Chapter III
The Search for 'Hidden' Virtual Communities of Practice:
Some Preliminary Premises

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ABSTRACT

This chapter examines the possibility of discovering a "hidden" (potential) Community of Practice (CoP) inside electronic networks, and then using this knowledge to nurture it into a fully functioning Virtual Community of Practice (VCoP). Starting from the standpoint of the need to manage knowledge and create innovation, the chapter discusses several issues related to this subject. It begins by examining Nonaka's SECI model and his notion of Knowledge Transfer; the authors follow this by an investigation of the links between Communities of Practice (CoPs) and Knowledge Management; the chapter concludes by examining the relation between Nonaka's Communities of Interaction and CoPs. Having established this the authors start their examination of the characteristics of "hidden" Communities of Practice. Following on from the previous discussion, they look at what is meant by "hidden" CoPs and what their value might be. They also look at the distinction between Distributed CoPs (DCoPs) and Virtual CoPs (VCoPs) and the issues raised when moving from 'hidden' CoPs to fully functioning VCoPs. The chapter concludes with some preliminary findings from a semi-structured interview conducted in the Higher Education Academy Psychology Network (UK). These findings are contrasted against the theory and some further proposals are made.

Jackson Grayson, chairman of the American Productivity & Quality Center, tells a story about a big-company CEO who, in a moment of contemplation, revealed a deep desire: "I wish we knew what we know," the CEO said. That wish is shared today by managers at dozens of large, decentralized companies. They fear the knowledge in their organizations is going to waste simply because hardly anyone knows it exists.'
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INTRODUCTION

It is important for institutions and companies to manage the knowledge they have. This knowledge represents not only the main asset an institution or company has, but it also can represent the future and survival in the time to come. As result, the majority of large companies include knowledge in their list of assets. This is not a new issue. For instance, Boersma and Stegwee have discussed this before (1996), but in our time that is more important than ever.

One tool that can help to reach this objective is represented by the social communities that reside within such organisations. These communities can create specialized knowledge that is vital for the 'host' institution. A special case of social communities, Communities of Practice (CoPs) (Brown & Duguid, 1991; Lave & Wenger, 1991; Wenger, 1998; Wenger et al., 2002) have been object of constant studies and analyses for several years. This interest can be explained by the fact that many see Communities of Practice as a powerful instrument for the management of knowledge and as source of innovation.

However, it is also necessary to take into account the advances in technology and communication present in today's world. The improvement in performance and the reduction in prices of personal computers, together with the spread of access to Internet in 1990s, resulted in an improvement in Computer-Mediated Communica-

tion (CMC). That enhancement has changed the nature of enterprises and institutions. As result, a new framework emerged, allowing social communities to grow and flourish across geographical boundaries – so-called virtual communities. With the creation of virtual communities came the possibility of easier 'transfer' of knowledge between people in different locations, even at an international level (Hiltz & Turoff, 1993; Sproull & Kiesler, 1992).

It is therefore important to examine the possibility of helping the growth of these communities, as this could open new possibilities for the management of the knowledge, which in turn could influence the success of an enterprise. For example, companies and institutions could create an environment suitable for innovation through the facilitation of contact between geographically separated groups with shared interests, thus, allowing the nurturing of Communities of Practice that could be of use to that organisation. These communities might be the 'seed' of an innovation that could lead to the development of new technologies, which in turn might lead to improvements in the company and institution or to the creation of new products and services. Similarly, research institutions might wish to discover potential groups and/or areas of collaboration and research as sometimes innovations are held back by a lack of communication or awareness, since the existence of similar groups inside the institution is unknown. The first step in this direction would be to discover the existence of 'hidden' communities that could, in time, represent the starting point of a fully functioning Community of Practice (CoP).

To accomplish this, it is necessary to analyse several related issues. First, we must be certain that 'hidden' communities can be located. Second, as we are considering distributed communities, we must also be sure that, what are often loosely termed VCoPs, can actually be considered to be CoPs. Finally, if the two previous conditions are met, we need to know if these 'hidden' communi-

ties can be developed to a level of fully functioning CoP. This chapter will discusses each of these steps and conclude with a small-scale study where the first premises under this approach are drawn.

CoPs, Knowledge Management and Knowledge Transfer

Before we discuss the subject of hidden CoPs in distributed networks, we will first discuss the reasons why those communities are important for organisations. In this section will consider the relationships between Knowledge Management (KM), Nonaka's work on Knowledge Transfer and Wenger's work on Communities of Practice. We will then use this as the background for a discussion on hidden CoPs and the roles they might play in an organisation.

Background

The traditional point to begin this discussion is the distinction between *tacit* and *explicit* knowledge. Currently, companies around the world are spending substantial effort and resources to manage their available (tacit and explicit) knowledge. *Explicit knowledge* refers to the knowledge that can be made available through a media (writing, audio, video, etc.) and it can be relatively easy to acquire, save and retrieve. That is the more commonly known type of knowledge. *Tacit knowledge*, on the other hand, refers to the knowledge that even if one wished to pass to another person, it would be very difficult to accomplish.

This distinction and its related issues have been the subject of several papers (Gourlay, 2002, 2003, 2004, 2006; Jorna, 1998; Nonaka, 1991, 1994; Nonaka & Takeuchi, 1995). For example, Gourlay (2002, 2004) points out that different authors disagree about the nature of tacit knowledge (e.g. does it exists only in individuals, in groups or in both?). Similar arguments exist concerning the possibility of tacit knowledge being made explicit (Gourlay, 2002, 2003, 2006).

Notwithstanding the finer distinctions between tacit and explicit knowledge, much of the attention in this area has focussed on the need to exchange and reuse knowledge, so-called *knowledge transfer*. It is possible to find numerous models in publications dedicated to knowledge transfer. We will concentrate on the best known of these: Nonaka's *SECI model* (Nonaka, 1991, 1994; Nonaka & Takeuchi, 1995; Nonaka *et al.*, 1996).

This model has been widely discussed and has been viewed as the mainstay of Knowledge Management for many years. However, it is not without its detractors: Gourlay, for example, states that the model is not supported by empirical evidence, and that some of its phases are not coherent (Gourlay, 2003). Similarly, Jorna argues that the model lacks any background in learning theories, omits important philosophers, and does not have a methodology (Jorna, 1998). Others argue that the model needs to consider additional aspects related to the complex environment which is a workplace, for example taking in account the nature of tasks it performs (Becerra-Fernandez & Sabherwal, 2001).

However, for the purpose of this chapter, the SECI model offers a simple and straightforward model to discuss knowledge transfer. It is also particularly appropriate for this chapter as Nonaka also outlines the concept of *Communities of Interaction* and later links this notion of *Communities of Interaction* to that of *Communities of Practice*.

The SECI Model

Nonaka first presented the SECI model (*Figure 1*) in 1991 (Nonaka). The model first appeared in the early 1990s as a tool to explain Nonaka's ideas of how western companies could achieve the same levels of success as Japanese ones. In that period, Japanese companies were leading the

Figure 1. The SECI model [based on (Nonaka, 1994), (Nonaka et al., 1996) & (Nonaka & Takeuchi, 1995)]
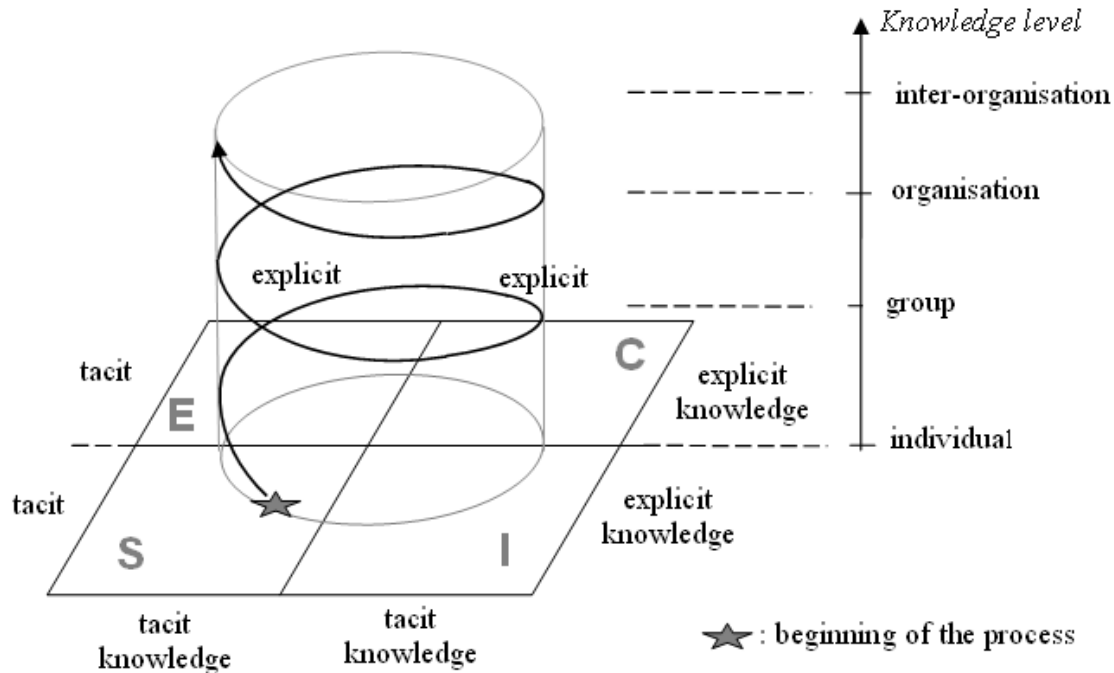
global market; one of the reasons (according to Nonaka) was the method the companies used to create and share knowledge.

The SECI model is based in the concept of apprenticeship. It explains how the tacit knowledge of an expert can be transferred to an apprentice through a process in four phases. Each phase represents a unique type of movement between tacit and explicit knowledge. Nonaka called the phases *modes of Knowledge Conversion* and the model, the *Spiral of Knowledge* (Nonaka, 1994) or *Knowledge Spiral* (Nonaka et al., 1996).

The four phases are:

- **(S)ocialisation.** Where the apprentice acquires the necessary skills (tacit knowledge) working with the expert(s). In this phase is said that the transfer occurs between tacit knowledge and tacit knowledge.

- **(E)xternalisation.** Where the person (former apprentice), after acquired the tacit knowledge, transfer it to a media or pass it on. In this phase is said that the transfer occurs between tacit knowledge and explicit knowledge.

- **(C)ombination.** Where the knowledge (now explicit) is combined with existing explicit knowledge. In this phase is said that the transfer occurs between explicit knowledge and explicit knowledge.

- **(I)nternalisation.** Where the knowledge after the previous interactions evolves to a richer and expanded tacit knowledge. In this phase is said that the transfer occurs between explicit knowledge and tacit knowledge.

The Spiral of Knowledge

Nonaka argues that knowledge transfer happens at several different levels within an enterprise. Looking at the *Figure 1* is possible also to see that the process moves upward in spiral. Nonaka called this *the Spiral of Knowledge* (Nonaka, 1991) or *Knowledge Spiral* (Nonaka et al., 1996).

The four processes are repeated in different levels. First, it occurs as described above at the individual level, moving to a group level, after the individual had shared the new ideas/concepts with a team or group. Later these ideas are divulged inside the company/institution, moving the knowledge to an organisational level. Finally, the knowledge might be divulged between organisations in different places, reaching the inter-organisational level.

Knowledge Transfer in a Distributed Environment

In 1994, Nonaka published a new study explaining in more details the SECI model (Nonaka, 1994). This time he related the model with the concepts of Organisational Knowledge Creation. That publication expanded several concepts of his first work. This time all the phases had a wider dimension, taking in consideration the interactivity of teams and groups within companies. That work helps us to situate better the SECI model in distributed environments as here, the possibility of non-collocated communities is explicitly discussed.

Later on Nonaka began to perceive the impact of Information Technology (IT) would have in future years to the concept of knowledge transfer, thus in 1995 he published another work discussing this issue (Nonaka & Takeuchi, 1995). In that work, he started considering the use of networks in the process of knowledge transfer. The authors discussed the impact of CMC in the process of creating new knowledge and consequently in the SECI model.

Further analysis came with another paper, published in 1996 (Nonaka et al.). This short paper gave, though, only a summary of the main aspects of the impact of IT in general and networks in particular to the SECI model and to the knowledge transfer, discussed in the previous work.

Seeing the progression of those publications, one can perceive clearly the evolution that the SECI model underwent. If in beginning the distributed scenario was subtly considered in the spiral of knowledge, after few years the expansion of CMC gave to Nonaka the certainty that electronic networks needed to be considered during the analysis of knowledge transfer in organisations.

Finally, in 1994, Nonaka defined an important concept in his work: *Communities of Interaction*. Although without outlining them precisely, he explained how important their existence is to accomplish successfully the knowledge transfer (Nonaka, 1994). What he did, however, was to trace a relation between *Communities of Interaction* and *Communities of Practice* (Nonaka, 1994) via the work of Brown and Duguid (1991). However, before explaining his arguments, it is necessary to review the concept of *Communities of Practice (CoPs)*.

Communities of Practice (CoPs)

While Nonaka's model presents an intuitively attractive model of knowledge transfer, many argue that it is flawed. Although the term knowledge transfer is widely used in knowledge management, one can argue that what happens is *learning*, as knowledge is not a object that can be simply passed on to another person. It is at this point that the notion Communities of Practice come into play (Kimble & Hildreth, 2002).

The idea of Communities of Practice was first introduced by Etienne Wenger and Jean Lave in 1991 when they published the book *Situated Learning: Legitimate Peripheral Participation* (Lave & Wenger, 1991). The book introduced the idea that learning is an informal social process,

rather than a planned and individual one. In this model, the learning happens mainly through the social contact. The figure of apprentice moves from a situation of learning in peripheral position to full participation. The learning comes as consequence of social interaction and observation. The authors used a set of specific communities as case studies. Those communities were formed by persons that shared a common practical work (thus, sharing practices). The idea revealed a new realm in learning: social learning (constructivism) was used, in contrast to the behaviourism, in vogue during that period.

That first publication attracted considerable interest in different areas. It became clear that CoPs required a more detailed analysis. Consequently, several authors released publications discussing the subject (e.g. Brown & Duguid, 1991). Wenger then released an additional publication regarding CoPs, where he conducted a detailed analysis of them (Wenger, 1998). In 2002, as consequence of the increase interest in the topic, Wenger et al. released a third book, having a more practical and direct approach for CoPs (Wenger et al., 2002).

The Key Concepts of Communities of Practice

Since their first appearance in 1991, the concepts related to CoPs have changed. Kimble and Cox have analysed this issue in (Kimble, 2006) and (Cox, 2005) respectively. Cox summarised some of those concepts and their changes over time with a table (Cox, 2005). However, despite these alterations the main concepts remained practically the same. These concepts derive from the definition of CoPs:

Communities of Practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. (Wenger et al., 2002)

This definition outlines the main characteristics that will be present in any CoP: the *domain*, the *community* and the *practice*. Wenger provides several slightly different definitions for these terms (Wenger, 1998, 2006; Wenger et al., 2002), but here they are taken to be:

- **Domain:** Responsible for creating a sense of common identity among the members. The shared domain produces a sensation of responsibility and participation in the community. It defines what the community is and is what attracts newcomers and allows them to identify themselves with it. It motivates participation, learning and gives meaning for member's actions.
- **Community:** Responsible for interaction and learning among the members. The community creates a strong social bond between its participants. It motivates the improvement of the shared knowledge through joint activities and discussions, creating mutual respect and trust.
- **Practice:** Represents the shared knowledge of the community. It is compounded by ideas, language, tools, frameworks and all tacit and explicit aspects of the knowledge that the community has.

The definition stands within a model with three principal dimensions of a community of Practice: *mutual engagement*, *joint enterprise*, and a *shared repertoire* of experiences (Wenger, 1998). The idea is based in the assumption that, as social beings, we always engage in enterprises with persons that share a passion, mutually learning and creating, as consequence, a common knowledge.

The Notion of Dualities in Communities of Practice

Wenger also saw a Community of Practice in terms of the interplay of four fundamental dualities or tensions that exist within them: *participation-*

reification, designed-emergent, identification-negotiability and *local-global.* Wenger views a duality as:

... a single conceptual unit that is formed by two inseparable and mutually constitutive elements whose inherent tensions and complementarity give the concept richness and dynamism (Wenger, 1998)

Although he describes four dualities, the participation-reification duality has been the focus of particular interest. According to Wenger, our experiences of meaning and our understanding of the world are formed primarily through two processes: participation and reification. Participation is how we learn through interaction with others, while reification is how we give our learning an independent existence.

In participation we recognise ourselves in each other, in reification we project ourselves onto the world (Wenger, 1998).

Both participation and reification are necessary for learning to take place. For Wenger participation represents:

... the social experience of living in the world in terms of membership in social communities and active involvement in social enterprises. [Participation] can involve all kinds of relations, conflictual as well as harmonious, intimate as well as political, competitive as well as cooperative. (Wenger, 1998)

BRINGING KNOWLEDGE MANAGEMENT, COMMUNITIES OF INTERACTION AND COMMUNITIES OF PRACTICE TOGETHER

It is this concept of the *participation-reification* duality that finally links the notion of Knowledge Transfer in Knowledge Management to Learning in CoPs. While taking the risk of oversimplifying a more complex concept, it is possible to make a relation between the *duality of participation/reification*, of Wenger (1998) and *tacit/explicit knowledge* by Nonaka. Wenger uses the concept of *reification*

... very generally to refer to the process of giving form to our experience by producing objects that congeal this experience into 'thingness' (Wenger, 1998).

Reification is significant in that it is an attempt to encapsulate some of the meanings generated by the community: "... a certain understanding is given form" (Wenger, 1998). However, as Wenger also notes:

Reification as a constituent of meaning is always incomplete, ongoing, potentially enriching, and potentially misleading. (Wenger, 1998)

This link is explored in greater detail elsewhere by Kimble and Hildreth (2002, 2005). Similarly, in the beginning of this section, it was affirmed that Nonaka made use of an interesting concept in 1994: Communities of Interaction. It was also said that he traced a relation between Communities of Interaction and Communities of Practice. He did that through an analysis of Brown and Duguid (1991) work; he stated:

Although ideas are formed in the minds of individuals, interaction between individuals typically plays a critical role in developing these ideas. That is to say, "communities of interaction" contribute to the amplification and development of new knowledge. While these communities might span departmental or indeed organizational boundaries, the point to note is that they define a further dimension to organizational knowledge creation, which is associated with the extent of

social interaction between individuals that share and develop knowledge. (Nonaka, 1994)

The significance of links between individuals that span boundaries, both within and outside the organization, has been highlighted by Brown and Duguid's (1991) revealing insight into the operation of "evolving communities of practice". These communities reflect the way in which people actually work as opposed to the formal job descriptions or task-related procedures that are specified by the organization. (...) The exchange and development of information within these evolving communities facilitate knowledge creation by linking the routine dimensions of day-to-day work to active learning and innovation. (Nonaka, 1994)

By contrast with conceptions of groups as bounded entities within an organization, evolving communities of practice are 'more fluid and interpenetrative than bounded, often crossing the restrictive boundaries of the organization to incorporate people from outside' (Brown and Duguid 1991, p. 49). Moreover, these communities can provide important contributions to visions for future development. Thus these communities represent a key dimension to socialization and its input to the overall knowledge creation process. (Nonaka, 1994)

Seeing together the three arguments, one can notice the similarity between *Communities of Interaction* and *Communities of Practice*. As Communities of Interaction amplify and develop new knowledge through social interaction, spanning boundaries, the same happens with Communities of Practice.

'HIDDEN' CoPs

Having established the link between CoPs and knowledge Management, and having established that Knowledge Management is of commercial importance in today's world, we will now proceed to look at the topic of 'hidden' CoPs, and why these should be seen as an important contribution to the health of organisations. The search for 'hidden' CoPs raises some singular questions. For a start, the state of being 'hidden' is largely understudied in Communities of Practice. In addition, the search can have ethical implications, and finally, if a hidden CoP is to be found, this itself can raise a different set of issues.

What are 'Hidden' CoPs and Why Are They Important?

The type of Communities of Practice that is the focus for this chapter are not easy to find: they are communities that are in their early stages. Their members may not see themselves as 'members of a CoP' and the 'host' organisation may not be aware of the existence of it. To the company, and possibly even to the members, the community is 'hidden' from view.

The Concept of 'Hidden'

It is not our intention to look for illegal or illicit communities: the term 'hidden' is used here in a restricted sense to mean something potential, to-be-discovered, nascent, unseen, veiled, etc. It is perhaps easier to explain our concept of a 'hidden' CoP through an example.

Lundkvist (2004) provides an example of such community. He discusses a case study involving Cisco Systems and a group of users of the company's products. The study showed how Cisco Systems were able to use the knowledge generated by the experience of a group of well-informed users, even though the group itself was not part of Cisco and did not form with the intention of helping them.

Cisco Systems operates in networking market and is one the biggest companies supplying such equipment in the world. With the growth of Internet after 1990s, Cisco became one of the leaders

of the sector. That expansion in business created new challenges for the company. They needed to expand support for customers and at the same time, reduce the administrative load caused by that expansion. Their solution was the automation of support, customer self-service and customer-to-customer support. Although this allowed the company to improve their existent equipment, it was at the cost of the loss of the feedback generated by the company's users.

In order to regain this lost feedback, the company wanted to gain access to the conversations the users had about their products, without crossing the limit of privacy. They needed to keep the interest of the users focused in a public and open channel of communication. Their salvation came in the shape of a group of technicians working in Swedish Universities.

This community of users had a strong interest in sharing their knowledge, but did not view themselves as a 'networking CoP' and even less a 'Cisco Systems CoP'. This was clearly stated:

One participant was very explicit about the problem: if social networks were identified and made known, corporate managers, by nature, would try to formalise and control them, a fact that would make everyday work harder. Consequently, the issue of CoPs was considered a highly delicate matter, one requiring a new managerial understanding. (Lundkvist, 2004)

The Value of 'Hidden' CoPs

'Hidden' communities can be everywhere. They can be inter or intra organisational communities and, as Lundkvist illustrates, in organisations, they can represent an invaluable force. They can be the seed of change or innovation that an organisation is looking for. They can aggregate members with different experiences, but with a shared passion, and these two factors can be nurtured more easily in a CoP than in a formal team.

Such communities can generate new ideas and services, as yet undreamt of by the company. They can become a group that can generate new ideas for improvements in existing sectors or departments. They can even evolve to spin-off companies, which in turn generate new products or services. Within educational institutions, as Universities or Colleges, they can lead to the creation of new areas for researches or courses. Such groups generally have the groundbreaking information that organisations sometimes miss. Moreover, because frequently they are disperse, that knowledge almost never produces results.

The principal issue with this type of community is that 'hidden communities' are very difficult to detect, even by their potential members. That is explained by the fact that being 'hidden' means that potential members are unaware of the existence of such communities. As it is, the community will be 'hidden' forever, or until a random situation happens to change that.

Another issue is that 'hidden' CoPs tend to be small when within organisations, so without the proper help or incentive they risk disappearance.

The Characteristics of 'Hidden' CoPs

'Hidden' groups can be people that work in the same company, but in different sectors. They even can be employees located in different cities or countries. Their principal characteristic is a shared passion for something common to all. Sometimes they know each other, and sometimes they know only very few of them. Sometimes they know that they share common interests and sometimes not.

The reasons a CoP is 'hidden' can be related to several specific situations, such as the political scenario inside the organisation, lack of awareness of others with similar concerns, or even conflict of interests between the community and the organisation. The literature lacks studies in

this area. Even when referred to under a different term (e.g., potential), the literature about 'hidden' CoPs is scarce.

Wenger et al. discusses some aspects of them in (Wenger et al., 2002), when talking about the stages of the development of a CoP. They use the term *loose network* to express that type of community. The authors explain that they consider the beginning of the development of a Community of Practice through the existence of an *extant social network* (Wenger et al., 2002).

Another publication that examines the case of potential CoPs is (Cappe, 2008). She studies the cases of latent Communities of Practice in organisations, although here also the definition of a potential CoP is similar to that of Wenger et al (2002).

However, there are examples in the literature of the opposite situation: the 'disappearance' of CoPs (Patricia Gongla & Rizzuto, 2004). Using experiences with CoPs in IBM Global Services, the authors discuss the reasons and characteristics of Communities of Practice that 'disappear' from the organisational scene. They list the main paths followed by communities when disappearing, the reasons why the CoPs vanish and the steps required for avoiding or reducing that. The authors divided the disappearance cases in four patterns: *Drift into non-existence*, *Redefine themselves*, *Merge into other communities* and *Become organizational units* (Patricia Gongla & Rizzuto, 2004). They also discussed the reasons why the communities disappear: *Organizational change*, *knowledge domain change* and *community leadership change*.

Some Issues in the Study of 'Hidden' CoPs

When considering the possibility of discovering 'hidden' CoPs some novel issues are raised. There is always a risk that the community wants to be 'hidden' (as discussed before). For instance, it can be the case where a group of members

wishes to start a new company that can rival the host organisation. Another possibility is that the potential community do not want to be controlled by the organization, as discussed by Lundkvist in (2004). Nevertheless, it is important to highlight that sometimes the 'hidden' community do wishes to be revealed. It can be the case that the members only did not have the opportunity yet to develop further. It is this type of community that is the focus of our work.

Regarding the problems that can appear after finding the communities, Gongla and Rizutto (2004) give a good insight about some issues on this matter. Understanding why some communities disappear can prevent revealing ones that do not want to be exposed. It also gives awareness of the risks involved in disclosing them. Clearly, there is an ethical dimension that must be considered when searching for 'hidden' CoPs. It is possible to discover, for instance, communities that the host organisation can see as harmful. Another aspect is the use of technologies that cross the limit of personal privacy. The researcher needs to make careful choices on this part. It is important to consider that Communities of Practice are driven by passion, and any threat to its freedom can compromise this motivation.

CoPs and Virtual CoPs

As our goal is to work with virtual communities of Practice, we must clarify precisely what we mean by this term.

Distributed Communities of Practice (DCoPs) and Virtual Communities of Practice (VCoPs)

The term 'Distributed Communities of Practice (DCoPs)' can often be found in articles related to Communities of Practice and Internet. However, its exact meaning is not always clear. The term *distributed* refers to something divided or spread. Additionally, when used together with the term

community, the word *distributed* has a geographical meaning. In that case, such community is not concentrated in a unique place, but rather is divided in one or more locations. Therefore, a good definition of DCoP could be:

Distributed Community of Practice (DCoP) is a CoP spread over a place, or without a precise delimitation of its space.

Similarly, it is easy to find publications with the term *Virtual Community (VC)*. It seems that Rheingold (1993) was the first to use it, but after that, it is possible to find many further definitions of this term, for example, by Roberts (1998) and Igbaria (1999). In Computer Science the term evolved from the idea of something that simulates the real equivalent (e.g. *virtual memory*), to the idea of something that is real, but only exist by means of computers and networks (e.g. *virtual world*). It can be seen that some elements are common to all definitions of Virtual Community. A general definition of *Virtual Community* based in the same common aspects might be:

Virtual Community (VC) is the type of social community that uses Computer-Mediated Communication (CMC) to maintain contact with its participants.

In the same way, with the expansion of *Computer-Mediated Communication (CMC)* and the Internet, the concept of *Distributed Communities of Practice (DCoPs)* had been reshaped to a point where it became almost natural to associate *Distributed* with *Virtual*. This can be seen in great part of the publications related to CoPs at the end of 1990s and beginning of 2000s. It is now commonplace to find references only to *Virtual Communities of Practice (VCoP)*; therefore, one definition that suits this approach can be:

Virtual Community of Practice (VCoP) is a non-collocated Community of Practice that uses

Computer-Mediated Communication (CMC) to maintain contact with its participants.

It is important to highlight that our use of the term *Computer-Mediated Communication (CMC)* is more adequate to our modern world. We include on this term all type of communication and interaction that occurs by mean of computers. That can include since the more typical use of internal networks, commonly found in organisations, until the Internet, where on this case it is possible to encompass the use of email, WWW, FTP or similar services.

FullyFunctioning VCoPs

As indicated earlier, the main objective of this work is to look for ways to identify and nurture 'Hidden' Virtual Communities of Practice existing in electronic networks, in other words, to help them develop into potential *fully functioning Virtual Communities of Practice*. It is necessary, then, to clarify what is meant by this.

The term *fully functioning VCoP* is understood to refer to communities that attend all (but are not restricted to) the following components at the same time:

- **It is a Social Community.** This means that the community should be represented by a group of persons that participate in the same community and have active involvement in social enterprises. Participation in this sense is both personal and social, involves personal and shared feelings and is reciprocal. In addition, the members can recognize each other as belonging to the same group (Based on Wenger, 1998).
- **It is a Community of Practice (CoP).** This means that the community should follow the definition of Community of Practice stated previously. Moreover, this definition implies the existence of all the set of concepts defined in (Wenger, 1998).

- **It is a Distributed Community of Practice (DCoP).** This means that the community should follow the definition of Distributed Community of Practice stated before. The concept of *spread* can be understood as short as a few meters, or as far as thousands of kilometres.
- **It is a Virtual Community (VC).** This means that the community should follow the definition of Virtual Community stated above.

As consequence of the characteristics listed above, the community will be a (social) Community of Practice that is distributed, and communicates via CMC. It is essential to notice, however that the concept of fully functioning Virtual Community of Practice as described above corresponds to an ideal situation that can be reachable or not. Consequently, this chapter accepts variations on these definitions, as long as the core ideas are still valid.

Is it Possible to Change a 'Hidden' CoP into a Fully Functioning VCoP?

In addition to the issues listed above, new considerations should be taken in account when discussing how to change a 'hidden' CoP into a fully functioning one. Further development of a 'hidden' CoP is dependent on the 'discovery' of such communities.

First, it is crucial to determine the community's desires or intentions to 'evolve' and become a fully fledge community. Wenger always highlighted passion as the driving force that keeps the community together and strong (Wenger, 1998; Wenger et al., 2002). A real CoP cannot be created by force or by any artificial means. What is possible however, is to help the development of a CoP, as Wenger detailed in (Wenger et al., 2002). Although his advices in that publication is mainly related to collocated CoPs, the same can be applied to VCoPs.

Another step would be to establish the forms to be used in order to help the 'hidden' CoP to flourish. This step is very dependent on the community, as only through an analysis on a case-to-case basis is possible to determine the best plan of action to reach that goal. It is likely that some procedures could be used in some parts of the study (e.g., the initial interviews with the potential members), but the best method(s) will only be decided after a full analysis of the community's situation. Cappe (2008) and Wenger et al. (Wenger et al., 2002) offer some advices on this topic.

Yet another step is to determine for how long an intervention is necessary to keep the VCoP active. This is very much related to the specification of what it is expected to achieve with the community. As a product of human interaction, the communities usually do not follow strict rules or schedules, thus it is important to determine the limit of interference in the CoP that can be tolerated, under risk of undermining the community's self-interest.

Referring to our definition of a fully functioning VCoP, some aspects are not difficult to find or implement. In some cases, no intervention is necessary. Examples of that are the items 'Social Community' and 'Community of Practice (CoP)'. Although these two items are complex *per se*, they can be found with no much difficulty in a potential community that accepts to become a fully developed community of practice, or in a one that already has started establishing the connections to become a real CoP. The other two items are related mainly to the configuration and to the use of CMC in the contact among members.

Maybe the most difficult part in the process of changing a potential community is to sustain the existence of such new CoP. Wenger considers CoPs as having a lifecycle. In his work of 2002 he shows a graph with 'born', 'life' and 'death' of a CoP (Wenger et al., 2002). However, others think that CoP can have a different approach. Gongla and Rizzuto, for instance, proposed a different model to explain the existence of a CoP. They

discuss an *evolution model* that '(...) *describes instead how communities transform themselves, becoming more capable at each stage, while at the same time maintaining a distinct, coherent identity throughout*' (P. Gongla & Rizzuto, 2001). That model sees CoP in a different way where it can grow and disappear in any phase of the model, becoming more mature with every step of its evolution.

SEARCHING FOR 'HIDDEN' VCOPS: A PRELIMINARY STUDY

The search for 'hidden' VCoPs will require knowledge on different aspects of the subject. Firstly, it is necessary to identify methods that can be used to recognize CoPs. Secondly, these methods need to be tested under a distributed (and possibly virtual) scenario. Finally, all the previous experience needs to be put together in such way that allows searching for 'hidden' VCoPs. Evidently, several subdivisions on these processes will be necessary, as the research advances.

As the first step in this direction, a small-scale study was set up. Its objective was to validate the parameters used to identify existent CoPs. The study has been implemented utilising the idea of reification as used in the concept of *participation-reification* duality (Wenger, 1998) where certain aspects of a CoP's activity are reified by its members as part of their participation in the CoP.

The Venue

The study was carried out in the *Higher Education Academy Psychology Network, UK*. The institution is one of 24 discipline-based centres within the Higher Education Academy in UK. The Psychology Network supports the teaching and learning of psychology across the UK. A core team, based at the University of York, works with staff, departments, professional bodies and overseas organisations to develop supportive networks and to improve the learning experience of psychology students in Higher Education.

The work environment is an open-plan area where all the employees have quick and easy access to each other. All the communication is made through face-to-face conversation or email. They can exchange electronic files via an Intranet and a file server. Regular meetings keep the group updated with objectives and future plans.

The Study

The approach to the research was broadly that of Action Research (Dick, 2003), consisting of two alternating cycles of purposeful action and critical reflection. The first component emphasizes on participation that builds shared understanding and shared commitment. Whereas the second one drives a better understanding of the wider process, allowing possible adaptation in future cycles (Dick, 2003). As the research is in its early stages, a first study has been drawn to confirm a method to detect the existence of Communities of Practice.

Wenger (1998) created a list of indicators that a CoP had been formed, which was used in this work as the basis for identifying the presence of a CoP; the list included:

1. Sustained mutual relationships – harmonious or conflictual
2. Shared ways of engaging in doing things together
3. The rapid flow of information and propagation of innovation
4. Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process
5. Very quick setup of a problem to be discussed
6. Substantial overlap in participants' descriptions of who belongs

7. Knowing what others know, what they can do, and how they can contribute to an enterprise
8. Mutually defining identities
9. The ability to assess the appropriateness of actions and products
10. Specific tools, representations, and other artefacts
11. Local lore, shared stories, inside jokes, knowing laughter
12. Jargon and shortcuts to communication as well as the ease of producing new ones
13. Certain styles recognized as displaying membership
14. A shared discourse reflecting a certain perspective on the world

One of the authors (Richard Ribeiro) is an employee in the Psychology Network, which allowed us to gain an 'insider' understanding of the community. The research took a broadly qualitative approach using Wenger's list and semi-structured interviews as primary mechanisms to examine the subjective experience of participation in a VCoP. Each of the members participated in a semi-structured interview of approximately 30 minutes, which identified general information about the person and the role, and where 11 of 14 items where checked. Items 6, 8 and 14 had been excluded from the interview, as they were not applicable to the chosen environment. These exclusions should not affect the overall quality of the research outcomes as the list is not rigid, and different items are used to verify the same characteristic. The interview was applied to the other staff in the Psychology Network (7 people) and the results are briefly discussed below.

The Results

Most of the results described in this section come from the combination of the analysis of the answers and the inner understanding of the community. If any point of a topic was not completely confirmed or understood, it was scheduled for a later stage in the research. Even though the process of collecting data is still ongoing, it can be seen that the current results confirm the existence of a CoP in the work environment. The results show that the employee's behaviour is consistent with the majority of the indicators that show the existence of a CoP.

It can be seen that the group has a strong sense of identity and meaning. They share the view of the organisation's objective, and of the role of each one in the final goal of the organisation. Maybe one aspect that influenced this result is the community's size (only 8 persons, including the researcher) and the fact that they work in an open-plan space. However, the change in the workspace only happened two years ago; before that, the employees worked in separated rooms with an average of two persons per room. They work together and even with the fact that some of them work part time, it can be seen that this does not affect their relationships or their sense of community. In addition, although having different roles, the employees have a set of common activities and a shared way of operating.

Information is propagated rapidly within the community, maybe as consequence of the fact that they work in an open-plan space. However, this indicator can be confirmed by the fact that the use of communications by email is as frequent as the communication face-to-face. Innovation is another aspect that is rapidly spread. Again, maybe this can be explained by the same reasons as the previous item. Another fact that might explain this characteristic is the noticeable existence of a common concern to propagate any innovation that can help the community.

In general, conversations and interactions reflect the ongoing working process that the community has. Frequently, only small introductions or preambles are required. One factor that helps to explain this is the existence of weekly meetings, although the introduction of these is quite recent. Even before that innovation, though, the

community could keep a reasonable update of the working situation. If there is a problem to be discussed, the community can rapidly set-up a meeting to solve it. Even when it was necessary to send files or documents related to the problem to be discussed, the existence of an electronic network helped to pass the information on. The community knows its members and its roles, allowing it to express who is responsible for what, and which knowledge that individuals have. The members showed in the interviews that they are capable of telling how each member can contributed in a shared enterprise.

As strongly connected and related group, the community was capable of demonstrating in the interviews that they could judge the appropriateness of actions and products related to their community. The sense of purpose is very clear, and in the cases where any doubt was present in a situation that required a decision of appropriateness, they knew who could provide an answer for the question. The community has a set of common tools, representations and artefacts, probably as consequence of the common goal and the nature of the work. The community's objective is clear and although with some specificity, it is well known among the members.

The members of the community share stories, experiences and local lore. They are able of recognise very subtle jokes that are related to some anecdotal experience they have had in common. Sometimes the jokes can only be understood by the members. Outsiders sometimes cannot grab the meaning on those jokes, even after explanations. They share a set of common jargon and shortcuts intended to facilitate and speed up the communication between them. For instance, the acronym *PLAT* can be used to refer to a conference (*Psychology Learning and Teaching* that runs every two years) or a journal published by the organisation. Sometimes when the term is used in a conversation, the members can recognise which *PLAT* the person is referring to.

In general, it is very noticeable that the community has the three main components needed in a CoP. The *domain* is always the same. They deal with all the aspects of the teaching and learning of Psychology in UK. Even though this concept embraces more nuances on it, the inner implications and relations are still present in the community. The *practice* is shared and always present in the everyday activities. They share ideas, language, tools, frameworks and the tacit knowledge that the organisation requires. The *community* is present through the existent bond among the members. They have joint activities and discussions that always improve the shared knowledge available to the community. They have a well-defined mutual respect and trust.

Regarding the indicators specified by Wenger, the study showed that the three dimensions of a Community of Practice were also present. The community of mutual engagement, a negotiated enterprise and a repertoire of negotiable resources collected over a period has been confirmed through the interviews and through the experience of one of the researchers as participant of the community.

CONCLUSION

Although the subject is not new, Virtual Communities of Practice are still full of potential. Several publications tried to discuss all that potential and how they can be useful within a managerial point of view. However, very little attention has been given to the Communities of Practice that are to be – the 'hidden' ones. They can represent a huge step in the direction of success of any organisation. The problem is how to discover them, and in addition, how to accomplish that in a modern world where the ubiquity of electronic networks has already created a new framework for social communities.

This chapter just scratched the surface of what can be a big area for future research. Combining

concepts already well sedimented with brand new possibilities that Internet and an always-connected world can bring will be difficult. However, if successful, it will deliver a countless amount of benefits for future organisations.

More research will be carried out in the search for 'hidden' Virtual Communities of Practice. We know that our first study was just the first step to confirm and embrace different approaches within CoPs. However, additional study is already in plan to answer some of the underlined questions raised in this chapter. It is still necessary to clarify if Virtual Communities of Practice have similar behaviour to collocated ones, and if all the original concepts and models still apply for that case. The idea of 'hidden' CoPs is still new and understudied. In order to find fully developed VCoPs some case studies will be necessary. For last, the issue of revealing a 'hidden' CoP requires more study and analysis.

In order to achieve these goals it is necessary to conduct more studies in different CoPs and with different sizes, probably using different methods and techniques. Maybe an ethnographic study can be necessary to complement the understanding of the inside issues.

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REFERENCES

Becerra-Fernandez, I., & Sabherwal, R. (2001). Organizational Knowledge Management: A Contingency Perspective. *Journal of Management Information Systems, 18*(1), 23-55.

Boersma, J. S. K. T., & Stegwee, R. A. (1996). Exploring the Issues in Knowledge Management. *Information Technology Management in Europe, Track of the 1996 Information Resources Management Association International Conference*.

Brown, J. S., & Duguid, P. (1991). Organizational Learning and Communities of Practice: Toward a Unified View of Working, Learning, and Innovation. *Knowledge and Communities, 2*(1), 40-57.

Cappe, E. (2008). *Conditions D'émergence Et De Développement Des Communautés De Pratique Pour Le Management Des Connaissances*. Unpublished PhD, Universite Pierre Mendes, Grenoble, France.

Cox, A. (2005). What Are Communities of Practice? A Comparative Review of Four Seminal Works. *Journal of Information Science, 31*(6), 527.

Dick, B. (2003, 4-5 may 2003). *What Can Action Researchers Learn from Grounded Theorists*. Paper presented at the Australia and New Zealand ALARPM/SCAIR Conference, Gold Coast, Australia.

Gongla, P., & Rizzuto, C. R. (2001). Evolving Communities of Practice: Ibm Global Services Experience. *IBM Systems Journal, 40*(4), 842-862.

Gongla, P., & Rizzuto, C. R. (2004). Where Did That Community Go? Communities of Practice That "Disappear". In P. Hildreth & C. Kimble (Eds.), *Knowledge Networks: Innovation through Communities of Practice* (pp. 295-307): Idea Group Publishing.

Gourlay, S. (2002, April). *Tacit Knowledge, Tacit Knowing or Behaving?* Paper presented at the Third European conference on organizational knowledge, learning and capabilities.

Gourlay, S. (2003). The Seci Model of Knowledge Creation: Some Empirical Shortcomings. *4th European Conference on Knowledge Management*, 377-385.

Gourlay, S. (2004). 'Tacit Knowledge': The Variety of Meanings in Empirical Research. *Fifth European Conference on Organizational Knowledge, Learning and Capabilities Innsbruck.*

Gourlay, S. (2006). Conceptualizing Knowledge Creation: A Critique of Nonaka's Theory. *Journal of Management Studies, 43*(7), 1415-1436.

Hiltz, S. R., & Turoff, M. (1993). *Network Nation: Human Communication Via Computer (Revised Edition)*: The MIT Press.

Igbaria, M. (1999). The Driving Forces in the Virtual Society. *Communications of the ACM, 42*(12), 64-70.

Jorna, R. (1998). Managing Knowledge, *Semiotic Review of Books* (9 ed., Vol. 9, pp. 5-8).

Kimble, C. (2006). *Communities of Practice: Never Knowingly Undersold*. Paper presented at the EC-TEL 2006 Workshops, Crete, Greece.

Kimble, C., & Hildreth, P. (2002). The Duality of Knowledge. *Information Research, 8*(1).

Kimble, C., & Hildreth, P. (2005). Dualities, Distributed Communities of Practice and Knowledge Management. *Journal of Knowledge Management, 9*(4), 102 - 113.

Lave, J., & Wenger, E. (1991). *Situated Learning: Legitimate Peripheral Participation*: Cambridge University Press.

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): Idea Group Publishing.

Nonaka, I. (1991). The Knowledge-Creating Company. *Harvard Business Review*(69), 96-104.

Nonaka, I. (1994). A Dynamic Theory of Organizational Knowledge Creation. *Organization Science, 5*(1).

Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company.* Oxford: Oxford University Press.

Nonaka, I., Umemoto, K., & Senoo, D. (1996). From Information Processing to Knowledge Creation: A Paradigm Shift in Business Management. *Technology in Society, 18*(2), 203-218.

Rheingold, H. (1993). *The Virtual Community: Homesteading on the Electronic Frontier.* Reading, MA: Addison-Wesley Pub. Co.

Roberts, T. L. (1998). *Are Newsgroups Virtual Communities?* Paper presented at the CHI 98, Los Angeles.

Sproull, L. S., & Kiesler, S. B. (1992). *Connections: New Ways of Working in the Networked Organization*: MIT Press.

Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*: Cambridge.

Wenger, E. (2006). Communities of Practice - a Brief Introduction.   Retrieved 10/11/2006

Wenger, E., McDermott, R., & Snyder, M. W. (2002). *Cultivating Communities of Practice - a Guide to Managing Knowledge*: Harvard Business School Press.

KEY TERMS & DEFINITIONS

Communities of Practice (CoPs): Groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis. (Wenger et al., 2002)

Distributed Communities (DC): Communities spread over a place, or without a precise delimitation of their space.

Distributed Communities of Practice (DCoPs): Communities of Practice spread over a place, or without a precise delimitation of their space.

Explicit Knowledge: Knowledge that can be made available through a media (writing, audio, video, etc.) and it can be relatively easy to acquire, save and retrieve.

"Hidden" Communities of Practice: Potential or unseen Communities of Practice.

Knowledge Transfer: Exchange and reuse of the available knowledge.

Social Community: Group of persons that participate in the same community and have active involvement in social enterprises. Participation in this sense is both personal and social, involves personal and shared feelings and is reciprocal. In addition, the members can recognize each other as belonging to the same group (Based on Wenger, 1998)

Tacit Knowledge: Knowledge that even if one wished to pass to another person, it would be very difficult to accomplish.

Virtual Communities (VC): Social communities that use Computer-Mediated Communication (CMC) to maintain contact with its participants.

Virtual Communities of Practice (VCoPs): Non-collocated Communities of Practice that use Computer-Mediated Communication (CMC) to maintain contact with their participants.