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Knowledge Management: the Collaboration Thread

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Knowledge Management is a thick web of themes from variety of professional disciplines. The field is populated with people who resonated with the ideas first articulated by Larry Prusak and Tom Davenport, Tom Stewart, Carla O'Dell, and others. "Getting the right information to the right people at the right time." Isn't that what information architecture and the information sciences are all about? "Leveraging the intellectual capital of the organization." Isn't that HR turf? "Harvest and refine reusable intellectual artifacts." Hello? Are there any technical writers out there? "It's about connecting people with people and supporting them with technology." Does anybody know that research in computer-supported cooperative work began in 1984?

The Evolution of Knowledge Management

Davenport and Prusak created the term "knowledge management" in 1995 to make sense of a number of trends that were emerging in businesses following the disruptive stage of "re-engineering the corporation." Companies were starting to understand that in the haste to streamline processes they had often eliminated key people – knowledge workers who held vital knowledge about the company, its people, processes, and core competencies. Coincidentally, the reengineering years were followed by the emergence of the world wide web and corporate intranets – vast collections of group and project archives, documents, and databases were linked to home pages throughout corporations and made accessible – by information and communications professionals for whom this "new" thing called knowledge management sounded a lot like what we were already always doing.

Many people in traditional functional roles in organizations discovered that this language resonated with their work, careers, and passions: librarians, technical writers, database administrators, project managers and coordinators, trainers and learning specialists, organizational effectiveness facilitators – their number is legion. These are the folks who dove into what is now called by some the "first age of knowledge management" – the stage dominated by infrastructure development and the themes of information architecture, intranets, taxonomies, metadata, intellectual capital, reuse, and repurposing.

Stage One and Stage Two

Explicit knowledge, as KM practitioners know, is that which is written down, codified, expressed in words and numbers. You can store it, index it, copy it, manipulate it, share it and re-use it. Explicit knowledge is represented in what I like to call "artifacts"; these are not the dry pottery shards of ancient civilizations, but the contemporary products and outputs of human knowledge workers: reports, case studies, project plans, methodologies, process instructions, customer data, strategic analyses, and so on. This is a real part of the business of knowledge management in an organization, and technologies that provide an information infrastructure that enables ready access to these artifacts are essential.

Tacit knowledge, by contrast, is that which cannot be easily written down. It is the know-how and experience of the practitioner – product architects and designers, project managers, marketing professionals – that cannot be formalized, and is often something that you don't even know that you know and even if you knew it, might not be able to transfer to someone else. Think about telling someone how to ride a bicycle. It's almost impossible to explain or to write down. You need to be in the presence of the person with the bicycle, and you need provide support and guidance as that person finds her way to the distinction of "balance."

In knowledge management terms, the organizational problem is one of the following:

- A person who knows that they need to learn to ride a bike needs to have access to a pool of people who can teach her.
- A person who thinks he might benefit from learning to ride a bike needs to be able to engage in a dialogue about what it is that he wants to accomplish, and whether the bicycle is the right vehicle.
- A person has to travel somewhere, knows only about a limited set of vehicle types, and hasn't even heard about bicycles.
- A person is exploring options for travel, and has completely forgotten that they have a bicycle and know how to ride it.

Each of these scenarios illustrates a person who is "stuck" – and can be unstuck only by finding another person who has requisite knowledge and experience to move them to the next appropriate action. On the other side of this person-to-person equation is someone who knows a lot about bicycles, the types of bicycle, the best times to use them, and the latest developments in bicycles, as well as how to ride them. This person doesn't know that there are people out there who need to know about bicycles or specific types of bicycle.

In the first stage of knowledge management, we used communications and publishing technologies to match people with the information they needed. This connecting of people-to-information was followed by the exploration of methods of capturing some of this tacit knowledge, but also enabling people to find each another. After-action reviews, best practices, yellow pages, expertise locators, and knowledge networking are the predominant themes of this second stage of knowledge management.

Communities and Collaboration

The roots of this particular stage of knowledge management are deep and broad. Groupware and group decision support technologies have been maturing for almost two decades. The eBusiness boom may have subsided, but business-to-business electronic collaboration is here to stay. The force of web- and email-based communities has had an impact on how companies create and manage customer relationships over time. Within most companies, collaboration – co-laboring, sharing, creating something new together – is the focus of several distinct type of community, communities of practice, communities of learning, communities of interest, and communities of purpose. (*Cultivating Communities of Practice*, by Etienne Wenger, Richard McDermott, and William M. Synder, just published this year, is the definitive work on developing, managing, and leveraging communities of practice.)

Communities of purpose are best described as teams, task forces, or groups with a focused mission and set of deliverables. I think that there is a broader theme at play if you consider an entire organization as imbued with some common purpose. This theme is *social capital*. Social capital consists of the stock of relationships, context, trust, and norms that enable knowledge-sharing behavior. Like intellectual, structural, and customer capital, social capital is one of the key indicators of a company's prospect for success. Figure 1 summarizes these types of capital.

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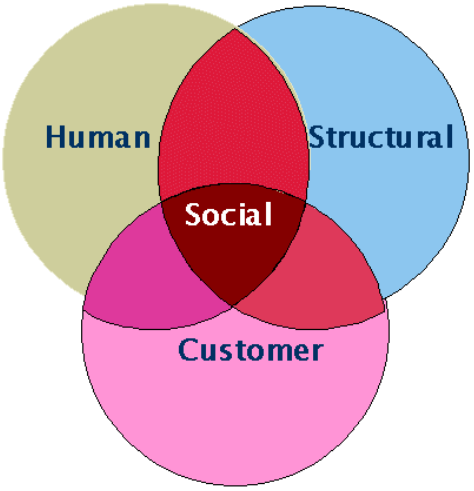
Figure 1 Components of Intellectual Capital



- Human Capital – the capabilities of the individuals required to provide solutions to customers
- Structural capital – capabilities of the organization to meet market requirements
- Customer capital – the value of an organization's relationships with the people with whom it does business
- Social capital – the stock of relationships, context, trust, and norms that enable knowledge-sharing behavior

Measuring Social Capital

In organizations where communities of practice are formally supported and managed, it's possible to maintain benchmarks that indicate the number and health of communities, the contributions of individuals and the contributions of the communities themselves. I like to think that social capital is also something that you can sense in the physical atmosphere of a company – or on its intranet bulletin boards. You see smiles and cartoons on the walls, hear jokes, and observe lots of interaction, informal knowledge exchange through gossip, stories and anecdotes. "Knowledge flows along existing pathways in organizations," Larry Prusak says. People collaborate with, talk with and share knowledge with people they know and trust. Leaders may instinctively know that organizational stovepipes ("silos") preclude some transfer of knowledge, but not understand the implications from a business standpoint without specific data. Most importantly, they may not be able to create a sense of urgency about increasing communications across their organizations.

Social Network Analysis

Social Network Analysis (SNA) is a method that has demonstrated value in diagnosing the patterns of interaction among people in an organization and providing a compelling "call to action" in organizations that are fragmented across and within teams.

The method and tools are based on academic work over two generations in sociology, epidemiology, economics, and many other disciplines. The steps in the process are quite simple:

1. Get data about the knowledge and information flow patterns in an organization. Some people get data with sophisticated tools that track email messages or repository logs, but it can also be done explicitly using a questionnaire in a simple Excel spreadsheet.
2. Use computer tools to create a network map from the data, and to produce statistical analyses of the patterns in the data.
3. Examine the results to look for gaps, or junctures, between individuals or groups.
4. Use consultative interviews to understand the context that is behind the data and the diagnostics.

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5. Target areas where insufficient knowledge flow has a serious impact on the business and design organizational interventions to create the environment that will enable social capital to grow.

The power of Social Network Analysis is that it provides a high-impact visual view of an organization and quantitative data, both of which lead to probing and discerning questions. The work in an SNA project is less about the actual diagrams and charts than about the dialogue that ensues from their examination and the insight and action that emerges from the dialogue.

Building a New Organization

Social Network Analysis is useful in many organizational contexts, but particularly so in conjunction with team formation, reorganizations, mergers, and acquisitions. The map in Figure 2 represents a group formed as the result of a recent reorganization. Each circle (node) represents a person in the group; the arrows denote responses to the assertion "I frequently or very frequently receive information from *X* that I need to do my job." Near the center of this map, the node with the incoming arrows is Paul, the group manager; arrows coming into a node represent that people get information from Paul on a frequent basis.

The grouping on the left and the larger grouping on the right represent teams that had been working together before the reorganization. The small cluster near the lower left is a new entity within this new, larger group. As you start to examine a social network diagram, you look for patterns – connections and the lack of connections, clusters and isolated individuals. And you ask questions:

- Why is Brenda not linked with others in her own group?
- Why doesn't anyone go to Pete for information?

In an interview with someone familiar with the team, you'd learn that Brenda has unique expertise that Paul really wanted to have in, and he placed her in what he thought was the most appropriate subgroup. Most of the people in the organization didn't know what she knew (she knew about a special type of bicycle none of the others had thought relevant to them). You'd also find out that Pete was the most recent person to join the group, had another type of very specialized knowledge, and he was located in a city distant from most o the other.

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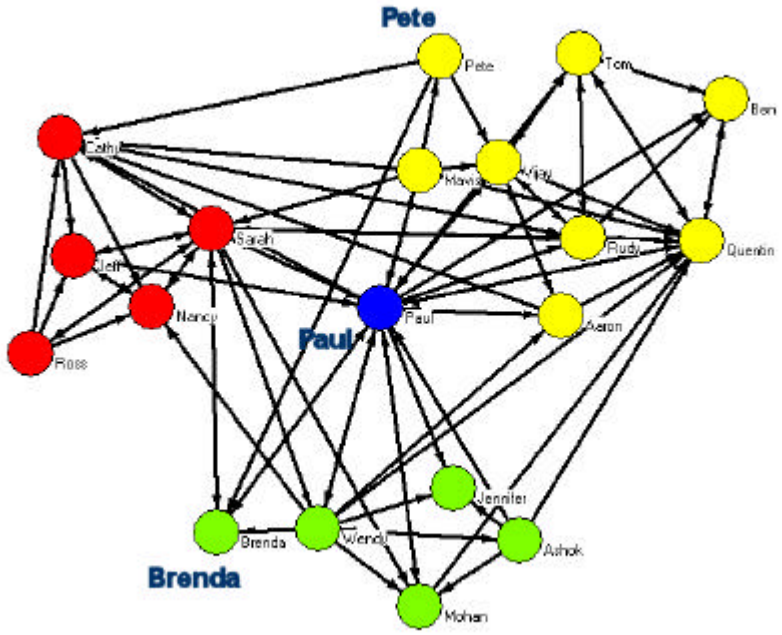
Figure 2 A Network Map



Interviews uncover the context behind the map in the diagram, and the "what to do" emerges from the dialogue process. In this case, Paul made sure that the people who were newer to the group, or had special expertise, were given an opportunity to talk about their work and make connections at team conference calls. He also began to look for opportunities to put people on projects together. Collaboration itself is one of the most powerful mechanisms for building social capital.

Business Acceleration

Senior managers who have a difficult time with concepts like knowledge management and collaboration have no trouble at all with social network analysis. Data draws them in, and the diagrams feed their leadership creativity. One senior manager – the President of a 1000-person business unit -- I worked with had an intuition about the potential for his organization to be working collaboratively across three product lines and two customer channels. The products were solution products – some with common components and methods – and the customers were divided between large accounts and smaller accounts. He knew that success depended on cross-selling (people delivering solutions from one product line being able to convey information about the solutions offered by another product line). Cross-selling in this environment meant that people needed to have knowledge about the other groups (products and customers) and to have a steady flow of quality information. How were they doing?

The social network analysis targeted the President and his executive staff (the five business leaders, and VPs from HR, Finance, and Operations), and the next level down: that is, the managers and senior staff who reported to the VPs. The total number of people in this group was 54. The initial map showed a fairly "dense" network, but on closer examination it became apparent that most of the arrows were going to the President and the VPs – communication was mediated by the senior team, the functional staff, and the executive administrators (who were also included). We ran the analysis removing the nodes that represented these people. Figure 3 shows the resulting

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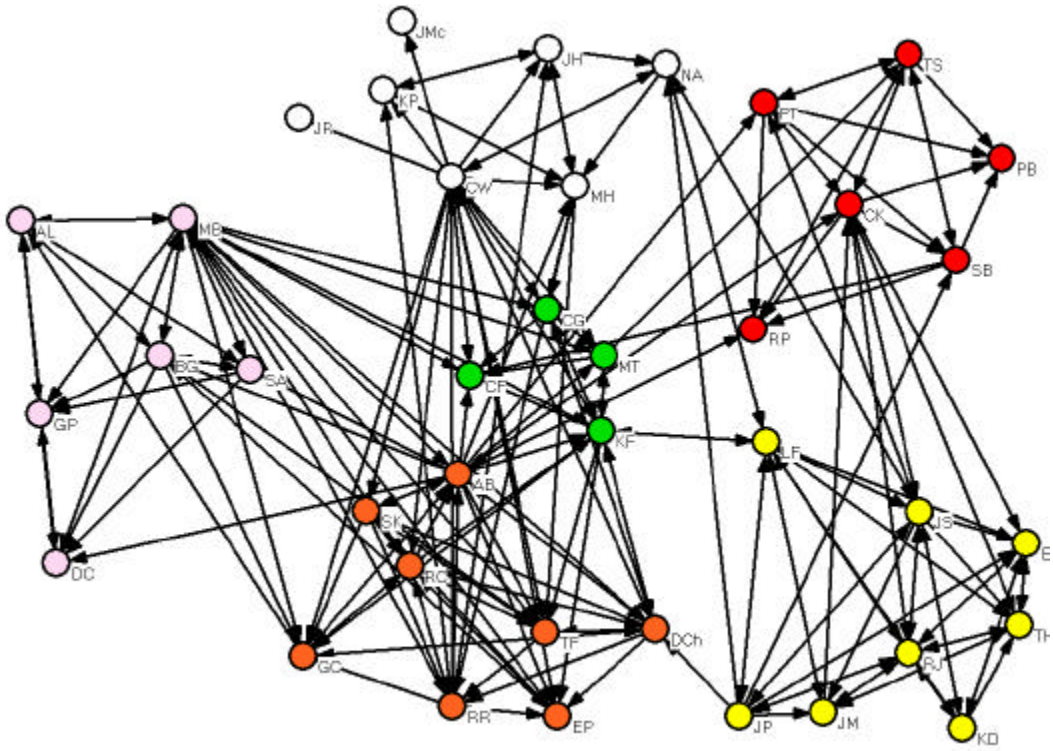
analysis from the five main groups and the operations team. The data reflect the response to the assertion, "I frequently or very frequently receive information from Person *X* that I need to do my work."

Figure 3 Executive Network



It was impossible to ignore the patterns displayed by this data; the separation of the groups was so surprising that the managers bolted upright in their chairs. This stunning diagram was accompanied by one of the quantitative analyses that come with the SNA "tool kit."

Figure 4 Quantitative Analysis

	Small	PL A	PL B	PL C	Large
Small Accounts	72%	11%	0%	2%	5%
Product Line A	8%	77%	0%	1%	4%
Product Line B	0%	2%	73%	0%	17%
Product Line C	2%	1%	3%	54%	17%
Large Accounts	2%	5%	16%	12%	73%

Figure 4 provides a view of the percentage of paths used to exchange information out of the number of possible paths that could be used. For example, if everyone in a group exchanged information frequently with everyone else, all the possible paths would be in use and the percentage would be 100%. (Note that in a group of any size this is almost always undesirable!) The numbers on the diagonal indicate the percentage of knowledge paths in use within a group: notice the relatively consistent numbers between 72% and 77% except for Product Line C (54%).

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As they examined this chart, the managers quickly correlated the current state of business to the lowest percentages. For example, might the infrequent communications between people in Product Line B and the Small Accounts group (shown as 0% in the matrix) be one reason for the poor showing in sales? Why weren't the product managers in Product Lines A and C working together to leverage their independent work in the same new technology areas? And so on. It was enough to see the paths to know where new paths needed to be made. By the end of the day, the managers had made commitments to start to build those paths.

Making New Paths for Collaboration

It is important of course to not dwell too much on the numbers. For one thing, they are tuned for impact. Zero percent does not mean "no information flows," it means "no *frequent* information flows." Most important, the numbers are indicators only, and what they indicate are patterns, and places to ask questions. The dialogues that ensue from an analysis yield creative, insightful, approaches to the challenges of organizations, and people move into committed action very quickly. Actions tend to fall into three categories:

Organizational change. An analysis may reveal a missing role, or a misplaced one. In the first case shown above, Brenda realized that her natural affinity was with a different subgroup, and she "joined" that group. In our more recent case, the manager of the Large Accounts group hired a senior person and gave him responsibility for managing information flow and tracking sales from Product Line B.

Knowledge management practices to improve the network. Depending on the scope of the network, the solution can be as simple as "presenting the Product Line B strategy to each of the other groups. " In other contexts, the result of an analysis can be a motivator for implementing expertise location systems, holding knowledge fairs, running seminars – using any of the methods in the KM practitioner's toolkit.

Individual and personal change. Managers and individuals take notice of their place in a network, and often take private or public action. One of the executives who was highly central in the network took steps to review the types of information he reviewed so he could delegate decision-making on certain types of topics. In another case, a senior technologist began to work systematically to ensure that people who were not connected to the network were brought into projects, given opportunities to give talks, and so on.

The power of social network analysis is in the conversations that it creates for change. In this regard, it is a method that arcs into the next stage of knowledge management, whose technology underpinnings will be worldwide, wireless, widely and intimately, networked.

The Next Stage

Since the term was coined, knowledge management has provided a common language set for multi-disciplinary projects that support how people work – access, create, and share knowledge – with systems and how organizations can leverage the knowledge for competitive advantage. The next stage of knowledge management is emergent – from the properties and activities that are already in place: networked architectures, models for community development and collaboration, from the application of complexity adaptive systems theory to knowledge and learning. The vision keeps changing, as does our world, and it is our very act of collaborating – and knowing how, when, and why to collaborate – that involves us in this creation.

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