Knowledge Management—Emerging Perspectives

Yes, knowledge management is the hottest subject of the day. The question is: what is this activity called knowledge management, and why is it so important to each and every one of us? The following writings, articles, and links offer some emerging perspectives in response to these questions. As you read on, you can determine whether it all makes any sense or not.

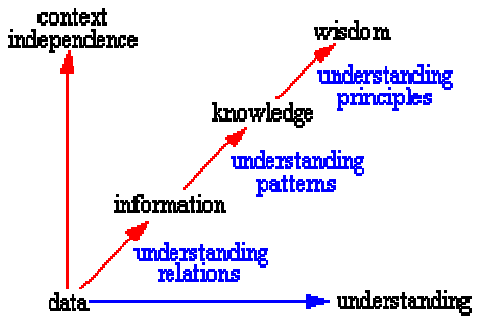
Developing a Context

Like water, this rising tide of data can be viewed as an abundant, vital and necessary resource. With enough preparation, we should be able to tap into that reservoir -- and ride the wave -- by utilizing new ways to channel raw data into meaningful information. That information, in turn, can then become the knowledge that leads to wisdom. Les Alberthal[alb95]

Before attempting to address the question of knowledge management, it's probably appropriate to develop some perspective regarding this stuff called knowledge, which there seems to be such a desire to manage, really is. Consider this observation made by Neil Fleming[fle96] as a basis for thought relating to the following diagram.

- A collection of data is not information.
- A collection of information is not knowledge.
- A collection of knowledge is not wisdom.
- A collection of wisdom is not truth.

The idea is that information, knowledge, and wisdom are more than simply collections. Rather, the whole represents more than the sum of its parts and has a synergy of its own.



We begin with data, which is just a meaningless point in space and time, without reference to either space or time. It is like an event out of context, a letter out of context, a word out of context. The key concept here being "out of context." And, since it is out of context, it is without a meaningful relation to anything else. When we encounter a piece of data, if it gets our attention at all, our first action is usually to attempt to find a way to attribute meaning to it. We do this by associating it with other things. If I see the number 5, I can immediately associate it with cardinal numbers and relate it to being greater than 4 and less than 6, whether this was implied by this particular instance or not. If I see a single word, such as "time," there is a tendency to immediately form associations with previous contexts within which I have found "time" to be meaningful. This might be, "being on time," "a stitch in time saves nine," "time never stops," etc. The implication here is that when there is no context, there is little or no meaning. So, we create context but, more often than not, that context is somewhat akin to conjecture, yet it fabricates meaning.

That a collection of data is not information, as Neil indicated, implies that a collection of data for which there is no relation between the pieces of data is not information. The pieces of data may represent information, yet whether or not it is information depends on the understanding of the one perceiving the data. I would also tend to say that it depends on the knowledge of the interpreter, but I'm probably getting ahead of myself, since I haven't defined knowledge. What I will say at this point is that the extent of my understanding of the collection of data is dependent on the associations I am able to discern within the collection. And, the associations I am able to discern are dependent on all the associations I have ever been able to realize in the past. Information is quite simply an understanding of the relationships between pieces of data, or between pieces of data and other information.

While information entails an understanding of the relations between data, it generally does not provide a foundation for why the data is what it is, nor an indication as to how the data is likely to change over time. Information has a tendency to be relatively static in time and linear in nature. Information is a relationship between data and, quite simply, is what it is, with great dependence on context for its meaning and with little implication for the future.

Beyond relation there is pattern[bat88], where pattern is more than simply a relation of relations. Pattern embodies both a consistency and completeness of relations which, to an extent, creates its own context. Pattern also serves as an Archetype[sen90] with both an implied repeatability and predictability.

When a pattern relation exists amidst the data and information, the pattern has the *potential* to represent knowledge. It only becomes knowledge, however, when one is able to realize and understand the patterns and their implications. The patterns representing knowledge have a tendency to be more self-contextualizing. That is, the pattern tends, to a great extent, to create its own context rather than being context dependent to the same extent that information is. A pattern which represents knowledge also provides, when the pattern is understood, a high level of reliability or predictability as to how the pattern will evolve over time, for patterns are seldom static. Patterns which represent knowledge have a completeness to them that information simply does not contain.

Wisdom arises when one understands the foundational principles responsible for the patterns representing knowledge being what they are. And wisdom, even more so than knowledge, tends to create its own context. I have a preference for referring to these foundational principles as eternal truths, yet I find people have a tendency to be somewhat uncomfortable with this labeling. These foundational principles are universal and completely context independent. Of course, this last statement is sort of a redundant word game, for if the principle was context dependent, then it couldn't be universally true now could it?

So, in summary the following associations can reasonably be made:

- **Information** relates to description, definition, or perspective (what, who, when, where).
- **Knowledge** comprises strategy, practice, method, or approach (how).
- **Wisdom** embodies principle, insight, moral, or archetype (why).

Now that I have categories I can get hold of, maybe I can figure out what can be managed.

An Example

This example uses a bank savings account to show how data, information, knowledge, and wisdom relate to principal, interest rate, and interest.

Data: The numbers 100 or 5%, completely out of context, are just pieces of data. Interest, principal, and interest rate, out of context, are not much more than data as each has multiple meanings which are context dependent.

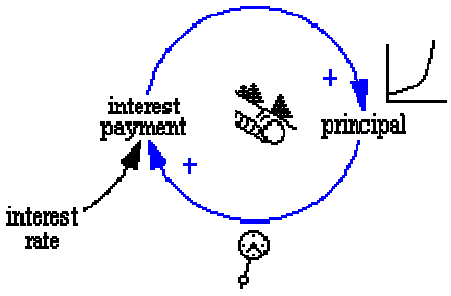
Information: If I establish a bank savings account as the basis for context, then interest, principal, and interest rate become meaningful in that context with specific interpretations.

- Principal is the amount of money, $100, in the savings account.
- Interest rate, 5%, is the factor used by the bank to compute interest on the principal.

Knowledge: If I put $100 in my savings account, and the bank pays 5% interest yearly, then at the end of one year the bank will compute the interest of $5 and add it to my principal and I will have $105 in the bank. This pattern represents knowledge, which, when I understand it, allows me to understand how the pattern will evolve over time and the results it will produce. In understanding the pattern, I know, and what I know is knowledge. If I deposit more money in my account, I will earn more interest, while if I withdraw money from my account, I will earn less interest.

Wisdom: Getting wisdom out of this is a bit tricky, and is, in fact, founded in systems principles. The principle is that any action which produces a result which encourages more of the same action produces an emergent characteristic called growth. And, nothing grows forever for sooner or later growth runs into limits.

If one studied all the individual components of this pattern, which represents knowledge, they would never discover the emergent characteristic of growth. Only when the pattern connects, interacts, and evolves over time, does the principle exhibit the characteristic of growth.



Note: If the mechanics of this diagram are unfamiliar, you can find the basis in Systems Thinking Introduction[bel96] .

Now, if this knowledge is valid, why doesn't everyone simply become rich by putting money in a savings account and letting it grow? The answer has to do with the fact that the pattern described above is only a small part of a more elaborate pattern which operates over time. People don't get rich because they either don't put money in a savings account in the first place, or when they do, in time, they find things they need or want more than being rich, so they withdraw money. Withdrawing money depletes the principal and subsequently the interest they earn on that

principal. Getting into this any deeper is more of a systems thinking exercise than is appropriate to pursue here.

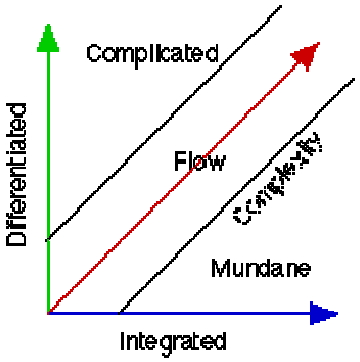
A Continuum

Note that the sequence data -> information -> knowledge -> wisdom represents an emergent continuum. That is, although data is a discrete entity, the progression to information, to knowledge, and finally to wisdom does not occur in discrete stages of development. One progresses along the continuum as one's understanding develops. Everything is relative, and one can have partial understanding of the relations that represent information, partial understanding of the patterns that represent knowledge, and partial understanding of the principles which are the foundation of wisdom. As the partial understanding stage.

Extending the Concept

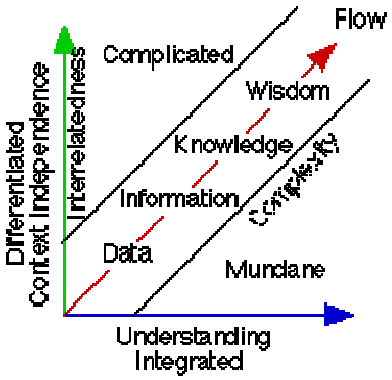
We learn by connecting new information to patterns that we already understand. In doing so, we extend the patterns. So, in my effort to make sense of this continuum, I searched for something to connect it to that already made sense. And, I related it to Csikszentmihalyi's interpretation of complexity.

Csikszentmihalyi[csi94] provides a definition of complexity based on the degree to which something is simultaneously differentiated and integrated. His point is that complexity evolves along a corridor and he provides some very interesting examples as to why complexity evolves. The diagram below indicates that what is more highly differentiated and integrated is more complex. While high levels of differentiation without integration promote the complicated, that which is highly integrated, without differentiation, produces mundane. And, it should be rather obvious from personal experience that we tend to avoid the complicated and are uninterested in the mundane. The complexity that exists between these two alternatives is the path we generally find most attractive.



On 4/27/05 Robert Lamb commented that Csikszentmihalyi's labeling could be is bit clearer if "Differentiation" was replaced by "Many Components" and "Integration" was replaced by Highly Interconnected." Robert also commented that "Common Sense" might be another label for "Mundane." If the mundane is something we seem to avoid paying attention to then "Common Sense" might often be a very appropriate label.
Thanks Robert.

What I found really interesting was the view that resulted when I dropped this diagram on top of the one at the beginning of this article. It seemed that "Integrated" and "Understanding" immediately correlated to each other. There was also a real awareness that "Context Independence" related



to "Differentiated." Overall, the continuum of data to wisdom seemed to correlate exactly to Csikszentmihalyi's model of evolving complexity.

I now end up with a perception that wisdom is sort of simplified complexity.

Knowledge Management: Bah Humbug!

When I first became interested in knowledge as a concept, and then knowledge management, it was because of the connections I made between my system studies and the data, information, knowledge, and wisdom descriptions already stated. Saying that I became interested is a bit of an understatement as I'm generally either not interested or obsessed, and seldom anywhere in between. Then, after a couple months I managed to catch myself, with the help of Mike Davidson[dav96], as to the indirection I was pursuing.

I managed to survive the Formula Fifties, the Sensitive Sixties, the Strategic Seventies, and the Excellent Eighties to exist in the Nanosecond Nineties, and for a time I thought I was headed for the Learning Organizational Oh's of the next decade. The misdirection I was caught up in was a focus on Knowledge Management not as a means, but as an end in itself. Yes, knowledge management is important, and I'll address reasons why shortly. But knowledge management should simply be one of many cooperating means to an end, not the end in itself, unless your job turns out to be corporate knowledge management director or chief knowledge officer. I'm quite sure it will come to this, for in some ways we are predictably consistent.

I associate the cause of my indirection with the many companies I have been associated with in the past. These companies had pursued TQM or reengineering, not in support of what they were trying to accomplish, but as ends in themselves because they simply didn't know what they were really trying to accomplish. And, since they didn't know what they were really trying to accomplish, the misdirection was actually a relief, and pursued with a passion&SHY;&SHY;it just didn't get them anywhere in particular.

According to Mike Davidson[dav96], and I agree with him, what's really important is:

- **Mission**: What are we trying to accomplish?
- **Competition**: How do we gain a competitive edge?
- **Performance**: How do we deliver the results?
- **Change**: How do we cope with change?

As such, knowledge management, and everything else for that matter, is important only to the extent that it enhances an organization's ability and capacity to deal with, and develop in, these four dimensions.

The Value of Knowledge Management

In an organizational context, data represents facts or values of results, and relations between data and other relations have the capacity to represent information. Patterns of relations of data and information and other patterns have the capacity to represent knowledge. For the representation

to be of any utility it must be understood, and when understood the representation is information or knowledge to the one that understands. Yet, what is the real value of information and knowledge, and what does it mean to manage it?

Without associations we have little chance of understanding anything. We understand things based on the associations we are able to discern. If someone says that sales started at $100,000 per quarter and have been rising 20% per quarter for the last four quarters, I am somewhat confident that sales are now about $207,000 per quarter. I am confident because I know what "rising 20% per quarter" means and I can do the math.

Yet, if someone asks what sales are apt to be next quarter, I would have to say, "It depends!" I would have to say this because although I have data and information, I have no knowledge. This is a trap that many fall into, because they don't understand that data doesn't predict trends of data. What predicts trends of data is the activity that is responsible for the data. To be able to estimate the sales for next quarter, I would need information about the competition, market size, extent of market saturation, current backlog, customer satisfaction levels associated with current product delivery, current production capacity, the extent of capacity utilization, and a whole host of other things. When I was able to amass sufficient data and information to form a complete pattern that I understood, I would have knowledge, and would then be somewhat comfortable estimating the sales for next quarter. Anything less would be just fantasy!

In this example what needs to be managed to create value is the data that defines past results, the data and information associated with the organization, it's market, it's customers, and it's competition, and the patterns which relate all these items to enable a reliable level of predictability of the future.What I would refer to as knowledge management would be the capture, retention, and reuse of the foundation for imparting an understanding of how all these pieces fit together and how to convey them meaningfully to some other person.

The value of Knowledge Management relates directly to the effectiveness[bel97a] with which the managed knowledge enables the members of the organization to deal with today's situations and effectively envision and create their future. Without on-demand access to managed knowledge, every situation is addressed based on what the individual or group brings to the situation with them. With on-demand access to managed knowledge, every situation is addressed with the sum total of everything anyone in the organization has ever learned about a situation of a similar nature. Which approach would you perceive would make a more effective organization?[bel97b]

References

- Alberthal, Les. Remarks to the Financial Executives Institute, October 23, 1995, Dallas, TX
- Bateson, Gregory. Mind and Nature: A Necessary Unity, Bantam, 1988
- Bellinger, Gene. Systems Thinking: An Operational Perspective of the Universe
- Bellinger, Gene. The Effective Organization
- Bellinger, Gene. The Knowledge Centered Organization

- Csikszentmihalyi, Miahly. The Evolving-Self: A Psychology for the Third Millennium, Harperperennial Library, 1994.
- Davidson, Mike. The Transformation of Management, Butterworth-Heinemann, 1996.
- Fleming, Neil. Coping with a Revolution: Will the Internet Change Learning?, Lincoln University, Canterbury, New Zealand
- Senge, Peter. The Fifth Discipline: The Art & Practice of the Learning Organization, Doubleday-Currency, 1990.