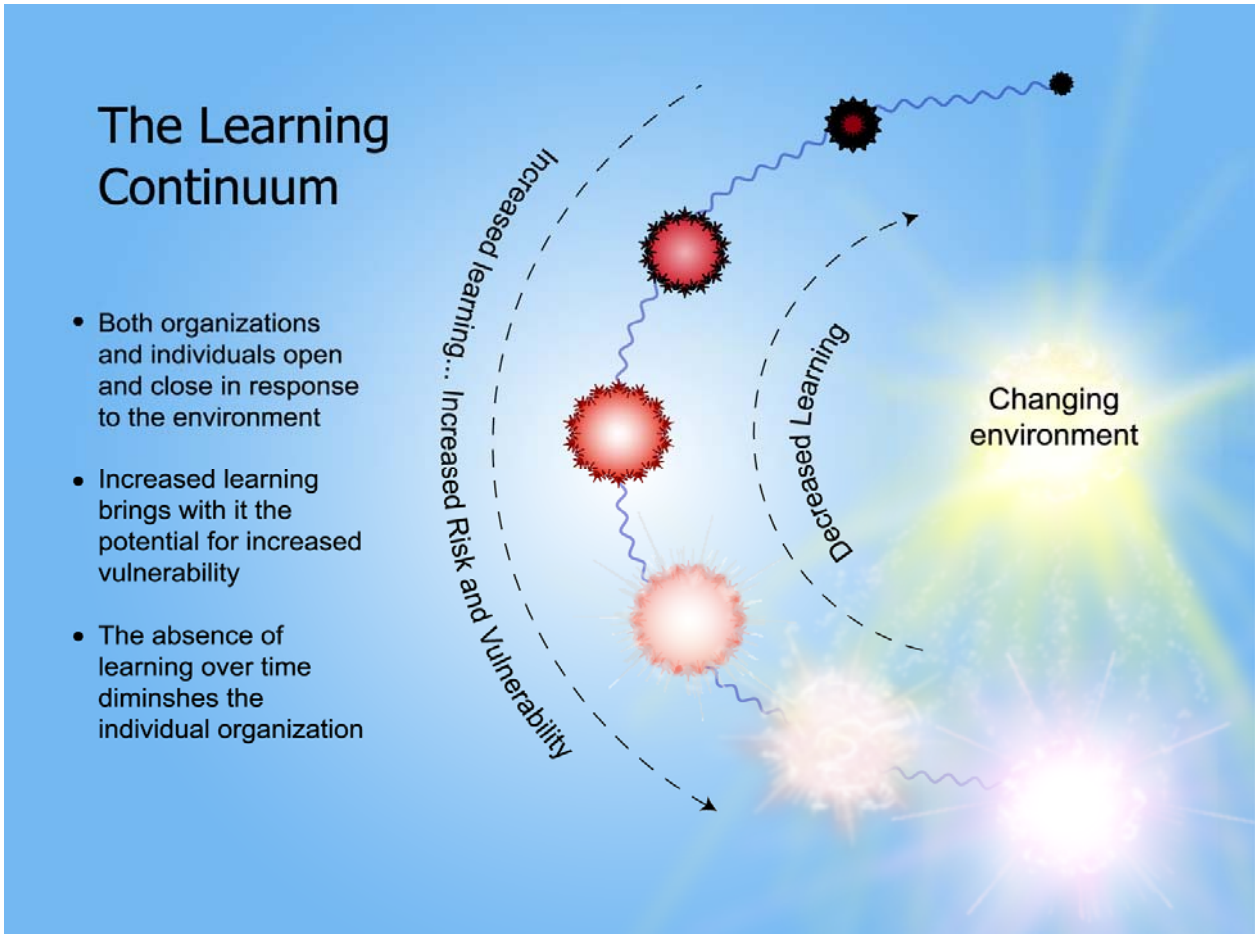
The Learning Continuum
• Both organizations and individuals open and close in response to the environment
• Increased learning brings with it the potential for increased vulnerability
• The absence of learning over time diminshes the individual organization
Increased learning... Increased Risk and Vulnerability
Decreased Learning
Changing environment

Figure 1