Knowing in Community:

10 Critical Success Factors in Building Communities of Practice

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The Limits of Knowledge Management

Many companies are discovering that the real gold in knowledge management is not in distributing documents or combining databases. In the last few years many companies have used the internet and other new information technology to link professionals across the globe to share documents or compare data. But many are discovering that the real value in knowledge management is in sharing ideas and insights that are not documented and hard to articulate. This undocumented, hard-to-articulate knowledge is what has been called tacit knowledge (Polanyi, 1958). A group of systems designers for a computer company tried to share their knowledge by storing their documentation for client systems in a common database. They soon discovered that they did not need each other's documentation. They needed to understand the logic other system designers used – why *that* software, with *that* hardware and *that* type of service plan. They needed to understand the *thinking* of the other system designers. A petrophysicist trying to interpret unusual data from a deep sea oil well needed help from a colleague who had seen similar anomalies and could help him *think through* how to interpret it. Only in the course of the discussion were they able to understand the anomaly. A geologist faced with an array of new seismic tools needed to know which would be most useful in his particular application. A product development team at an auto company found through their internet that another development team had developed and rejected a design ideas similar to one they were considering. They needed to understand the reasons for the rejection and get feedback from the other team on the approach they were considering. A sales manager working with a particularly difficult client needed to know how sales managers for other product lines had dealt with that client. In all these cases people needed tacit knowledge; knowledge that was not documented, that their peers had never previously articulated, and that needed to be *thought about* to be shared (McDermott, 1999a).

Using typical knowledge management methods to leverage tacit knowledge often results in <u>*information junkyards*</u> *and* <u>*empty libraries*</u>. At the heart of most knowledge management efforts is an attempt to document and share information, ideas and insights so they can be organized, managed and shared. But documenting tacit knowledge frequently does more harm than good. When a major computer company first introduced its knowledge site, it asked field engineers to place their files in a common database. But, like many other companies, this company soon discovered that their staff did not want to hunt through many, redundant entries. As one engineer said, "My own file cabinet is bad enough, why would I want look through everyone else's file cabinet." Rather than a resource, the company had created an *information junkyard*, full of potentially good material that was too much trouble to sort through. The field engineers wanted someone familiar with their discipline to assess the material, decide what is important and to

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enrich the documents in the database by summarizing, combining, contrasting, and integrating them. This would make the junkyard useful. Another company instructed their professional staff to document key work processes so others could easily learn from them. Most staff felt their work was too varied to capture in a set of procedures, but eventually they completed the task. Within a year the database was populated, but little used, *an empty library*. Most people found the information to be too general to be useful. The help they needed was still in the experience – the tacit knowledge -- of their peers.

Sharing Tacit Knowledge Requires Interaction

Tacit knowledge is always recreated in the present moment. Part of the reason these attempts to codify knowledge fail is that most of us cannot articulate what we know. Our knowledge is largely invisible and often comes to mind only when we need it to answer a question or solve a problem. When professionals solve problems, they don't just cut and paste "best practice" from the past to the current situation. They *think about the current situation, reflect* on their experience, *generate* insights, and *use* those *insights in the present* to solve problems. They draw from their experience to *think about* a problem. An architect looking for a design that will work on a steeply sloping site, looks at the site "through the eyes" of one idea, discards it and sees it again "through the eyes" of a different idea, drawing on different information about the site in each thought experiment. In running these experiments, the architect is not just looking for pre-made solutions, but thinking about how those solutions might apply and letting ideas *seep* from one framework to the next, so a new, creative idea can emerge (Schon, 1983). Professional practice is a kind of thinking improvisation. *Knowledge is a kind of sticky residue of insight left over from using information and experience to <u>think</u>*.

Knowing is a Human Act

Knowledge always involves a person who knows. My bookcase contains a lot of information on organizational change, but we would not say that it is knowledgeable about the subject. The same is true for my computer, even though it can store, sort and organize information much better and more quickly than my bookcase. Thinking of our minds as a biochemical library is little different from treating it as a bookcase or computer. But knowledge is much more than that. To know a topic or a discipline is not just to possess information about it. It is the very human ability to use that information to think.

Since thinking is at the heart of professional practice, sharing it also involves thinking. We don't just express bits of ready-made knowledge stored in our heads. Sharing knowledge involves guiding someone through the logic we used to solve a problem in the past or drawing on our experience to help them see their own situation better. To do this well we need a great deal of information about the current situation. We need to know something about those who will use our insights, the problems they are trying to solve, the level of detail they need, maybe even the style of thinking they use. For example, novices frequently solve problems by following step-by-step procedures, but experts solve problems in an entirely different way. They typically develop a theory of potential causes based on their experience and test to see if the theory is correct, often testing the least complex or expensive theories, rather than the logically correct ones, first (Konradt, 1995). The knowledge useful to novices is very different from the knowledge useful to experienced practitioners. Sharing knowledge is *an act of knowing* who

will use it and for what purpose. This often involves mutually discovering which insights from the past are relevant in the present. *To share tacit knowledge is to think together.*

But sharing tacit knowledge one-on-one is not enough to leverage it organization wide. Since personal interaction, whether face-to-face or through email, is usually limited to the people directly involved, others interested in the same issue are excluded from the ideas and insights shared. This is one of the problems with using skill directories or yellow pages to link people to share tacit knowledge. While the directories are useful to help individuals expand their personal network, they do little to include others in their collaborative thinking. How do you preserve thinking together and leverage knowledge throughout the organization?

Communities of Practice Leverage Thinking

Ironically one of the oldest elements of organization is key to leveraging tacit knowledge, communities of practice. Communities of practice are groups of people who share information, insight, experience, and tools about an area of common interest (Wenger, 1998). A community's focus could be on a *professional discipline* -- like reservoir engineering or biology -- *a skill* -- like machine repair -- or a *topic* -- like a technology, an industry, or a segment of a production process. In a manufacturing company, for example, communities were formed around steps in the production process. Shell Oil Co.'s New Orleans operation, which is organized into cross-functional teams, formed them around key disciplines and topics that cross individual teams. Communities of practice have always been part of the informal structure of organizations. They form spontaneously as people seek help, try to solve problems, develop new ideas and approaches. Some say that spontaneous communities of practice have always been the real vehicle through which technical knowledge spreads through organizations. Spontaneous communities of practice are informal. People participate in them as their interest, time and energy dictates. Although they usually gel around a particular topic or domain, the specific issues they focus on change over time, as the needs and interests of their members change.

Communities are held together by passionate interest and value. Communities of practice frequently form around topics community members have invested many years in developing; topics they are often passionately interested in, a science, a craft or a manufacturing process. But communities of practice are not just celebrations of common interest. They focus on practical aspects of a practice, everyday problems, new tools, developments in the field, things that work and don't. So people participate because the community provides value. Community members frequently turn to each other to help solve technical problems, like interpreting anomalous data. Because they are often linked, not only to each other but also to suppliers, universities and others outside their organization communities of practice, they often keep members informed of new developments in the field. Because community members share a common technical interest, they can share ideas and concerns with others who really understand. And praise from community members is often the most meaningful because technical peers really understand the difficulty of the work or the brilliance of an analysis. As a result, people often have a great deal of their professional identity tied up in their communities.

Communities of practice link people in many ways. Communities frequently link people with a common interest who do not have regular day-to-day contact. For example, in Shell Oil's New Orleans operation, communities link people who work on different teams. In this double knit

organization (McDermott, 1999b) teams are the core organizational structure. Communities form around technical disciplines and topics that draw people from many teams. Each community operates in its own way, but the Turbodudes community is fairly typical. The Turbodudes draw people from different disciplines (geology, geophysics, petrophysics, reservoir engineering) who are interested in a particular kind of geological structure common in the Gulf of Mexico, turbidites. The Turbodudes stay together through five key components: a coordinator, mentors, a weekly meeting, presentations by outside vendors, and a website that stores topics discussed at previous meetings. For the last two years the Turbodudes have met every Tuesday at 7:30 in the morning, before the other organizational meetings begin. Typically twenty to forty people come to the meetings. While there are often many new faces at the meetings, there is a core group of ten high-contributors who make most of the meetings. The meetings seem very informal. The coordinator asks who has a question or problem. After a short presentation, others offer their observations, describing the logic or assumptions they made in formulating those observations. A technical specialist takes notes on her computer. The following day meeting notes are posted on the community's website. While the meeting only lasts an hour, people often leave in small groups hotly engaged in discussions of the meeting's topic. But these meetings are not as informal as they seem. Between meetings the coordinator "walks the halls" connecting people with others who share similar concerns, following up on the meetings topics, and finding topics for the next meeting. To keep discussions focused on cutting edge topics and to keep senior community leaders engaged, the community developed a mentorship program for people new to the field. The mentorship program provides an avenue for basic questions and distributes the job of educating new community members in an equitably.

Communities thrive on trust. One of the main dynamics of the Turbodudes and many other communities of practice is that members ask for and offer help solving technical problems. Regularly helping each other makes it easier for community members to show their weak spots and learn together in the "public space" of the community. Having frank and supportive discussions of real problems frequently builds a greater sense of connection and trust between community members. As they share ideas and experiences, community members often develop a shared way of doing things, a set of common practices, and a greater sense of common purpose. Sometimes they formalize these in guidelines and standards, but often they simply remain "what everybody knows" about good practice. In the course of helping each other, sharing ideas, and collectively solving problems, "everybody" often becomes a trusted group of peers.

Communities of practice are ideal vehicles for leveraging tacit knowledge because they enable person-to-person interaction and engage a whole group in advancing their field of practice. As a result, they can spread the insight from that collaborative thinking across the whole organization

Critical Success Factors for Community Building
Communities of practice are a new/old kind of organizational form. Even though communities of practice have been part of organizations for many generations, we have only recently begun to understand their dynamics and tried to intentionally develop them. Because they are organic, driven by the value they provide to members, organized around changing topics, and bound by people's sense of connection, they are very different from teams and other organizational forms most of us are familiar with (McDermott, 1999b; Wenger & Snyder, 2000). The challenges they pose and the factors in making them successful are also different.

There are four key challenges in starting and supporting communities capable of sharing tacit knowledge and thinking together. The *management challenge* is to communicate that the organization truly values sharing knowledge. The *community challenge* is to create real value for community members and insure that the community shares cutting edge thinking, rather than sophisticated copying. The *technical challenge* is to design human and information systems that not only make information available but help community members think together. And the *personal challenge* is to be open to the ideas of others and maintain a thirst for developing the community's practice. Ten factors, dealing with each of these challenges, are critical to the success of communities of practice. Without them, communities tend to flounder or fail.

Critical Success Factors in Building Community

Management Challenge
1. Focus on topics important to the business and community members.
2. Find a well-respected community member to coordinate the community.
3. Make sure people have time and encouragement to participate.
4. Build on the core values of the organization.

Community Challenge
5. Get key thought leaders involved.
6. Build personal relationships among community members.
7. Develop an active passionate core group.
8. Create forums for thinking together as well as systems for sharing information.

Technical Challenge
9   Make it easy to contribute and access the community's knowledge and practices.

Personal Challenge
10. Create real dialogue about cutting edge issues.

The Management Challenge

Knowledge management, like total quality and reengineering has become the latest of management fads. Many professionals have found that if they just keep their heads low they can escape the extra work and impact of these fads. With so many pressures drawing on their time, it is often hard to get the attention of professional staff. Four factors can communicate that management really does support knowledge-sharing communities.

1. Focus on knowledge important to both the business and the people.
To show that communities of practice are important, form them around topics at the heart of the business, where leveraging knowledge will have a significant financial or competitive impact. Communities of practice at Shell, a very technically oriented company, started around technical topics. At a manufacturing company, we formed the first communities around major steps of the manufacturing process. But the topics also need to be ones people feel personally passionate about. In the team-oriented structure at Shell, forming communities around disciplines gave people a chance to talk to peers about topics dear to them. As one geologist said,

"With so many meetings that aren't immediately relevant to your work, it's nice to go to one where we talk about rocks."

2. Find a well-respected community member to act as coordinator.
Communities are held together by people who care about the community, who have some heartfelt interest in the topic and the people who participate. In spontaneous communities, where there is no organizational attempt to support them, an individual or small group spontaneously takes on the job of holding the community together. They keep people informed of what each other is doing and create opportunities for people to get together to share ideas. This role is also critical to the community's survival. We have found that successful community coordinators are well-respected members of the community. They are usually senior practitioners, but not usually the world leading experts. Since their primary role is linking people, not giving answers, being a leading expert can be a detriment to effectiveness. What's most important in a coordinator is that they are able to connect with community members on a human level. For a large, vibrant community, this role is often full time. It should at least be a substantial part of the coordinator's job. We have found that when it is less than a quarter of their job, coordinating the community falls off their plate.

3. Make sure people have time and encouragement to participate.
One of the great limiting factors of a community's effectiveness at sharing knowledge is the time people have to participate. In the short term, sharing ideas and insights is usually less pressing than team and individual responsibilities. So community participation, even when very valuable, can easily be surpassed by more pressing tasks. Allied Signal supports learning communities by giving staff time to attend community meetings, funding community events, creating community bulletins, and developing a directory of employee skills. One management team addressed this issue by folding community participation into their planning and budgeting activity. They agreed on the number of person/years they would budget for communities for the year. This allocation was based on the centrality of the community to the annual business goals, the number of problems teams were experiencing in the community's domain, and the potential for cost savings, cycle time reduction and quality improvement in the area. Most major communities were budgeted two to four technical people. Out of that most communities had a full-time leader. Community members who felt that they would be core contributors could then opt to have a percentage of their time allocated to the community. This insured that the time they spent on community activities was specifically allocated and would not interfere with their team responsibilities. It also insured that the time and energy they invested in the community would count in their performance appraisal.

4. Build on a core value of the organization.
To make sharing knowledge acceptable and routine, match your core cultural values rather than try to change them. Failures in implementing knowledge management systems are often blamed on the organization's culture. It is argued that people were unwilling to share their ideas or take the time to document their insights. But organizational culture is hard to change. It rarely yields to efforts to change it directly, by manipulating rewards, policies, or organizational structure. A recent study of corporate culture and knowledge management (McDermott and O'Dell, 2000) found that however strong your commitment and approach to knowledge management, your culture is stronger. Companies successful at sharing knowledge did not try to

change their culture to fit their knowledge management approach. They build their knowledge management approach to fit their culture. They describe knowledge management as a way to enable people to pursue something that the organization and its members already valued. This made sharing knowledge a more natural step that required less convincing than a direct change campaign. At American Management Systems (AMS), for example, "leveraging" what you know by educating colleagues, writing, helping others, and teaching junior staff members has been central to the company since its inception. "Leveraging" what you know is how you build a reputation as a world class thought leader. Without evidence of leveraging it is not possible to be promoted to partner. As a senior AMS manager said, "It's not what you know that gives you power; it's what you share about what you know that gives you power." As a result, AMS has always had many informal communities of practice, through which people found and offered help. When the company was small and housed in a single location, this informal networking was a natural part of people's daily work. Now that AMS has grown and has offices around the globe, informal networking is more difficult. The "coffee pot" just does not scale to a global level. The AMS community building staff described their efforts as legitimating what already existed, providing structures, leadership, and software to extend people's ability to "leverage," even though those structures and systems have greatly increased the documenting and sharing knowledge.

The Community Challenge

The greatest danger to *growing communities* is for them to lose energy and drift into apathy, letting the coordinator carry all the responsibility for community care-taking. When the coordinator moves on to other interests or work, then the community can easily fall apart. The greatest danger to *successful communities* is that they become too enthralled with their own success and see their work as that of "preserving the practice" from change. Several factors can help keep the energy of the community going, get others involved it, and keep the community on the cutting edge of its field.

5. Involve thought leaders
Getting respected thought leaders involved as soon as possible, preferably from the start, is one of the key ways to build energy in the community. Building a community usually starts with finding, nurturing and developing the networks that already exist. Typically there are key players who either have an important specialized knowledge or who are well-connected and influential members of that network. Involving these people is important because they legitimate the community, drawing in other members. One of Shell's global networks had to involve a group that had developed an important new technology. Many people said that they would not participate unless this group did. Everyone wanted access to their ideas and technology. As it turned out, they were relatively inactive members of the global community. But once the community was running, it realized that participation of the group was not as central as they thought it would be.

6. Create forums for thinking.
Build energy though community contact. Of course documented reports, templates, tips, analyses, proposals, etc. are helpful to most community members. But live contact is key to building a sense of commonality, enthusiasm and trust. In addition to individual meetings and web connections, create opportunities for the community as a group to share ideas. Most of

Shell's global communities have face-to-face contact one to three times a year. These are rarely meetings of the whole community. Usually they involve coordinators or groups who specialize in subtopic of the community. Several of Shell's global communities also hold biweekly teleconferences. This creates more of a relationship, even when people are spread across the globe. In addition these events punctuate the community's life. By creating events, they give the community a sense of history. However the community develops, a common history gives it a chronology, time and the possibility of progress. Without events it is hard for the community to see itself move through time. So physical events are important to building the ongoing energy of the community.

7. Maintain personal contact among community members
Contact -- and the social connection and obligation that comes with it -- is key to ongoing community success. The coordinator of one of our most vibrant global communities said, "This is all about relationships. People don't really contribute to the community because it is good for the company. They do it because I ask them to." Successful coordinators visit community members, find out what they are working on, refer or introduce them to other community members, bring in new ideas and find opportunities for the community to develop its practice. They keep the community energy up by building one-on-one relationships among community members strong. The Turbodudes' coordinator tracks the number of people who attend the meetings and has found that the strongest predictor of high attendance is how much time he spent the previous week walking the halls. Successful coordinators build and maintain these personal connections outside official community meetings. When people come to the meeting they are already connected with some members of it and can focus their energy on exciting cutting edge issues. Even when the community's topic is very scientific or theoretical, it is the *human* connection that builds a base for effective knowledge sharing.

8. Develop an active, passionate core group
Participation in communities varies. Most have a core group of high contributors, a large group of "lurkers," who listen but add little, and a larger group of peripheral members who only participate occasionally. When we first discovered this distinction, we thought we should encourage even participation. But soon discovered that the lurkers often get great value without taking away from the core contributor's interaction. Many lurkers say that they use the community to find out who is working on what or learn about the field and make contact later.

More important than balancing participation is to build an active core group. Active core group members not only contribute but often feel responsible to help develop the community by inviting or easing participation of people they know. In one global community, a core group member is a conduit for people who are less comfortable in English, the community's common language. He posts questions and loads documents for them, slightly editing them as he goes. In another community, a core group member calls people he thinks would benefit from items posted on the community's website and helps them connect to it. Active core group members are potential successors to the coordinator. Core group members are not always world leading experts on the topic. What makes them effective is their heartfelt caring about the topic and the community. Coordinators can develop a core group by involving them in meeting planning, asking them to take over some meetings, host subgroups, or organize elements of the website.

The most important thing in developing potential core group members is to give them visibility in the community without requiring them to spend much extra time.

The Technical Challenge

There is so much good technology for collaborating and sharing information that it is tempting to focus on the functionality of products. But the real challenge is to design the social side of information technology.

9. Make it easy to connect, contribute to and access the community.

Ease of use has little to do with software functionality. As the market bursts with many different kinds of knowledge management software we find two things particularly important to communities. First, software should make it easy for community members to connect with each other, contribute to and use information from the community's knowledge base. Ease of use is more about how the software integrates with people's daily work, the knowledge they need to share, the way they think about their community's domain and how they move about in it, than with specific features of the software itself. Shell's global communities chose software that was less than ideal for organizing documents because some people were already using it and others were at least familiar with it. But ease of use is more than the software itself. One local team that was very active in their global community said that the reason they contributed so much was because they chose to use the same software for storing team documents as the community used. Thus, saving for the team or posting for the community involved the same number of steps. Familiar software reduces the friction in connecting to the community and its space.

> ## Friction
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> An interesting way to think about communication within a community is in terms of friction. Friction is the resistance or difficulty you face in trying to connect, contribute or find help. The greater the friction, the less likely people will take the time to connect or at least connect regularly. One of the reasons local face-to-face communities are so much easier to start and maintain than global ones is that there is very little friction: walk down the hall and look for someone to talk to. It took a global community member in Nigeria 20 minutes to connect to the community website because their bandwidth was so narrow. A lot of friction. Even though he did not need to be typing in at his computer the whole time, he found the experience of connecting painful and did so much less frequently than other community members. To have a global teleconference one coordinator needed to participate in both evening and morning sessions. The more special effort it takes to connect, the more friction you need to fight. Always try to keep friction at its lowest level.

Easy integration, which sometimes translates into standardization, needs to be balanced with making the community space familiar and easy to move about in. Community space needs to be organized according to some principles or taxonomy. A good taxonomy should be intuitive for those who use it. This means it should reflect the natural way community members think about their field or topic. Like the architecture of a building, a taxonomy enables people to move about within a bank of information, find familiar landmarks, use standard ways to get to key information, create their own "cowpaths," and browse for related items. Different communities are likely to have different natural taxonomies, not only in the key categories through which information is organized, but also in the way that information is presented. A group of geologists, who often work with maps, wanted their website to be a picture. They think in

pictures. A group of reservoir engineers wanted their website to be organized like a spreadsheet. They think in tables. The key to making information easy to find is to organize it according to a scheme that tells a story about the discipline in the language of the discipline.

The Personal Challenge

The most valuable and vibrant community events focus on solving problems rather than presenting practices. But openly discussing problems, sharing half-baked ideas, or thinking aloud in public doesn't come naturally to most of us. As one community member said, "It's hard to talk about your problems in front of a lot of people you don't know." The personal challenge for most community members is to develop this capacity.

10. Create real dialogue about cutting edge issues in community forums.
Relationship happens in true discussion, not report outs on best practices. In the beginning stages of community development, we often orchestrate community meetings so a senior, well-respected community member asks for help and people we know have some insights to offer are in the room. This helps legitimate the discussion of problems. Even when we "stage" the event, the request needs to be real and the discussion genuine. After several rounds of well-respected community members requesting help, others usually start asking. The coordinator finds potential requests and solutions while "walking the halls" and asks these people to come to the meeting prepared to discuss the issue. During the meeting the coordinator lightly facilitates the discussion by asking people the logic of their suggestions. This helps the community discuss assumptions, alternative assumptions and think together rather than engage in a battle of positions.

Sometimes a community does not have enough connection and trust for this approach to work. There we have focused on building trust one-on-one before building it with the whole community. To build trust among a group of sales managers, we divided them up in to a series of three person discussions, sharing problems and solutions. We chose the groupings carefully to first build on then extend the trusting relationships within the group. Only after many rounds of relationship-building in three person groups did the whole community begin to trust each other enough to talk openly. Even though the coordinator only participated in a few of these discussions, he gained credibility with the group by orchestrating what was for them a painless transition from mistrust to connection.

Conclusion

Communities of practice present an odd irony. They have always been part of the informal structure of organizations. They are organic. They grow and thrive as their focus and dynamics engage community members. But to make them really valuable, inclusive and vibrant, they need to be nurtured, cared for, and legitimated. They need a very *human* touch. As leaders, organizational designers and support staff, we have little experience in how to develop this sort of organic organizational element. Too much support and they lose their appeal to community members. Too little and they wither. The challenges they pose and the factors that help them thrive are different from the factors most of us as organizational leaders, designers and support staff are used to working with.

It is ironic that information technology has made possible for us to *imagine* people sharing ideas and insights across the globe as easily as across the hall. But since knowing is a human act, the heart of sharing is finding a common interest, making real connection, caring for each other thinking, and building a community that trusts each other enough to ask for help and share half-baked ideas. It is ironic that for the first time in history, information technology has made global community possible, but it takes acts of the human heart to make it real.

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