Quick, what's the definition of knowledge management? Don't know? join the crowd. Welcome to the most successful fuzzy idea in the history of management. KM has been successful in the sense that everybody seems to be doing it, and fuzzy in the sense that nobody seems to agree on what it is. Definitions of knowledge management generally range from data warehousing or data mining on the one hand, to vague notions of communities of practice as comprising the salvation of business and humankind, on the other. Would the real knowledge management please stand up!

Despite all the confusion in the marketplace, there apparently has been some agreement for many on one common theme: knowledge management is all about getting the right information to the right people at the right time. Practicing knowledge management has therefore been mostly about information capture, indexing, storage, and retrieval—which means that it should come as no surprise to anyone that the conventional practice of KM has -been utterly technocentric. If KM is all about delivering information to people on a timely basis, what better way to do so than to arm them with technology and the data du )our of their choosing? Have it your way, as it were.
These delivery-oriented approaches to knowledge management amount to what I like to think of as "supply-side" KM schemes. The practice of supply-side KM begins with the assumption that valuable organizational knowledge exists, and that the primary task of the knowledge manager is to find it, codify it, and deliver it to the working masses. The unspoken model here is significant. Someone-an authority structure of some kind-is doing the finding, codifying, and delivering. The recipients of this largesse, on the other hand, are on the receiving end only. Knowledge is handed down from heaven, as if from God to the people-hence, the supply-side metaphor. The opposite of supply-side KM is demand-side KM. Unlike supply-side schemes, which tend to begin with the assumption that knowledge exists and must only be found, codified, and delivered, demand-side practitioners make no such starting assumption. Instead, they first ponder the question of where valuable organizational knowledge comes from in the first place. Sure, sharing valuable organizational knowledge is important, they argue, but shouldn’t we also be focusing on the production of new knowledge, and not just on the management of the old? Shouldn’t we also be looking into how can we increase the capacity of an organization to satisfy its demand for new knowledge, as it strives for competitive advantage and improved performance? These are the central questions posed by practitioners of the new KM.
THE STORKTHEORY OF KNOWLEDGE

The general failure of the knowledge management profession to focus, in earnest, on the question of knowledge production amounts to a kind of hysteria or denial—an unspoken, unacknowledged, but universally shared aversion to "going there," in favor of accepting a kind of modern-day myth of the stork as an explanation for where knowledge babies come from. Indeed, knowledge management has opted for the convenience of not having to worry about how we make knowledge. That's too scary a problem to tackle: too fuzzy, too controversial all too theoretical. Or as the King of Austria reportedly once said to Mozart, it has "too many notes."

Here is a quiz: Two knowledge managers are working for two similar companies. One decides to practice supply-side knowledge management and focuses only on the capture, codification, and distribution of existing organizational knowledge. The other decides to practice both demand-side and supply-side KM together, and sets about the task of enhancing her firm's ability to generate new knowledge, as well as to manage the old. Assuming both are equally successful at their Jobs, which company is better off in the end?

Answer: The second company is better off in the end, of course, because not only is it managing the integration of existing knowledge as effectively as the first, but unlike the first, it is also accelerating its rate of organizational learning and knowledge production.

As a result, it is outlearning its rival by discovering and creating new knowledge on a regular basis. Knowledge babies don't come from, storks, you see; organizations actually make them. Two or more people collaborate to solve a problem. They engage in a kind of
dialectical foreplay, and together they hatch new knowledge babies. What's more, this process (presented in more detail below) is understandable to us. We know how it works, or at least how it's supposed to work. The implications of this knowledge cannot be overstated.

We now know not only how knowledge production works, but also how to recognize cases in which knowledge-baby production is not working and what to do about it. Most of these insights can be traced to the influence of complex adaptive systems theory (CAS theory), which provides a powerful view of how knowledge is produced in living systems. According to CAS theory, knowledge evolves in the minds of individual learners who sometimes go on to co-attract one another on the basis of their shared interests. Communities of interest or practice then sometimes form, through which groups of many individuals collaborate in the production of new knowledge of a mutually held kind. Some of this knowledge may later escalate into adoption by an entire organization, after which an innovation, or an episode of organizational learning, can be said to have occurred.

Familiarity with the pattern of knowledge-making set forth in CAS theory is key to determining whether or not "natural" knowledge production is happening in an organization. Social patterns of behavior that conform to the characteristic dynamics of complex adaptive systems signal health in learning and knowledge production, and social patterns to the contrary do not. Still, the conventional practice of knowledge management has largely ignored these insights, choosing instead to hide behind the myth of the stork—because the new knowledge management has too many notes, is too scary, and is too theoretical. Enough, already.
For shorthand purposes, let us refer to the old practice of supply-side KM as "first-generation KM," and the practice of balance between supply- and demand-side KM as "second-generation KM." It is the practice of second-generation KM, then, that I am referring to when I say "the new KM." In the new KMI the myth of the stork is dead. People in organizational settings create new knowledge, we argue, and they do so by following certain regular and predictable patterns of knowledge-making behavior. We believe that by focusing our investments and management efforts on supporting and strengthening these behaviors, we can enhance the production of organizational knowledge—even accelerate the rate of organizational learning and innovation. In the new KM, knowledge management, organizational learning, and business innovation converge into a single body of practice.

A LIFE CYCLE VIEW

In the late 1990s, a small band of devoted "new KM thinkers," myself included, got together to develop a body of second-generation practice under the auspices of the Knowledge Management Consortium International (KMCI). Out of that effort came a theoretical model that attempts to portray the process by which organizations produce and integrate new knowledge. We called this vision of knowledge processing the knowledge life cycle, or KLC (see Figure 6-1). Here's a rough narrative of the organizational knowledge processing story embodied by the KLC:
1. All knowledge begins in the minds of individuals. "Organizations learn only through individuals who learn. An important early step in the production of new, shared knowledge, then, is the individual learning experience. Individual learning, of course, also leads to learning by groups and communities; and they, too, contribute to organizational learning.

2. As individuals learn, they begin to sense continuities and discontinuities with their experience. In other words, their experience either agrees with what they think they know, or it doesn't. In cases where it doesn't, tension arises that must be resolved. This might be in the minds of individuals who see their employers heading in directions that they firmly believe are mistaken. These people then turn to each other for relief, as it were. They seek each other out; they 'coattract' one another; and they engage in a process of commiseration, and constructive dialogue. They create their own knowledge, or rules. As Ralph Stacey puts it, "Some of those rules come to be shared in small groups, or even across the whole system: in other words, group and organizational cultures develop that are not part of the officially sanctioned culture or ideology." It is in this way that communities of knowledge, interest or practice spring forth.

3. These communities or groups then engage in a process of knowledge making and evaluation. Each 'member' brings his or her "knowledge claims" to the table, and together they are scrutinized, discussed, modified, and refined. New knowledge is shaped in this way, and out of this process comes community-made knowledge claims of a highly refined and tested form. In cases where these community-validated knowledge claims are at odds with the prevailing wisdom or practice of the day, tension builds again, but this time not at the level of the individual, but at the level of the organization.
4. Community-made knowledge claims, in cases where they conflict with the status quo of knowledge-in-practice, often escalate to the level of an organization's authority structure or senior management. Here again, the same community knowledge-making process unfolds, and in the end, new knowledge may or may not emerge at the level of the authority structure. An authority structure is, after all, just another group or community, one that differs from the rest, however, given the power it holds.

In cases where authority-structure communities embrace and create new knowledge, attempts to diffuse such knowledge into practice, or to "Integrate" it organizationally, generally follow. This is the knowledge integration phase of the KLC. In the first stage of this phase, new knowledge propagates across the organization either informally or by directly managed attempts to do so. On the managed side, we call this "training" or "broadcasting." On the informal side, we call it "searching" or "sharing." As new knowledge becomes integrated within the organization, its embodiment in practice becomes more apparent. If so, we can say that it has become adopted in practice in the business processing environment. Here we can also say that an episode, or cycle, of organizational learning has occurred. Behaviors change, accordingly. As Chris Argyris and Donald Schon put it in their book, Organization Learning II, "The output of organizational inquiry may take the form of a change in thinking and acting that yields a change in the design of organizational practices." Each occurrence of organizational learning can, in turn, be regarded as an innovation. The means by which new knowledge is produced and integrated into widespread organizational practice is what we mean by the term COI innovation." Innovation and organizational learning are largely synonymous terms. 5. Once new knowledge has progressed to the point of widespread...
dominant practice, its application by individuals in business processes begins to produce experience in the field. The effects of practicing new knowledge feed back to its practitioners, who in turn learn from these effects and form judgments and opinions on the value of the new knowledge, accordingly. Not only do these value assessments lead to alterations in practice, but they also serve to stimulate the production of new ideas and new problems in the minds of individuals, who then go on to imagine the next generation of the same idea, or better ones yet. In other words, feedback from knowledge in practice engenders new problems, new learning, and inventive tendencies in the minds of individuals, which takes us back to the beginning of the cycle set forth in step 1 above. And so the whole process then repeats itself, continuously and recursive-ly.

The knowledge life cycle, as described above, was created using a blend of complexity theory, organizational learning, epistemology, sociology, and system dynamics. As such, it has an unmistakable multi i i inary systems thinking spin to it, thanks mainly to the ence of the science of complexity. What many people may find surprising, then, is that most of the ideas expressed in this paper are firmly rooted in complexity theory. Now seen as a valuable source of insight in understanding how living systems function-including human organizations-the science of complexity has a great deal to say about the nature and role of cognition in the conduct of human affairs.

Indeed, as noted earlier, second-generation KM owes much of its thinking to complex adaptive systems theory, or CAS theory, which holds that living systems (i.e., organizations made up of living, independent agents, such as people) self-organize and continuously fit themselves, individually and collectively, to ever-changing conditions in their environment.
They do this, the theory says, by modifying their knowledge of fact and of practice (i.e., their know-what and their know-bow knowledge) as a consequence of their interaction with their environment and the effects of their own and others’ actions.

Knowledge in the mind, according to CAS theory, can be represented by rules that agents follow in their perpetual quest to successfully adapt themselves to their environment. According to this view, living systems are nothing if not learning organizations. Understanding how knowledge forms at the level of individual agents, and rises to the level of the collective to become shared organizational knowledge, is a lesson in process taken directly from complexity theory.

The application of complexity theory to a broad range of business and organizational development issues is widening in practice. Examples include the New England Complex Systems Institute, 12 and the Institute for the Study of Coherence and Emergence, 13 whose respective members have been actively studying the application of complexity and CAS theory to the management of human affairs for years.

Major corporations have also risen to the occasion by investing in dedicated resources, such as Citibank's Complexity and Organizational Behavior Project," to explore and embrace ways of applying complexity's lessons to the management of their own affairs. Even the Wall Street journal, thanks to the pioneering efforts of journalist Tom Petzinger, has been closely following the trajectory of complexity theory as practiced by business since the mid-1990s." But it wasn't until 1997, when the Knowledge Management Consortium International (KMCI) was formed-a think-tank in Washington, D.C.-that the profound connection between complexity theory and knowledge management was formally embraced." By simply
recognizing human organizations as living systems—consistent with CAS theory’s definition of complex adaptive systems— all of the theory’s insights on how knowledge happens in such systems were suddenly seen as applicable to business and industry. This insight, coupled with the influence of organizational learning on KM, accounts for the strikingly new and different brand of second-generation knowledge management that we now see before us—a practitioner’s framework firmly rooted in the study of living systems, also known as the new knowledge management.

TO THEORETICAL?

Unfortunately, new ideas all too often provoke the kinds of complaints mentioned above as being "too vague," "too scary," or "too theoretical" to be of any use on a purely "practical" basis. Detractors of the new knowledge management might already be saying to themselves, "Come on, who’s kidding whom? This business of ‘a practitioner’s framework firmly rooted in the study of living systems’ may sound good in the classroom, but it’s dead-on-arrival in the boardroom. We need executable models that we can deploy ‘on Monday morning,’ that come with clearly defined value propositions and measurable benefits—economic benefits, that is. Nothing less will do. 51

Fair enough. Let’s take a crack at it.

First, let’s tighten the scope of our opening hypothesis a bit. That is, that businesses, which are human social systems, are subject to the implications of complex adaptive systems theory (CAS theory). We can say this, we believe, because human social systems are living
systems, and comprise "exactly the kind of system that the science of complexity deals with."

Still, this is decidedly different from conventional thinking, which has tended to regard businesses as collections of objects that in this instance we call people. When it comes to conventional thinking on matters related to knowledge production, sharing, and human performance, the most commonly held first principle might read like this: People in organizations can be manipulated to form social systems that create new ideas and new products. Rarely are business plans expressed in these terms, but this assumption is at least implicitly contained in most of them. The new knowledge management begins with a different first principle: Knowledge production in organizations is an emergent social process. Human social systems, by their intrinsic nature, give rise to collective knowledge-making by their members as a byproduct of their individual learning and interpersonal interactions. What invariably bubbles up from all of this is new knowledge. In other words, no manipulation or management is required to get people to innovate in organizations; human social systems are already endowed with predispositions to do so."

Let me put it in more business-friendly terms: Organizations innovate by their very nature (see knowledge life cycle discussion above). You don't manage innovation, you either get out of its way or you engage it on its own terms, not yours. Better yet, you acknowledge its primacy in human social systems, and you support, strengthen, and reinforce it.

Now, here's where the hardcore inspiration of take it to work and put it to use on Monday comes in. If organizations are already fundamentally predisposed to create new knowledge-and that's what they do and always have done, and if we think we have some
inkling of how they do this, which can only be described as attributable to self-organization then rather than think in terms of trying to manage or manipulate organizations toward some desired outcome (e.g., better knowledge making or sharing), why don't we begin by declaring victory at the outset and celebrate the fact that what we want is already in there?

Wait! You say it's not there? Or it's not there to the desired extent? You agree, of course, that people learn without being told to do so. And that people affiliate with one another in communities of interest without being told to do so; and of course people engage in co-invention and all of the other things described above in the knowledge life cycle without being told to do so to some degree. What you want, however, is for them to do it more often? Or more intensively? Or more effectively? Or more collaboratively? Or more prolifically? Is that what you want? Is that what you mean? Or do you still cling to the notion that you can manage or manipulate people into following certain other knowledge-making or -sharing regimes of a manager's making? This issue requires resolution of the central question implied above, which is do you agree with "first principle number one" or "first principle number two"? Because you can’t have it both ways. And if you are a first-principle-number-one believer, I challenge you to explain how throughout all of human history men and women have been making shared knowledge at the planetary level without once being subjected to knowledge-making management schemes of an administered kind. I'm talking about knowledge-making at the level of whole social systems such as science, religion, philosophy, politics, medicine, and education.

These are all knowledge-making social systems (self-organized communities) operating on a planetary scale that have never been subjected to any form of centralized planning, control, or management, and yet they have all somehow managed to create mutually held
new knowledge throughout time. The philosopher of science Thomas Kuhn observed that evolutions in science, in particular, have been anything but managed. "Competition between segments of the scientific community is the only historical process that ever actually results in the rejection of one previously accepted theory or in the adoption of another." CAS theory applies to all levels of scale, whether all of humanity at one extreme or Acme Widgets, Inc. at the other. That all said, surely it is possible to create artificial knowledgemaking systems that can produce new knowledge by following prescribed patterns of behavior, rather than relying on patterns that emerge, such as the life cycle described above. After all, we do this all the time in the form of R&D departments, market research functions, product planning and development, steering committees, task forces, and so on. Even our predominant form of management in most businesses is arguably artificial and patently oligarchical (management by the privileged few). But are these approaches to knowledge-making sufficient and, ultimately, sustainable? Probably not.

Oligarchical businesses systematically fail to take the full creative power of their human inhabitants into account, and they regularly make knowledge that has a long history of leading to unsustainable behaviors over the long term. If you have any doubt of that, then I'm sure you wouldn't mind volunteering your basement at home to serve as a repository for the millions of tons of spent nuclear fuel produced by the energy industry in the United States, for which there are no suitable places of long-term storage on Earth. Or perhaps the asbestos industry’s attempts to go on pushing their products despite their knowledge of the attendant risks to human health will convince you. Or the tobacco industry’s equally reprehensible behavior. Or the chemical industry’s unbridled release of synthetic products into the
atmosphere every day. Or the life sciences industry’s reckless experiments in genetic engineering. Or Firestone/Bridgestone’s cover-up of its faulty tire products. Or Enron’s overreliance on dubious accounting practices. Does anyone really think that left to their employees' devices, as opposed to only those of their management teams, any one of these companies or industries would have made the same mistakes or gotten as far as they did with them? I doubt it.

After a few hundred years of practicing unsustainable business on Earth, one starts to get the impression that the cause of our ills may not be so much a matter of bad decisions being made by bad people as, perhaps, it is that our knowledge processing systems themselves are dysfunctional. Oligarchies are sub-optimal when it comes to knowledge making for the masses. Top-down knowledge making always is. Bot-tom-up knowledge making, however--of the selforganizing kind described in the life cycle narrative above--always does a much better job over the long-term, and is therefore inherently more sustainable and more prolific. just look at the ants! Human social systems-businesses included-are endowed with certain knowledge processing behaviors that can best be described as the tendency to self-organize around the production and integration of knowledge.” Practicing the new knowledge management therefore begins with this insight, and continues with the belief that these behaviors should be acknowledged, embraced, supported, and reinforced. Anything less than that is patently unsustainable. The new knowledge management is all about sustainable innovation!