

Peripheral Members in Online Communities¹

Wei Zhang, John Storck
Boston University
{zhangwx, jstorck}@bu.edu

Abstract

Organizations are exploring the role communities play in knowledge management and online communities are attracting more and more attentions. One difference between online communities and conventional communities lies in the large number of peripheral members in online communities, which is the focus of the study. The study empirically verifies the important role peripheral members play in online communities. It also suggests that in addition to benefiting from online communities, peripheral members also contribute to online communities.

Keywords: Communities of practice, online communities, peripheral members, knowledge management

0. Introduction

Believing that knowledge is the source for sustainable competitive advantage (Stewart 1991; Riesenberger 1998), companies are allocating great amount of resource to knowledge management (Davenport and Prusak 1998). While new technologies are deployed, new organizational structures are also examined and experimented. Initially, communities of practice are groups of people informally bound together by shared expertise and passion for a joint enterprise (Wenger 2000). In these communities, individual experiences are shared, new knowledge is created, and problems are solved through the interactions between community members (Brown and Duguid 1991). Many organizations are now trying to apply the concept to their knowledge management practice, cultivating knowledge-embedded communities (Storck and Henderson 1999; Storck and Hill 2000).

Organizations have long been providing electronic communication to their employees. Technologies such as Wide Area Networks, E-mail, and Distributed Database successfully help organizations to overcome geographic and temporal gap and provide access to both person and knowledge otherwise unavailable. As face-to-face teams moved to electronic virtual teams (Townsend et al. 1998), a natural move would be to bring the communities online. However, to help doing so, we need a better understanding of online communities.

In the study to be presented in this paper, we are particular interested in one special group of online community members, namely *peripheral members*. The reported study describes our first effort in appreciating the role of peripheral members, especially that in knowledge acquiring and contributing, in online communities.

1. Literature Review

1.1 Communities of Practice

Communities of practice are all about practice and identity (Wenger 1998). Practice is about meaning *negotiated* between community members in everyday life. The negotiation of meaning involves the interaction of two constituent

¹ Accepted by AMCIS 2001, Boston, MA.

processes: *participation* and *reification*. Participation refers both to the process of taking part and to the relations with others that reflects this process. Reification refers to the process of giving form to member experience by producing objects that congeal this experience into "thingness".

Practice defines a community through three dimensions: mutual engagement, joint enterprise, and shared repertoire. Identity is produced as a lived experience of participation in specific communities. One's identity is built and maintained through practice, and recognized by other members in the practice. In this sense, the dimensions of practice become dimensions of identity: a competent member should possess mutuality of engagement, accountability to the joint enterprise, and negotiability of the repertoire.

1.2 Online Communities: how they are different

In the last several years, numerous online communities burgeon on Internet. We discuss below the differences between online communities and conventional communities of practice.

?? Open Membership: Communities of practice are open social systems, but not boundary-less. Access to them is not available to anybody. In fact, one has to get legitimacy before participating (Lave and Wenger 1991, p35). In online communities, especially those without written membership criteria, the number of members can be infinite. As long as one is connected, he can join any online community he wants and he can reach all its members easily. The larger the member base, the more knowledge brought to the community by the members. The connections between members could be far and weak, but they have their own advantages and can contribute to problem solving and new knowledge creation (Friedkin 1982).

?? Computer-mediated Communication: Face-to-face talking is the dominant communication method in conventional communities. The cost of narration and collaboration – the two process that enable community members to share knowledge and create new knowledge (Brown and Duguid 1991) – is low. Besides, face-to-face talking involves more social cues (Sproull and Kiesler 1986), which helps to establish member identities. In online communities, communications are computer-mediated. In most cases, members talk to each other through text-based, electronic communication. Compared with face-to-face talking, Computer-mediated communication (CMC) is thinner (Daft and Lengel 1986), thus less a choice for knowledge work, which features both high uncertainty and high equivocality. However, the asynchronous nature (Hiltz and Turoff 1978) and the ability to reach all members easily (Markus 1994) of CMC may make up for the disadvantage.

Previous research on email use demonstrated two dimensions on CMC: task-related and socioemotional (Steinfeld 1986). Examples of task-related use are coordinating projects, monitoring progress, and distributing/providing information. Social use includes maintaining relationships and organizing a social activity. In online communities, everything is in flux: memberships are negotiated; members come and go; joint enterprises will change as the communities evolve; shared repositories grow over time; and communities may last for a long period of time. A substantial part of communications has to be about the community itself: its mutual engagement, joint enterprise, and shared repository. Thus, community-related communications should comprise the third dimension of CMC in online communities.

?? Segregated Practice: In conventional communities of practice, where the community members meet is where the practice goes on. Participation and reification are interweaved in face-to-face conversations between members (Wenger 1998, p62). In virtual community, members are geographically dispersed. Their practice actually consists of two parts: the task practice and the community practice. Task practice is the domain task members perform. It reflects the joint enterprise of the community. Community practice happens when they "talk" with each other. For a group of soap TV lovers (Baym 1999), the task practice is to watch the soap TV programs at their homes; the community practice is to communicate with each other on their individual task practice: they would talk about their feelings about a role or exchange information pertaining to the program they were watching. We call this phenomenon *segregated practice* to characterize the separation of task practice from community practice.

Two implications of segregated practice deserve further attention. The first is that social and community-related communications may be more prominent in online communities than in conventional communities, since task practice does not allow many chances for both kinds of communications. The second is that since task practice is separate from community practice, the identity a member gains from participating in community practice may not consist with his experiences in task practice.

?? Recorded History: In conventional communities, history, if not intentionally recorded, remains distributed in the memories of community members. Accessing history requires interacting with different community members and integrating information from multiple sources. In online community, CMC can be easily stored and further processed to facilitate purposeful browse or search. Part of the history of a virtual community is naturally recorded as the practice is going on. Such records draw a holistic picture about the community. As a result, reading the history makes it easier for newcomers to blend into the community and participate in its practice.

1.3 Peripheral Members in Online Communities

The open access to online communities brings numerous members to them. Among them, most are seldom heard to other members (Baym 1999). Even in relatively closed case such as email distribution lists, only a small portion of members participate frequently on a regular base (Finholt and Sproull 1990). Among those who are not so active, some are pure observers and totally invisible to others. Due to the difficulty in reach these members, we excluded them in this study. Some are light participants, raising voice occasionally during a long period of time. In this study, such members are called *peripheral members*.

The first difference between “peripheral members” here and “peripheral members” in Lave and Wenger (1991) is visibility. In conventional communities, members have to show up in person to participate, thus making themselves visible to others. In online communities, peripheral members are less visible in that if they don’t participate, only they themselves know their existence (Finholt and Sproull 1990). The second difference is that in conventional communities, “peripheral members” are related to “core members” or “full members”. Learning can be viewed in terms of the identity change: from peripheral members to core members. In online communities, due to the large number of peripheral members and their invisibility, only a relatively few peripheral members will become core members over time. Chances are most peripheral members will keep being peripheral. By using the term “peripheral members”, we don’t mean to juxtapose it with “core members”, and don’t implicate any necessity or intention of the identity change as in conventional communities of practice.

The role of peripheral members in online communities is intriguing and has been little researched so far. In the next section, we list research questions that we were going to address in this paper.

2. Research Questions

It is widely accepted that there are indeed many peripheral members in an open online community. But still, how many is many and how peripheral is peripheral? Thus our first research questions concerns defining the “peripheral”:

Q1. What is the participation pattern of the community members and how many of them are peripheral?

Less participating, peripheral members bear less recognizable identity information with them, which would put the members into a disadvantaged position in practices in conventional communities. In an online community, the CMC and recorded history can help peripheral members understand the community without having to engage with other members. When needed, they are able to post messages consistent with the communities’ joint enterprise and thus contribute to the practices. Social communication may be more problematic. Reading the message exchanged between members will of course familiarize peripheral members with the relationships in the community to a certain degree. But jumping into the relationships and socialize with other members will be difficult without regular engagements between members. Hence, we wonder:

Q2. Do peripheral members in online communities communicate differently from non-peripheral members?

As conventional communities of practice, online communities can facilitate knowledge exchange between community members (Faraj and Wasko 2000). Our third research question is about the roles peripheral members play in the process:

Q3. Are peripheral members different from non-peripheral members as far as knowledge acquiring and knowledge contributing are concerned?

3. Methodology

The selected community is a travel forum hosted by a major Internet information service company in China. Basically, it is a moderated online message board, equipped with some searching tools. At one time, it may have one or more hosts². The company also holds many other online communities. The travel forum is selected for reasons beyond our access to it. First, it has been active for more than two years, and has shown no sign of slowing down. It is more stable than most other communities (Rice and Love 1987). Second, it is an active community. In average, more than 100 new messages are posted everyday.

The communication in the community is through text-based messages. Members can post a new message to initiate a new thread, or reply to a posted message to join an existing thread. The messages appear on the board in threaded format for about one week and then are deleted. The forum maintains a best-article collection, essentially the most important part of a shared repertoire. Forum members make extensive use of it. Many would consult it when they make their own travel plans. Inquiring members are also often directed to it.

² See http://abcnews.go.com/sections/tech/DailyNews/china_webpolice000125.html as of Feb 19th, 2001 for more information on hosts.

Messages were periodically downloaded from the travel forum during the period from June 10th to July 28th 2000. The messages used for analysis belong to threads initiated between June 9th and July 21st, 2000, when there was no major holiday. The six-week period are picked to control for daily peaks. Each message's subject, content, author, posting time are recorded. Among the messages, those in threads initiated between July 8th and July 14th were coded to decide the use of communication. The main purpose for choosing message in only one week is to make the coding manageable with limited time and resource but still allowing enough time for community members to read and respond to the messages without losing control of daily peaks.

Due to the time limitation, coding was conducted by one of the authors, and there was no reliability check. Considering the research's explorative nature, we believe it was an acceptable expedient. The recruiting of independent coders has been planned and will be implemented during the next a couple of months. The unit of analysis for coding was the message. The coder tried to put each message into one of four categories: task-related, social, community-related, or illegal. The illegal category consisted of the messages that violate the joint enterprise of the community and therefore, should not be posted in the forum.

To measure members' participation in the explicit knowledge acquiring and knowledge contributing, task-related messages pertaining to knowledge exchange were further classified into two sub-categories: knowledge acquiring and knowledge contributing. Knowledge acquiring messages are those with which a member request information or knowledge from other members. Knowledge contributing messages are those with which a member 1) answers to a request from other members for certain information or knowledge, or 2) takes part in a discussion by joining in an existing thread, or 3) contributes his experience or knowledge by initiating a new thread. Note that not all task-related messages are about knowledge exchanging. For example, many messages try to coordinate member activities, i.e., seeking a travel partner.

In the next section, we present the result. First we present data pertaining to the participation of community members. Based on the data, peripheral members are defined. We then present two comparisons between peripheral members and non-peripheral members regarding Question 2 and Question 3.

4. Results

4.1 Defining Peripheral Members

Since members' task practice is out of reach, we focused on the community practice and measured member's participation with four different variables: number of messages posted, number of threads initiated, number of threads participated, and tenure, which is the numbers of days between the time stamps of a member's first and last message. 1065 different members posted the 9590 messages in 2123 threads sampled. As observed by other researchers, the level of participation is not equal between members (Figure 1, 2, 3 and 4).

Table 1 shows the correlations between the four variables. The correlations between any pair of the variables are at least 0.5 and are significant at 0.01 level, suggesting that the four variables are somehow equivalent in measuring the members' participation in community practices. Hence, we based our definition on peripheral members solely on the number of messages posted: a peripheral member is a member who posted 30 or less messages during the sampling period. The basis for this selection was that the number of messages posted by all peripheral members is about the same as that of messages posted by all non-peripheral members, as shown in Table 2.

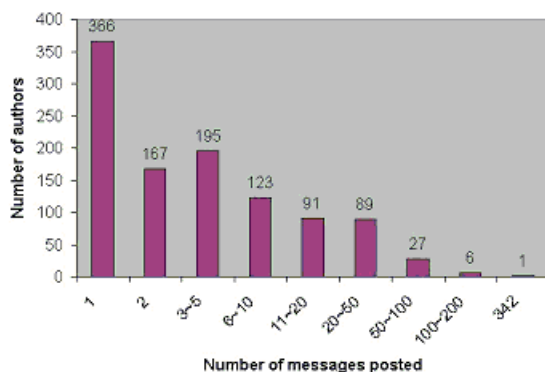


Figure 1: Participation Level of Members Measured by Number of Messages Posted

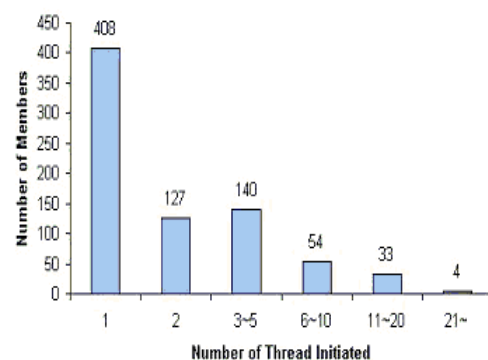


Figure 2: Number of Threads Initiated by Members

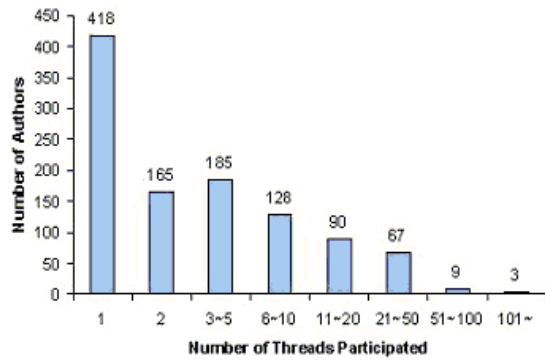


Figure 3: Number of Threads Participated by Authors

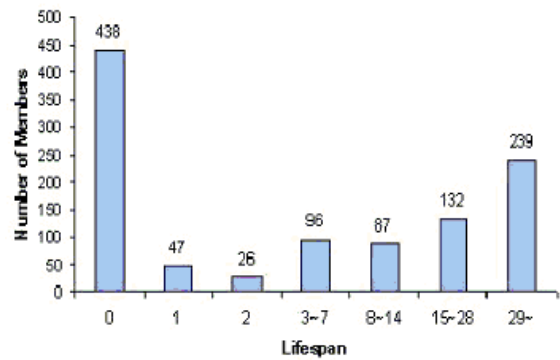


Figure 4: Lifespan of Members

Table 1: Correlations Between Four Measurements of Member Participation in Community Practice

	Number of Messages Posted	Number of Threads Initiated	Number of Threads Participated	Member Lifespan
Number of Messages Posted	-			
Number of Threads Initiated	0.723**	-		
Number of Threads Participated	0.982**	0.700**	-	
Member Lifespan	0.572**	0.514**	0.572**	-

** p < 0.01 (2-tailed).

Table 2: Peripheral Members vs. Non-peripheral Members

Member Category		Peripheral	Non-peripheral
Whole Data Set	Number of Members	987	78
	Average Number of Messages Posted	4.88	61.24
	Total Number of Messages Posted	4813	4777
Coded Data Set	Number of Members	291	62
	Average Number of Messages Posted	2.04	7.68
	Total Number of Messages Posted	594	509

Under this criterion, 987 of 1065 members who had ever posted a message during the sampling period were classified as peripheral members. In another word, 92.68% of all members of the online community were peripheral members. They accounted for about half of the messages posted during the sampling period.

4.2 Peripheral Members vs. Non-peripheral Members

Among the 1103 coded messages, peripheral members posted 594 (Table 2). Direct comparing peripheral members with non-peripheral members will be difficult since the data points is heavily skewed toward peripheral members. We aggregated the data on peripheral members and computed the percentages of each of the four communication uses among all messages posted. Then, we compare the percentages of non-peripheral members with the aggregated data using one-sample t-test. Table 3 summarizes the results of the t-tests.

There are two interesting results in the table. The first is that peripheral members seemed to be more focused on the task of online community than non-peripheral members ($t = -3.60, df = 61, p < 0.001$), maybe because non-peripheral members socialize more than peripheral members ($t = 4.58, df = 61, p = 0.000$). The second is that there is no significant difference at 0.05 level between the two populations regarding unfitted communications ($t = -1.67, df = 61, p = 0.10$). As far as community-related communication is concerned, percentages for both were low, but that of peripheral members is significantly higher than that of non-peripheral members ($t = -7.72, df = 61, p = 0.000$).

4.3 Knowledge Acquiring and Knowledge Contributing by Peripheral Members

Similarly to what we do in 4.2, we aggregate the knowledge acquiring and knowledge contributing data on peripheral members and one-sample t-tests were conducted. Table 4 shows the results.

Two sets of comparison were conducted: the percentage of knowledge acquiring messages and knowledge contributing messages to task-related communications and to all communications, respectively. Peripheral members benefit significantly more from the knowledge exchanging in the community. They are much more likely to request information from the online community ($t = -4.34, df = 47, p = 0.000$ and $t = -5.06, df = 61, p = 0.000$, respectively.). Among task-related communications, non-peripheral members' participation in knowledge exchanging in online communities are more knowledge contributing ($t = 5.12, df = 47, p = 0.000$). But surprisingly, when we take all communications into consideration, peripheral members' knowledge contribution would equal that of non-peripheral members ($t = -0.47, df = 61, p = 0.64$).

Table 3: Comparing Communication Percentages of non-peripheral members against peripheral members

Percentage	Test value	t	df
Task-related communication	55.72%	-3.60***	61
Social communication	37.04%	4.58****	61
Community-related communication	1.35%	-7.72****	61
Unfitted communication	5.89%	-1.67	61

***: $p < 0.001$

****: $p = 0.000$

Table 4: Knowledge Sharing and Knowledge Contributing by Peripheral Members

Percentage	Test value	t	df
Knowledge acquiring in task-related communication	29.00%	-4.34****	47
Knowledge Contributing in task-related communication	62.54%	5.12****	47
Knowledge acquiring in all communication	16.16%	-5.06****	61
Knowledge Contributing in all communication	34.85%	-0.47	61

****: $p = 0.000$

5. Discussion

5.1 Summary and Generalizability of Findings

Three of our findings are particularly interesting. First, relatively little research concerns measuring how large the peripheral membership of an online community might be. Our methodology enables us to estimate that more than 90% of the community can be deemed peripheral. Next, we note that although peripheral members behave differently from non-peripheral members, their mode of participation in this online community indicates that they are indeed members: they share identity, communications repertoires, and a sense of engagement with other members. Finally, while peripheral members benefit more from knowledge exchanging in the community, they contribute as much as non-peripheral members.

These findings are of both theoretical and practical significance. Theoretically, they confirm that in online communities, there are much more peripheral members than non-peripheral members ((Finholt and Sproull 1990; Baym 1999)). Individually, they participate less. However, accumulatively, they can contribute to the knowledge exchanging in the community as much as non-peripheral members. In a certain sense, peripheral members' participation in an online community is more important than one may expect, which calls for further research focused on them. Practically, in many online communities, peripheral members are deemed as unwanted "free-riders", often urged to speak and contribute. The findings here ask online community managers to rethink the role they play. It may be better to welcome peripheral members and allow them to keep peripheral and to contribute when they feel comfortable.

However, caution has to be used when interpreting the findings. In addition to the aforementioned issue of only one coder, some other factors may limit the validity of the research. This study is essentially descriptive and exploratory, and is based on observations of only one community. In addition, only observational data are used, in part due to the difficulty in

surveying community members. For example, we have no information about communication between members outside the forum. Therefore, we were not able to evaluate the impact of such back-channel communication on the community. Also, we didn't measure the quality of members' participation, which cannot be obtained without surveying the members involved.

5.2 Future Research

To deepen our understanding of online communities and peripheral members, future research from different perspectives is needed. We are especially interested in the following.

First, this study confirms the importance of peripheral members as a whole to the forum. Due to the difficulties in reaching individual peripheral member and the number of peripheral members, the study doesn't reveal exactly how individual peripheral members benefit from and contribute to the community. We don't know specifically what attracts peripheral members to the community and why they contribute their knowledge to other members. Answers to these questions would draw a more complete picture of the role of peripheral members in an online community of practice.

Second, the online community is about travel, which is not work-related. Research found that there are significant differences between work-related electronic groups and non-work related electronic groups (Finholt & Sproull 1990). When online communities are concerned, will the members in a work-related community behave differently than those in a non-work related community? And if yes, how? A multiple-site case study of work-related communities in real organizations will be able to answer these questions.

Third, the community studied is a Chinese community hosted by a company. Is the community affected by the company's business philosophy and business model? Does the unique diffusion of the Internet and World Wide Web in China, as well as the Chinese culture, affect members' online behavior? The subject population studied may have a different view of the Web and of other users of the Web than other populations. A cross-cultural research on these issues seems extremely intriguing.

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