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# Some first steps in the search for 'hidden' Communities of Practice within electronic networks

## ABSTRACT

1. *This article examines the problem of how to discover hidden Communities of Practice (CoPs) inside electronic networks and whether it is possible to nurture them into fully fledged Virtual Communities of Practice (VCoPs). It discusses the characteristics of hidden communities and the relationship between virtual communities, Distributed Communities of Practice (DCoPs) and VCoPs. It then examines some of the methods that might be used to search for hidden CoPs and the ways by which these might be transformed into full VCoPs. Finally, the article presents some findings from two early studies conducted in the Higher Education Academy Psychology Network in the United Kingdom.*

## KEYWORDS

Communities of Practice  
Distributed Communities of Practice  
hidden Communities of Practice  
knowledge management

virtual communities  
Virtual Communities  
of Practice

1. 'Social community' is defined in section '*Social Communities, Distributed Communities of Practice, Virtual Communities and Virtual Communities of Practice*'.
2. The word 'transfer' is used in quotes because we do not believe that it is possible to 'transfer' knowledge directly in the same way that can be done with an object. Rather, we believe that what actually happens is that a person learns from another, thus acquiring knowledge that is broadly similar, but shaped by the conditions and environment in which it was learnt.

## INTRODUCTION

The world has become an ever more demanding place for businesses to operate; underlying this change are two interrelated trends. The first is the increasing value placed on the ability to control and exploit knowledge; the second is the rapid development of information and communication technologies, which have allowed organizations to become ever more 'virtual'.

Customers are demanding cheaper products and services without compromising on quality, and businesses need to find novel ways to deliver without straining existing resources. One approach to meeting these challenges is to make better use of the knowledge that is available both inside and outside organizations (Chanal and Caron-Fasan 2008; Hildreth and Kimble 2004; Howe 2007; Wenger, Mcdermott and Snyder 2002), an approach sometimes labelled as 'knowledge management' (KM). Communities of Practice (CoPs) (Lave and Wenger 1991; Wenger 1996; Wenger 1998a, 1998b; Wenger, Mcdermott and Snyder 2002) are seen as a tool that can be used to deal with the problem of managing knowledge. Thanks to this concern with ways of creating and managing knowledge in organizations in general, and in 'social communities'<sup>1</sup> in particular, CoPs have become an area of intense study and analysis.

In parallel with the recognition of the importance of knowledge to organizations, a new variable has emerged. The dramatic improvement in performance and the equally dramatic fall in prices of computers, coupled with the rapid spread of and access to Internet, has led to a host of new possibilities to communicate via different forms of computer-mediated communication (CMC). Consequently, a new dimension has emerged; one that allows the formation of so-called virtual communities. With the creation of virtual communities comes the possibility of the 'transfer'<sup>2</sup> of knowledge between people in different geographical locations (Hiltz and Turoff 1993; Sproull and Kiesler 1992). It is therefore important to examine such communities, as they could have important consequences for the management of the knowledge. For example, these communities might be the source of a change that could conduct to the creation of new technologies or processes, or the design of new products and services; likewise, research institutions might be able to find other related groups and/or new areas of collaboration and research.

It is possible, however, that such innovations could be held back by a lack of communication or awareness. It is not an uncommon experience for anybody working in a large organization to discover the existence of a group of peers with the same interests within the same institution only by accident or through some chance meeting. One step towards overcoming these problems would be the ability to discover 'hidden' communities, which might become the seeds from which a fully developed CoP could eventually grow. However, to accomplish this, it is first necessary to deal with several interrelated issues: it is necessary to be certain that such hidden communities can be located; it is necessary to know that these communities can be developed to the level of CoP, and specifically in the case of distributed environments, to a Virtual Community of Practice (VCoP). Finally, if these issues can be addressed, we must then know whether that prototypical CoP can be developed into a fully formed VCoP.

The remainder of the article will deal with some of the underlying theory behind these issues and report on the first steps in our search for 'hidden' Communities of Practice within electronic networks.

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## 1. **KNOWLEDGE TRANSFER IN A DISTRIBUTED ENVIRONMENT**

2. The field of KM is an intellectual and terminological minefield (Hildreth and  
3. Kimble 2002; Wilson 2002). However, the starting point for most discussions  
4. is the distinction between 'tacit knowledge' and 'explicit knowledge' (Nonaka  
5. 1991, 1994; Nonaka and Takeuchi 1995). Tacit knowledge in particular is very  
6. hard to acquire and is utterly personal; however, it is argued that there are  
7. ways to transfer tacit knowledge, if not totally, then at least partially. Gourlay  
8. (2002) gives a good overview of some of the key points associated with this  
9. argument.

10. In the early 1990s, Nonaka suggested using the transfer of tacit knowledge  
11. as a way to achieve success in companies. He proposed the SECI model to  
12. explain how to transfer knowledge from one person to another (Nonaka 1991,  
13. 1994; Nonaka and Takeuchi 1995; Nonaka, Umemoto and Senoo 1996). The  
14. model has been widely accepted and applied in several areas. However, some  
15. remain critical and argue that there are problems with it. Jorna argues that  
16. the model lacks support from learning theories and lacks methodology (Jorna  
17. 1998); similarly, Gourlay states that the model is not supported by empirical  
18. evidence and that its phases are not coherent (Gourlay 2003), while Hildreth  
19. and Kimble (2002) argue that it is flawed, because tacit knowledge can never  
20. be externalized and recorded in an explicit form. Nevertheless, the SECI model  
21. remains widely accepted and has proved to be a useful vehicle through which to  
22. discuss the issues associated with transfer of knowledge.

23. The SECI model is based upon the concept of apprenticeship. It explains  
24. how the tacit knowledge of an expert can be transferred to an apprentice  
25. through a four-phase process. Each phase represents a unique form of trans-  
26. fer between tacit and explicit knowledge. Nonaka called the phases 'modes  
27. of knowledge conversion' (Nonaka 1994: 18) and the model, the 'spiral of  
28. knowledge' (Nonaka 1991: 99) or 'knowledge spiral' (Nonaka, Umemoto and  
29. Senoo 1996: 209). The four phases are '(S)ocialization', where the apprentice  
30. acquires the necessary skills through working with the expert(s); '(E)xternali-  
31. zation', where the person, after acquiring the tacit knowledge, records it in  
32. order to pass it on; '(C)ombination', where the knowledge (now explicit) is  
33. combined with existing explicit knowledge; and '(I)nternalization', where the  
34. knowledge becomes new, richer and more expanded, tacit knowledge.

35. In addition to the move between phases, the model also describes a  
36. movement in ascendant spiral (the spiral of knowledge), where the 'reach' of  
37. knowledge expands as it moves throughout the company. After the knowl-  
38. edge is individually absorbed, it goes to a higher level of interaction (group,  
39. organizational and inter-organizational), where more people can acquire it,  
40. resulting in the creation of new internal knowledge for the company.

41. Nonaka predicted that the SECI model could also be used in a distributed  
42. scenario. The spiral of knowledge, in its higher levels, is an example that shows  
43. how knowledge could spread in non-collated environments (e.g. between  
44. organizations). In 1994, Nonaka expanded several concepts from his first work,  
45. giving a new dimension to his previous ideas, taking into consideration the  
46. interactivity of teams and groups within companies (Nonaka 1994). He detailed  
47. how each phase of the SECI model works in (potentially distributed) groups  
48. and, in doing so, clarified the higher levels of the spiral of knowledge, showing  
49. that the SECI model is applicable to a distributed environment.

50. In 1994, Nonaka also explained that interaction between individuals played  
51. a critical role in the development of new knowledge. He called these groups  
52.

'communities of interaction' (Nonaka 1994: 15). They form a direct link between Nonaka's ideas and CoP; however, for better understanding of how this link is made, it is first necessary to examine the concepts underlying a CoP.

### CoPs AND HIDDEN CoPs

When Lave and Wenger (1991) initially introduced the idea of CoP, it was used to explain a concept of social or situated learning. They put forward the idea of learning as an informal social process, rather than as a pre-planned activity. In this new model, learning happens through social contact; the figure of the novice moves from a situation of peripheral to full participation in a community and their learning comes about through observation and interaction with others.

That first publication attracted considerable attention from several sources. It became clear that CoPs deserved a more detailed analysis and a number of authors attempted to fill this gap. Wenger, in particular, released a number of publications in the intervening years (Wenger 1996, 1998a, 1998b), where he attempted to provide a more systematic, analytical approach to the subject and in 2002, Wenger, McDermott and Snyder released a book aimed directly at managerial audience (Wenger, McDermott and Snyder 2002). This last publication has a more practical tone and more direct approach than its predecessors had.

### The main concepts related to CoPs

Unsurprisingly, the theoretical concepts behind CoPs have changed between their expression in the early work (Lave and Wenger 1991), which was primarily concerned with theories of learning, and in the later work (Wenger, McDermott and Snyder 2002), which was primarily concerned with KM. Cox (2005) in particular has analysed this issue and has summarized how these concepts have changed over time. In this work, we will draw mainly from Wenger's later works.

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, McDermott and Snyder 2002: 4)

This definition outlines the key characteristics that are present in any CoP: the 'domain', the 'community' and the 'practice', all of which are described in detail in Wenger, McDermott and Snyder (2002):

- **Domain:** The domain is responsible for creating a sense of common identity among the members. The shared domain creates a sense of responsibility for, and is the focus of, participation in the community. It defines what the community is about and it is what attracts newcomers and allows them to identify with it. It motivates participation and learning, thus giving meaning to the member's actions.
- **Community:** The community is the hub for interaction and learning for its members. The community creates a strong social bond between its participants. It motivates the sharing of knowledge through joint activities and discussions, creating mutual respect and trust.

1. • **Practice:** The practice represents the concrete expression of the shared
2. knowledge of the community and is the focus of its passion. It is
3. compounded from ideas, language, tools, frameworks and all the tacit and
4. explicit knowledge that the community has.

5.  
6. These definitions are placed within a model with a further three dimensions:  
7. 'mutual engagement', 'joint enterprise' and a 'shared repertoire' of experiences  
8. (Wenger 1998b: 72–85). The idea is based on the assumption that, as social  
9. beings, we engage in enterprises with people that share a passion: mutually  
10. learning, and creating, as a consequence, common knowledge. Although a  
11. more extended and detailed set of concepts can be found in Wenger's work  
12. (Wenger 1998b), we believe that those listed above represent the minimum  
13. requirements for a community to be called a CoP.

14. Now that we have outlined the main concepts underlying CoPs, we  
15. can now return to Nonaka's statement regarding the relationship between  
16. communities of interaction and CoP. From the above discussion concern-  
17. ing the nature of CoPs, we can now see that Nonaka is referring to CoP, as  
18. the three main elements (domain, community and practice) are all present in  
19. the communities of interaction. Nonaka himself makes this link in his paper  
20. in organization science (Nonaka 1994: 23–24) when he refers to the work of  
21. Brown and Duguid (1991). This observation is important as it demonstrates  
22. that CoPs can play a part in the model of knowledge transfer used by Nonaka;  
23. hence, we can root CoPs firmly in the field of KM.

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### **Hidden CoPs**

27. Having established a concrete link between KM and CoPs, we can now return  
28. to the issues outlined in the introduction. In general, CoPs are only the object  
29. of study when the community is fully established. However, there are cases  
30. where CoPs are either unknown or not established yet; in such cases, we say  
31. these communities are 'hidden'. The term 'hidden' does not imply any illegal  
32. or treacherous intent; it simply implies that the CoPs are not yet fully visible  
33. or developed.

34. The idea of hidden CoPs is not new; several suggestions have been made  
35. that indicate that these potential communities exist and need to be studied.  
36. For example, in 1991, Brown and Duguid stated, 'From our viewpoint, the  
37. central questions more involve the detection and support of emergent or  
38. existing communities' (Brown and Duguid 1991: 49). Wenger also saw these  
39. communities in 1998 (Wenger 1998a, 1998b) where he called them 'unrecog-  
40. nized', defining them as 'Invisible to the organization and sometimes even  
41. to members themselves' (Wenger 1998a). Wenger (1998b) divided them in  
42. two separate types: 'potential' and 'latent' – the first type referring to the case  
43. where the members are somehow related, the second one concerning the  
44. case where members share past histories (Wenger 1998b: 228) and later, he  
45. discussed other aspects of such communities calling them 'loose networks'  
46. (Wenger, Mcdermott and Snyder 2002: 70). Finally, Cappe (2008) has also  
47. examined cases of latent CoPs within organizations through her study of  
48. the 'seeds' of CoPs. However, in most of these examples, the communities  
49. concerned were collocated and already had some members in common.

50. One characteristic of the type of 'hidden' community we wish to study is that  
51. they are extremely difficult to detect, even by the people who are their poten-  
52. tial members. This is because these CoPs do not yet have a defined existence.

The reasons a CoP is hidden can relate to specific situations, such as the political scenario inside the organization, lack of awareness by others with similar concerns or a conflict of interests between the community and the host organization. There is, for example, a body of literature that discusses situations where CoPs that already exist and are visible become hidden. Gongla and Rizzuto (2004), using study cases with CoPs in IBM Global Services, discuss the reasons why CoPs disappear from the organizational scene. These include organizational change, such as the redefinition or reorientation of an organizational unit, knowledge domain change and a change in the leadership in the community. Significantly, they also cite examples of communities that have disappeared in order to 'avoid the organizational radar', which implies that some CoPs might actually become hidden because they do not want to be found.

Searching for hidden CoPs, even unintentionally hidden CoPs, is not a trivial task. The first suggestion about how this could be done might be simply to ask the members of an organization what they like or what they care about, and later verify if these answers could lead to the development of a fully fledged CoP. However, as previously mentioned, there may be several reasons as to why a community is hidden, and this topic needs to be addressed carefully. Thus, any research in this area needs to verify which method is appropriate for the community in question.

The methods that can be used might be as simple as interviews or as complex as a longitudinal study using a combination of qualitative and quantitative methods. This is clearly a decision based on a case-to-case analysis, and is highly dependent on the organization's objectives and the characteristics of the community.

### CoPs WITHIN ELECTRONIC NETWORKS

Since the beginning of his work with CoPs, Wenger always considered the possibility of existence of non-collocated communities. In 1991, he affirmed '[...] nor does the term community imply necessarily co-presence, a well-defined, identifiable group, or socially visible boundaries' (Lave and Wenger 1991: 98). In 2002, he discussed this issue more deeply, dedicating an entire chapter of his book to it (Wenger, Mcdermott and Snyder 2002: 113). However, before proceeding, it is again necessary to clarify some of the underlying concepts.

#### ***Social communities, Distributed Communities of Practice, virtual communities and Virtual Communities of Practice***

The term 'social community' (or 'social communities') has been used for a long time, although often only in a rather vague and general sense. Previously writers employed it as a reference to a community (or communities) that had some sort of social bond among its members. Now, the term is more often used as a reference to online communities, also known as 'social networks'. For a better understanding of the term, it is necessary to clarify its use in this article.

'Social community' in this work is a group of people that participate in the same community and have active involvement in social enterprises. Participation in this sense is both personal and social, involves individual and shared feelings and is reciprocal. In addition, the members are able to recognize each other as belonging to the same group (Wenger 1998b).

In similar way the term 'Distributed Communities of Practice' (DCoPs) can also be found in several articles related to CoPs and the Internet; however,

1. its precise meaning is often far from clear. The word 'distributed' refers to  
 2. something divided or spread, additionally, when used together with the term  
 3. 'community', it adds a geographical meaning. In this case, the 'distributed'  
 4. community is not concentrated in a single place, but it is divided between two  
 5. or more locations. Therefore, a 'Distributed Community of Practice (DCoP)'  
 6. refers to a CoP that is spread out geographically: one that does not have a  
 7. precise delimitation in space.

8. Finally, it is also possible to find publications that use the term 'Virtual  
 9. Community'. Rheingold (1993) was among the first to use the term, but it is  
 10. possible to find many other definitions, for example Roberts (1998) and Igarria  
 11. (1999). In computer science, the term evolved from the idea that something is  
 12. a simulation of its real (physical) equivalent (e.g. 'virtual memory'), leading to  
 13. the idea of something that exists only by means of computers and networks  
 14. (e.g. 'virtual world'). Combining these ideas, we conclude that the place in  
 15. which such virtual communities are located is in a non-physical world, some-  
 16. times referred to as 'cyberspace'.

17. It can be seen from this brief discussion that some elements are common  
 18. to all definitions of Virtual Community; thus, a general definition of such a  
 19. 'Virtual Community' might be as follows:

20. A Virtual Community is the type of social community whose members  
 21. use CMC to keep in contact.

22. With the expansion of CMC and the Internet, the concept of a (geographi-  
 23. cally) DCoP has been shaped and reshaped to a point where it has become  
 24. almost natural to equate the term 'distributed' with the term 'virtual'. The  
 25. conflation of these two terms can be seen in many of the publications related  
 26. to CoPs that appear at the end of 1990s and beginning of 2000s.

27. While this may appear to be simply an argument about semantics, this  
 28. is not the case. DCoPs leave open the possibility of occasional face-to-face  
 29. meetings, whereas, at least some definitions of VCoPs do not. We have  
 30. argued previously that face-to-face meetings are often the vital ingredient that  
 31. 'boosts' the community (Kimble and Hildreth 2005), consequently we have  
 32. adopted the following definition for a VCoP that does not exclude the possi-  
 33. bility of meetings in the physical world (sometimes termed 'meatspace') but  
 34. does give due prominence to the role of CMC and meetings in cyberspace.  
 35.

36. A Virtual Community of Practice is a non-collocated Community of  
 37. Practice that uses CMC for its day-to-day communications.

38. Now that the concept of VCoP has been defined, we can say what we consider  
 39. a 'fully developed VCoP' to be. In order to be called a fully developed VCoP,  
 40. a community needs to have, as a minimum, the following characteristics. It  
 41. needs to be a:

- 42. • **Social community:** The community needs to be engaged in a relationship  
 43. that has active involvement in social enterprises in accordance with the  
 44. previous definition of social community.
- 45. • **Community of Practice:** It needs to follow Wenger's definition of CoP  
 46. outlined previously.
- 47. • **Distributed Community of Practice:** It needs to be distributed in space  
 48. in accordance with the previous definition of DCoP.

- **Virtual Community:** It needs to use CMC to communicate, in accordance with the previous definition of Virtual Community.

### **Changing hidden CoPs into VCoPs**

There is already a large body of literature, both theoretical and practical, that deals with nurturing/stewarding/facilitation of both online and collocated CoPs. In the limited space that is available, all we can do is to attempt to highlight some key points for our work concerning how hidden CoPs can be transformed into fully fledged VCoPs.

First, it is crucial to know if the intention is for the hidden CoP to evolve and become a fully fledged community. Wenger always highlighted passion as a driving force that keeps the community together and strong (Wenger 1998b; Wenger, Mcdermott and Snyder 2002). A CoP cannot be created by force or by any artificial means, what is possible, however, is to help nurture its development (Wenger, Mcdermott and Snyder 2002).

Another step is to establish the methods that can 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-by-case basis is it 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, Mcdermott and Snyder (2002) both offer some advice on this topic.

Yet another step is to determine for how long and at what level an intervention is necessary to keep the VCoP active. CoPs often emerge from repeated interactions between groups of people undertaking the same activity (Wenger, Mcdermott and Snyder 2002); what it takes to maintain this activity is very much related to what it is expected to achieve with the community. As an emergent product of human interactions, CoPs do not usually follow strict sets of restricted rules of schedules; thus, it is important to determine what degree of interference in the CoP that can be tolerated without undermining the sense of community. Considering all the benefits to an organization that a fully developed VCoP can bring, all the procedures and time involved are worthwhile.

### **TWO STUDIES BASED ON EXISTENT CoPs**

In order to search for hidden CoPs, it is first necessary to validate the parameters used to identify existent CoPs. Therefore, two case studies have been completed using the idea of 'reification' as used in the concept of 'participation-reification' duality (Wenger 1998b: 57). By reification, we mean treating something that is an abstraction as if it were something with real substance or a concrete existence. Using this concept, Wenger argues that participants reify parts of an activity of CoPs during their discourse

### **The venue**

The studies have been undertaken in the Higher Education Academic Psychology Network, United Kingdom. The institution is one of 24 discipline-based centres within the Higher Education Academy in the United Kingdom. The Psychology Network supports the teaching and learning of psychology



1. across the United Kingdom. A core team, based in York, works with staff,  
 2. departments, professional bodies and overseas organizations to develop  
 3. supportive networks and to improve the learning experience of psychology  
 4. students in higher education.

5. One of the authors (Richard Ribeiro) is an employee of the Psychology  
 6. Network, which has given him a particular insight into the community's internal  
 7. functioning. The main characteristics of the institution are:

- 8.
9. • A small organization. The entire organization consists of eight people: a  
 10. director, a manager, a secretary, three academic coordinators, one comput-  
 11. ing officer and one technical consultant.
12. • An open plan office. This allows easy and quick face-to-face communica-  
 13. tion among the employees.
14. • The intense use of e-mail. Although face-to-face communication is  
 15. common, this is the main channel for official communications.
16. • The use of shared electronic documents and files. A file server is used as a  
 17. means of sharing electronic files. In addition, the existence of an Intranet  
 18. permits quick access to the most used resources.
19. • The existence of informal relationships. Maybe due to the nature of the  
 20. work or maybe due to the small number of employees, the relationships  
 21. within the group are very informal.
22. • A flat hierarchical structure. With exception of the director and the  
 23. manager, all the employees have a similar position in the hierarchy.
- 24.

### 25. **The first study**

#### 26. *The method*

27. Using the concept of reification, Wenger (1998b: 125–26) created a list of indi-  
 28. cators that a CoP had been formed. The list included

- 29.
- 30.
31. 1. Sustained mutual relationships – harmonious or conflictual.
32. 2. Shared ways of engaging in doing things together.
33. 3. Rapid flow of information and propagation of innovation.
34. 4. Absence of introductory preambles, as if conversations and interactions  
 35. were merely the continuation of an ongoing process.
36. 5. Very quick set-up of a problem to be discussed.
37. 6. Substantial overlap in participants' descriptions of who belongs.
38. 7. Knowing what others know, what they can do and how they can contrib-  
 39. ute to an enterprise.
40. 8. Mutually defining identities.
41. 9. The ability to assess the appropriateness of actions and products.
42. 10. Specific tools, representations and other artefacts.
43. 11. Local lore, shared stories, inside jokes, knowing laughter.
44. 12. Jargon and shortcuts to communication as well as the ease of producing  
 45. new ones.
46. 13. Certain styles of acting that are recognized as displaying membership.
47. 14. A shared discourse reflecting a certain perspective on the world.
- 48.

49. These items verify the existence of the three main components of a CoP,  
 50. as detailed in the section 'The Main Concepts Related to CoPs': 'mutual  
 51. engagement', a 'joint enterprise' and a 'shared repertoire'. To verify the existence  
 52. of the characteristics listed above, qualitative research methods were used.

A semi-structured interview was carried out in the workplace, to discover the existence of 11 of the 14 items. Items 6, 8 and 14 have been excluded from the interview, as they were not applicable to the chosen environment. These exclusions should not affect the overall of the research as the list is not rigid, and some items are used to verify the same characteristic. The interview was applied to the staff (seven participants, excluding the researcher) and the results are displayed in Table 1.

*Objectives*

The interview was targeted to confirm each of the items in Wenger’s list, trying to keep the interview as close as possible to the issue discussed in each item. The intention was mainly to verify if Wenger’s list could confirm the existence of a Community of Practice within the Psychology Network. Later on, if successful, such list could be used to trace hidden CoPs.

*Results*

The answers received are listed in Table 1.

The first point to notice is that all of the answers are consistent, clearly showing an agreement with the indicators pointed by Wenger. The only item that shows some diversity is item four (‘Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process’). The interpretation of this item can be a bit confusing and can lead to misunderstandings. The different answers can be the result of the lack of understanding or it can just represent a different opinion on the issue. It is not possible to reach any conclusion based only on the answers received.

Using only the indicators as a base, the results show that the participants have the beginning of a strong collocated CoP. Moreover, the three main components verified are apparent. Mutual engagement, represented by items 1, 7 and 9, is present for all participants. Joint enterprise, represented by items 1, 2, 4 and 5, is strongly represented in the community (the exception is question 4, discussed previously). Finally, a shared repertoire, represented by items 2, 3, 10, 11, 12 and 13, is again very significant.

Items	Participants						
	1	2	3	4	5	6	7
1.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3.	Yes	Yes	Sometimes	Yes	Yes	Yes	Yes
4.	No	No	No	Sometimes	Yes	No	No
5.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13.	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 1: Answers for the interview conducted during the first study.

1. At the end, this study generated several questions. It was not clear that  
 2. the list of indicators had been enough to certify the existence of a CoP.  
 3. Maybe the important aspect present is the underlying existence of the three  
 4. main components ('domain', 'community' and 'enterprise'). Additionally, in  
 5. some cases, items need to be excluded, and in others, the understanding is  
 6. not complete. These can add extra doubts about the efficacy of the whole list.  
 7. Wenger (1998b) did not detail the use of the indicators, resulting in a series of  
 8. unanswered questions.

9. Although the indicators can be used to classify a community as CoP,  
 10. considering its limitations and problems, they are not sufficient to be used  
 11. as the only form of search for hidden CoPs. A more detailed analysis is  
 12. required.

### 13. **The second study**

#### 14. *The method*

15. Using the experience acquired with the first experiment, a new study has been  
 16. carried out at the Psychology Network. This time the approach was to use  
 17. Grounded theory (Corbin and Strauss 2008) to develop a theory that could  
 18. explain the reasons for the formation of CoP. With that knowledge, it should  
 19. be possible to search for similar characteristics in other virtual communities.  
 20.

21. The process includes a set of semi-structured interviews with the same  
 22. group of participants from the first study with one difference: one of the  
 23. participants in the first study has left the job.

24. After each interview a transcript was created and a careful analysis was  
 25. carried out. Each analysis modifies the questions to the following interview.  
 26. These changes have the impact of directing the interview to points that can  
 27. lead to relevant conclusions. Microcoding (Cairns and Cox 2008; Corbin and  
 28. Strauss 2008) has been used on the interviews already processed.

#### 29. *Objectives*

30. As discussed previously, the first study could not answer some questions  
 31. about the nature and origin of an existent CoP, hence the development of this  
 32. new study.

33. This time the objective is to understand how a CoP can form: what are  
 34. the main aspects to be considered when searching for a CoP? The three main  
 35. characteristics of a CoP stated by Wenger (domain, community and enter-  
 36. prise), considered as part of a model with three dimensions of mutual engage-  
 37. ment, joint enterprise and a shared repertoire, are the main guidelines to the  
 38. study of this community. This allows the study to be more concentrated on  
 39. the primordial definitions of CoPs.

40. This study will help to understand deeply the functioning and character-  
 41. istics of a CoP.

#### 42. *Results*

43. At the time of writing, this study is still running and the data analysis is ongo-  
 44. ing, but already preliminary results have begun to appear.

45. The concept of a static community, for instance, with a fixed number of  
 46. participants is clearly different from the reality of the community studied. This  
 47. aspect will require more analysis, but it has been found that although there

are a fixed number of members, sometimes, additional members are added to accomplish a particular task, who then leaves the community at the end of it. Even though those members in a first analysis look like temporary participants of a team, they are in fact, members of the community because all the factors found in a 'normal' CoP (mutual engagement, joint enterprise and a shared repertoire) are present. For example, they have a strong identity with the community and have a notable influence in the community's life.

Another finding is related to the concepts of Virtual Community, VCoPs, DCoPs and CoPs. While the underlying concepts remain distinct, the presence of electronic networks, more specifically the sheer ubiquity of Internet, has created a complex web of multiple connections between them. For example, some members work together in the same place (collocated), but once a week some work from home, using a special program to access their computers in the workplace (virtual and distributed). Additionally, some members are located in different countries (one in Scotland and another in Australia) (virtual and distributed).

The influence of electronic networks does not stop with the change of location of the workplace; it has also changed the way of working. In the community we studied, e-mail has become the official channel for communications. It serves as a repository for information and tasks, complementing the file server and the Intranet, which is already designed to hold the shared documents. The members even use e-mail as way to make requests to persons in the same (open-plan) workplace. That is done to avoid disturbing the rest of the office and the person in question, so he or she has the freedom to read the request when it is more convenient. It is possible to regard this as the community reifying its knowledge as part of its everyday activities.

## CONCLUSIONS

The two preliminary studies showed that the search for hidden CoPs in electronic networks would be a rewarding research.

However, these studies have also demonstrated that it is necessary to use more sophisticated techniques: using Wenger's indicators alone is not enough to capture all the necessary information to discover to hidden CoPs. Although useful in situations where the community is already known, they cannot replace a more detailed study of why and how a CoP forms.

One aspect that now seems clear is the need to concentrate on keeping the current study centred in the main characteristics that define a CoP (domain, community and practice). However, the investigation needs to be open to fresh ideas that sometimes can go against common ideas or traditional definitions and concepts: technology is influencing the way people act in communities, creating new habits and dropping others.

One finding that comes from the existent literature, and that will be necessary to consider in the future steps of the research, is the possibility that CoPs do not necessarily follow the life cycle defined by Wenger, Mcdermott and Snyder (2002: 69). For instance, Gongla and Rizzuto described a case where the community did not follow the established life cycle (Gongla and Rizzuto 2001: 846). Similarly, Janson and Howard (2004: 169) describe a variation in the model described by Wenger. These experiences do not invalidate Wenger's model, but do show that variations can happen and that it is necessary to be open to the possibility of such discrepancies. This will be particularly important in the next phase of the research, as it will be necessary to identify at

1. what stage a CoP actually comes into existence and how its formation is influenced by external events.

2.  
3. Finally, one further facet that is necessary to consider in this work is the motivations and barriers to the participation in CoPs. Ardichvili, Page and Wentling (2003) and Wasko and Faraj (2000) have already discussed this aspect and suggest important insights, for example, explaining that the communities' interests and the common good are often more of a motivator than the self-interest.

4.  
5.  
6.  
7.  
8. Although seemingly complex, the search for hidden CoPs has the potential to generate profound improvements in companies and institutions. To adapt to the always-changing world and constant challenges, those companies and institutions will need to consider new sources of innovations.

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