Virtual Communities of Practice

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Chris Kimble
University of York, UK

Paul Hildreth
K-Now International Ltd., UK

INTRODUCTION

When knowledge management (KM) began to emerge in the 1990s it was seen as an innovative solution to the problems of managing knowledge in a competitive and increasingly internationalised business environment. However, in practice it was often little more than information management re-badged (Wilson, 2002). More recently, there has been recognition of the importance of more subtle, softer types of knowledge that need to be shared. This raises the question as to how this sort of knowledge might be managed. Communities of practice (CoPs) have been identified as means by which this type of knowledge can be nurtured, shared and sustained (Hildreth & Kimble, 2002). Do CoPs offer a means of managing the softer aspects of knowledge and, if they do, are they applicable to today's increasingly "virtual" world?

BACKGROUND TO COMMUNITIES OF PRACTICE

The term communities of practice (CoPs) was coined in 1991 when Jean Lave and Etienne Wenger used it in their exploration of situated learning (Lave & Wenger, 1991). Although the examples they used (non-drinking alcoholics, Goa tailors, quartermasters, butchers and Yucatan midwives) were all based on what might be broadly termed an apprenticeship model, the concept of a CoP is not restricted to this form of learning.

Lave and Wenger (1991) saw the acquisition of knowledge as a social process in which people participated in communal learning at different levels depending on their authority or seniority in the group, that is, whether they were a newcomer to the group or had been an active member for some time. The process by which a newcomer learns by being situated in the group was central to their notion of a CoP; they termed this process legitimate peripheral participation (LPP).

LPP is both complex and composite; legitimation, peripherality and participation are each indispensable in defining the other. Legitimation is concerned with power and authority relations in the community but is not neces-sarily formalised. Peripherality is not a physical concept or a measure of acquired knowledge, but concerned with the degree of engagement with the community. Participation is engagement in an activity where the participants have a shared understanding of what it means in their lives.

For Lave and Wenger (1991), the community and participation in it were inseparable from the practice. Being a member of a CoP implied participation in an activity where participants have a common understanding about what was being done and what it meant for their lives and their community. Thus, it would appear that CoPs with their concentration on situated learning and the exchange of understanding might be well suited to the management of the softer aspects of knowledge: but can this idea be applied to the business world?

EXTENSIONS TO THE COMMUNITY OF PRACTICE CONCEPT

Interest in CoPs continued to grow throughout the 1990s and several attempts were made to re-define Lave and Wenger's (1991) original model to encompass new areas such as communities of circumstance, communities of interest and communities of purpose. In particular, several attempts were made to re-define CoPs in a way that was more relevant to the commercial environment (e.g., Seely Brown & Duguid 1991, 1996; Stewart 1996). One of the most popular work related definitions of a CoP was offered by John Seely Brown and Estee Solomon Gray in their 1995 article called "The People Are the Company":

"At the simplest level, they are a small group of people … who've worked together over a period of time. Not a team not a task force not necessarily an authorised or identified group … they are peers in the execution of "real work". What holds them together is a common sense of purpose and a real need to know what each other knows" (Brown & Gray, 1995).

In 1998, Wenger (1998) published the results of an ethnographic study of a claims processing unit in a large

insurance company that described how employees exchanged knowledge during meetings and by the passing of handwritten notes. He proposed a view of the company not as a single community, but as a constellation of interrelated CoPs. CoPs arise out of the need to accomplish particular tasks and can provide learning avenues that exist within, between and outside organisations. CoPs are formed through mutual engagement in a joint enterprise and will share a repertoire of common resources (e.g., routines, procedures, artefacts, vocabulary) that members develop over time.

Thus, according to Wenger (1998) a CoP becomes defined in terms of:

- What it is about:

The particular area of activity/body of knowledge around which it has organized itself. It is a joint enterprise in as much as it is understood and continually renegotiated by its members.

- How it functions:

People become members of a CoP through shared practices; they are linked to each other through their involvement in certain common activities. It is this mutual engagement that binds its members together in a single social entity.

- What it produces:

The members of a CoP build up a "shared repertoire" of communal resources over time. Written files are a more explicit aspect of this, although less tangible aspects such as procedures, policies, rituals and idioms can also included.

Wenger (1998) also identified two key processes at work in CoPs: participation and reification. He described participation as:

"... the social experience of living in the world in terms of membership in social communities and active involvement in social enterprises" (Wenger, 1998, p. 55)

and reification as:

"... the process of giving form to our experience by producing objects that congeal this experience into thingness" (Wenger, 1998, p. 58)

Wenger emphasises that like LPP, participation and reification are analytically separable, but are inseparable in reality. Participation is the process through which people become active participants in the practice of a community and reification gives concrete form to the community's experience by producing artefacts. One is meaningless without

the other and vice versa. In day-to-day work, people both negotiate meaning through participation in shared activities and project that meaning onto the external world through the production of artefacts.

Wenger's (1998) work with CoPs shows that the concept can be applied in a business setting. Since then, several other authors have identified the business benefits of CoPs (e.g., Fontaine & Millen, 2004: Lesser & Storck, 2001). However, almost all of the previous work on CoPs has described co-located communities. With the increasing globalisation of business and the heavy reliance on information and communication technology (ICT), the next question is "Can CoPs continue to operate in a modern business environment?"; that is, "Can a CoP be virtual?"

FUTURE TRENDS

Concerning the future of CoPs, and virtual CoPs in particular, two main issues must be considered. The first concerns the relationship between a CoP and its wider (electronic) environment; the second concerns the nature of the "work" that CoPs do; that is, do processes in a virtual CoP differ from one that is co-located?

CoPs in an Electronic Environment

Internet-based networking technologies, which can provide a single platform for groups or networks of groups to form within larger organisations, have led to the development of various forms of virtual groups and communities. Seely Brown and Duguid (2000) coined the phrase "networks of practice" (NoPs) to describe one type of virtual group. NoPs are composed of people who are geographically separate and may never even get to know each other, but who share similar work or interests. Thus, NoPs are organised more at the individual level and based on personal social networks than CoPs with their notions of mutuality and the collective social will of the community.

In a study of job seeking activity, Granovetter (1973) introduced the notion of strong and weak social ties. In terms of the previous description, CoPs are characterised by strong social ties, whereas NoPs are characterised by weak social ties. Within a wider network consisting of weak ties, an individual may act as a "local bridge" or broker that enables the network to react more quickly and provide a coordinated response. Nevertheless, within a network there is also a need for strong ties to encourage local cohesion and avoid fragmentation that would make knowledge sharing and the adoption of innovation more difficult.

CoPs can be seen in the role of hub for the wider network, providing a more tightly knit sub-network that serves as knowledge generating centres for the larger NoPs. CoPs can act as bridges drawing together different groups and

combining knowledge in new ways. They can also provide the access points for individuals to engage with the wider network and to establish a local identity within the larger organisation. Previous research has shown that the most common distributed form of a "virtual" CoP has a co-located active core (Hildreth, Kimble & Wright, 1998), which tends to support this view of distributed working.

A more recent example was provided by Lundkvist's (2004) study of customer networks as sources of innovation. This case study was generated from a long-term study of the Cisco Systems newsgroup, which identified user networks as peripheral and yet vital sites of innovation. In this case, the co-located core of the network was provided by a group of university technicians.

Work in Virtual CoPs

How might the balance between reification and participation be maintained in virtual working? This issue was addressed in an earlier paper (Kimble, Hildreth & Wright, 2000) where we described how a geographically distributed CoP managed both hard (reified) and soft (social) knowledge. In this case, the CoP was made up of four members co-located in the UK, a group of five members in the USA and one member in Japan.

In this situation, it might have been expected that sustaining participation would be more difficult and therefore reification would play a greater role. However, the findings of the case study showed that this was not necessarily the case. Shared artefacts, such as a planning document, did play an important role but the importance of social relationships remained paramount. While the group was able to sustain itself using e-media, it was still dependent on the development of relationships in the physical environment through face-to-face meetings.

It is interesting to observe how artefacts such as a planning document (reification) were used not only as ways of projecting knowledge from within the CoP but were also instrumental in the process of creating it (participation). The document stimulated discussion, problem solving, innovation and further participation. It was used both to drive meetings and as the focus of meetings. During discussions based on the document, new and innovative ideas would be triggered that could form the basis for new projects. Thus, as well as acting as a stimulus for innovation, the document acted as a catalyst leading to further participation.

A similar account can be found in Bradshaw, Powell and Terrell (2004) that describes how a team of remote workers developed into a CoP. They describe not only how the group deploys a variety of technologies to maintain contact but also the efforts that went into building commitment, ownership, engagement and focus in the group. In this case, the members of the group were all engaged in collaborative research. Writing about their work and presenting papers for peer-review was seen as a key factor in maintaining cohesion and developing the community's shared understanding of goals, development of knowledge and sense of belonging.

CONCLUSION

Reporting on a recent case study of how CoPs translate to a geographically distributed international environment, Hildreth (2003) throws further light on a number of these issues. The study examines the work of an internationally distributed CoP that spans three continents. In particular, it highlights the role that shared artefacts play in the process of creating, sharing and sustaining both types of knowledge and highlights the role that the creation of artefacts plays in enabling and sustaining participation in CoPs. Hildreth (2003) observes that the process of creating the artefact and regular (although not necessarily frequent) face-to-face contact are instrumental in maintaining the relationships that allow a CoP to function successfully in a virtual environment. Thus, paradoxically, it appears that one of the keys to a successful virtual CoP is an occasional, non-virtual, face-to-face meeting.

However, the changes that are sweeping the corporate infrastructure mean that increasingly workers find themselves forced into one or another form of virtual working. Instead of inhabiting a world of fixed roles with easy access to co-located resources, today's workers are increasingly based in a world of weak ties where resources are only obtained through personal and individual relationships. Rather than being embraced by a collective CoP, workers often find themselves functioning as individuals and building up networks, one contact at a time. Again, paradoxically, as social networks such as NoPs become more important, the fundamental unit for many examples of virtual working is not the group but the individual. This is not to say that collective groups such as CoPs and teams have ceased to exist but simply that the difficulty of building and maintaining the strong social ties needed to build a sense of community in a virtual environment should not be underestimated.

REFERENCES

Bradshaw, P., Powell, S., & Terrell, I. (2004). Building a community of practice: Technological and social implications for a distributed team. In P. Hildreth & C. Kimble (Eds), *Knowledge networks: Innovation through communities of practice* (pp. 184-201). Hershey, PA: Idea Group Publishing.

Fontaine, M.A., & Millen, D.R. (2004). Understanding the benefits and impact of communities of practice. In P. Hildreth & C. Kimble (Eds), *Knowledge networks: Innovation through communities of practice* (pp. 1-13). Hershey, PA:

Idea Group Publishing.

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology, 78*(6), 1360-1380.

Hildreth, P. (2003). *Going virtual: Distributed communities of practice.* Hershey, PA: Idea Group Publishing.

Hildreth, P., & Kimble, C. (2002). The duality of knowledge. *Information Research, 8*(1). Paper no. 142. *http://InformationR.net/ir/8-1/paper142.html*

Hildreth, P., Kimble, C., & Wright, P. (1998, March). Computer mediated communications and communities of practice. *Proceedings of Ethicomp'98,* Erasmus University, the Netherlands (pp. 275 – 286).

Kimble, C., Hildreth, P., & Wright, P. (2000). Communities of practice: Going virtual. In Y. Malhotra (Ed.), *Knowledge management and business model innovation* (pp. 220-234). Hershey, PA: Idea Group Publishing.

Lave, J., & Wenger, E. (1991). *Situated learning. Legitimate peripheral participation.* Cambridge: Cambridge University Press.

Lesser, E.L., & Storck, J. (2001). Communities of practice and organizational performance. *IBM Systems Journal, 40*(4), 831 – 841. Retrieved from *http://researchweb.watson.ibm.com/journal/sj/404/lesser.pdf*

Lundkvist, A. (2004). User networks as sources of innovation. In P. Hildreth & C. Kimble (Eds.), *Knowledge networks: Innovation through communities of practice* (pp. 96-105). Hershey, PA: Idea Group Publishing.

Seely Brown, J., & Duguid, P. (1991). Organizational learning and communities of practice. *Organization Science, 2*(1), 40-57.

Seely Brown, J., & Duguid, P. (1996). Universities in the digital age. *Change,* 11-19.

Seely Brown, J., & Duguid, P. (2000). *The social life of information.* Boston, MA: Harvard Business School Press.

Seely Brown, J., & Solomon Gray, E. (1995). The people are the company. *Fast Company.* Retrieved February 10, 2004, from *http://www.fastcompany.com/online/01/people.html*

Stewart, T.A. (1996). The invisible key to success. *Fortune Online.* Retrieved October 4, 1996, from *http://pathfnder.com/@@V3AagAUAZyqOEYKS/fortune/magazine/1996.960805/edg.html*

Wenger, E. (1998). *Communities of practice. Learning, meaning and identity.* CUP.

Wilson, T.D. (2002). The nonsense of 'knowledge management'. *Information Research, 8*(1). Paper no. 144. Retrieved from *http://InformationR.net/ir/8-1/paper144.html*

KEY TERMS

Artefact: An artefact in the context of CoPs indicates objects, articles, and "things" which have been created by the CoP to assist the members in their work and which may have some of the community's knowledge embedded in them. Artefacts do not have to be concrete – a process or procedure may be an artefact.

Communities of Circumstance: Communities of circumstance are driven by position, circumstance or life experiences. Communities of circumstance are distinguished from CoPs in that they tend to be personally focused and are often built around "life stages," such as teenagehood, university, marriage or parenthood.

Communities of Interest: Communities of interest are groups of people who share a common interest. Members exchange ideas and thoughts about the given interest, but may know little about each other outside of this area. Participation in a community of interest can be compelling and entertaining but is not focussed on learning in the same way as a CoP.

Communities of Practice: Communities of practice are groups of people who have a common goal and who are internally motivated to reach the goal. The members have some form of common background and shared language.

Communities of Purpose: Communities of purpose form around people who are to achieve a similar objective. Such communities only serve a functional purpose. Members of the community can assist each other by sharing experiences, suggesting strategies and exchanging information on the process in hand.

Hard Knowledge: Hard knowledge is unambiguous and unequivocal, can be clearly and fully expressed, can be formalised and structured, can be "owned" without being used and is both abstract and static: it is about, but not in, the world.

Knowledge Management: Knowledge management is the means whereby an organisation "manages" and leverages its knowledge resources. This can include reports, databases and patents; it also includes people – identifying experts, sharing knowledge, and helping people learn.

Legitimate Peripheral Participation: LPP is the process by which a newcomer gradually works his/her way towards full participation in the community. Lave and Wenger's (1991)

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examples were based on the apprenticeship model, where a newcomer (the apprentice) was allowed to undertake basic tasks. As they became more experienced, they were given more complicated tasks until they could fully participate in the practice of the community and became old-timers.

Network of Practice: People who are not directly connected to each other but still engage in similar kinds of activities are said to belong to a network of practice (NoP). NoPs link local communities whose members have similar interests and give a minimal coherence to the network.

Soft Knowledge: Soft knowledge is implicit and unstructured, cannot be articulated, can be understood without being openly expressed, is associated with action and cannot be possessed, is about what we do and is acquired through experience.