Online communities as communities of practice: a case study

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Abstract
Purpose – The purpose of this paper is to investigate to which extent the concept of communities of practice (CoPs) can be applied to online communities and to explore how organizations can better utilize online social structures for their knowledge management practice.

Design/methodology/approach – A case study was used to examine an online community with the practice-and-identity framework that characterizes conventional CoPs. Qualitative data analysis was conducted primarily on 7,853 messages downloaded from the online community during a six week period.

Findings – The results showed how an online community could manifest the practice and identity characteristics of conventional CoPs as community members actively engaged in their shared practice and identity development while pursuing a joint enterprise.

Research limitations/implications – The study was conducted in a single Chinese online community on traveling, which may limit the generalizability of the findings.

Practical implications – This study suggested how organizations can nurture online CoPs. In addition, a hierarchical model was proposed to help organizations identify the appropriate online social structure for their knowledge management purposes.

Originality/value – This study empirically verified that CoPs can emerge from online communities and demonstrated that the concept of CoPs can be used to guide knowledge sharing and knowledge creation in online environments.

Keywords Online operations, Communities, Knowledge sharing, China

Paper type Research paper

Introduction
The concept of communities of practice (CoPs, first introduced in Lave and Wenger, 1991) has received much attention from both practitioners and researchers in the area of knowledge management. CoPs are “groups of people informally bound together by shared expertise and passion for a joint enterprise” (Wenger and Snyder, 2000, p. 139). In these communities, individual experiences are shared, new knowledge is created, and problems are solved through interactions between community members (Brown and Duguid, 1991, 1998, 2001; Wenger, 1998). Recognizing the inherent capabilities of CoPs in handling knowledge, organizations are applying this concept to their knowledge management practices, attempting to cultivate such knowledge-embedded communities (e.g. Liedtka, 1999; Wenger et al., 2002).

Original research in CoPs has focused on communities in which members are collocated and face-to-face communication is the form for interaction (Brown and Duguid, 1991; Lave and Wenger, 1991; Wenger, 1998). Some literatures attributed the success of CoPs in handling knowledge to the face-to-face communication and the close connections fostered through the personal interactions (e.g. Brown and Duguid, 1991). However, as organizations become increasingly geographically distributed, the demands to expand the scope of
collocated CoPs to include distant members grow. An expanded CoP could pool the knowledge distributed across the organization and allow the accumulated knowledge to be shared and utilized enterprise-wide. Communities themselves may also benefit from the expansion because the distant members with diverse sets of skills and resources can be important for the communities to sustain themselves (Butler, 2001; Granovetter, 1973). On the other hand, many organizations have utilized online communities to connect geographically dispersed organizational members (Constant et al., 1996; Finholt and Sproull, 1990; Williams, 1999; Williams and Cothrel, 2000). It seems a natural move for them to develop such online communities into online CoPs, leveraging existing technical infrastructures and harvesting the power of CoPs in handling knowledge (Brown, 1998).

It is one thing to create a technical environment that allows organizational members to communicate with each other online; it is another thing to see a community emerge from the connected members (Erickson, 1997; Jones, 1997), let alone a CoP that has been conceptualized in the non-electronic domain (Duguid, 2005; Roberts, 2006). In fact, few studies have convincingly demonstrated that CoPs can emerge from online communities, casting a shadow of doubt on whether the lens of CoPs can be meaningfully used to examine online communities and to which extent online communities can be utilized effectively for knowledge management. This paper took a first step in addressing these concerns by showing the existence of a CoP in an online community based on Wenger's characterization of CoPs (Wenger, 1998).

Theoretical background

The practice-and-identity framework of communities of practice

Wenger (1998) characterized CoPs in terms of practice and identity: practice defines what the members do and identity defines who the members are in regards to the practice. Practice and identity are inseparable: it is through practice that community members shape both the community as a collective and themselves as individuals. Practice involves the interaction of two processes: participation and reification. Participation refers ”both to the process of taking part in the community and to the relations with others that reflects this process” (Wenger, 1998, p. 52). Reification refers to the process of ”giving form to member experience by producing objects that congeal this experience into ’thingness’” (Wenger, 1998, p. 55).

According to Wenger (1998), how practice is shaped in a community and how practice shapes a community are reflected along three dimensions: Mutual engagement describes how community members interact with each other in the practice. Joint enterprise embodies the shared interest of community members and the goal of the community as a whole, and symbolizes what the community is about. Shared repertoire consists of ”routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions, or concepts that the community has produced or adopted in the course of its existence, and which have become part of its practice” (Wenger, 1998, p.83). A shared repertoire reifies the history of a community’s past engagement, which in turn, can help community members participate in future practice.

The formation of member identities is embedded in practice. It is through engaging in community practice that members establish who they are in regards to pursuing the joint enterprise. As Wenger put it, ”Identity in practice is defined socially because it is produced as a lived experience of participation in specific communities” (Wenger, 1998, p. 151). It cannot be granted or self-claimed, but must be built and maintained through practice, and at
the same time be recognized by other members in the practice. In this sense, one’s identity embodies much more than competence. It reifies a member’s entire participation history in the CoP.

The power CoPs possess in handling knowledge can be understood through the evolution of practice and identity in CoPs, which resulted from a “shared history of learning” (Wenger, 1998, p. 86). Through learning, community members negotiate new practices based on past and present practice and on their identities. They push current practice to new levels, and they themselves gain new identities during the process: competent members are identified; incompetent members are labeled; newcomers become experienced members; and old-timers who are no longer involved lose significance. In these ways, CoPs provide an effective environment for not only knowledge sharing, but also knowledge creation for all members (Brown and Duguid, 1998, 2001; Lave and Wenger, 1991).

While Wenger’s characterization of CoPs is not the only one and the concept of CoP is still evolving (Cox, 2005), it is by far the most systematic and comprehensive description of CoPs. The practice-and-identity framework can be used to examine a certain social structure and identify whether it constitutes a CoP or not (Thompson, 2005). The classical studies of CoPs were based on extensive ethnographic studies (Brown and Duguid, 1991; Lave and Wenger, 1991; Wenger, 1998). However, much follow-on research in CoPs has not critically examined whether the communities under study qualify as CoPs, which may have contributed to the misuse and overuse of the CoP terminologies lamented by some scholars (e.g. Duguid, 2005; Kling and Courtright, 2003; Osterlund and Carlile, 2005; Roberts, 2006).

Online communities and communities of practice

While online communities have been the subject of many publications, the terminology was often undefined. Here the authors follow Jones’ characterization of “virtual settlement” and refer to online communities as a cyber-place with associated group computer-mediated communication (CMC) featuring:

- a minimum level of interactivity;
- a variety of communicators;
- a minimum level of sustained membership; and
- a virtual common-public-space where a significant portion of interactive group-CMCs occurs (Jones, 1997).

Most online communities studied in previous research exhibited these four characteristics, and this definition is consistent with how practitioners used this terminology (e.g. Williams, 1999; Williams and Cothrel, 2000). These four characteristics of online communities embody some – but not all – of CoP characteristics discussed above. Hence online communities are not necessarily online CoPs as the online environments may affect the emergence of online CoPs in a few ways.

First of all, online communities rely on CMC. Previous research in conventional CoPs emphasized the role that face-to-face interaction plays in facilitating narration and collaboration – two processes underlying knowledge creation and sharing (Brown and Duguid, 1991). According to media richness theory, face-to-face communication is a richer medium than CMC (Daft and Lengel, 1986). It involves more social context cues (Sproull and Kiesler, 1986), is felt to be more personal, and allows for more immediate feedback, and thus
is considered a better choice for interactions in knowledge work that features high equivocality and/or high uncertainty (Daft and Lengel, 1986). Hence face-to-face communication serves forming CoPs better than CMC. Later studies found that people do not always select their media in ways that are consistent with the media richness theory (Markus, 1994). By extension, it is not clear to what extent communications in online communities are affected by media richness. Community members may prefer CMC to face-to-face communication because of its convenience, its availability (across both geographical and temporal gaps), its capability for reaching a large number of members simultaneously (Markus, 1994), or even because recipients of the communication would tend to focus on the message rather than the cues that are filtered out (Bagozzi and Dholakia, 2002). Moreover, as users become more experienced with CMC, they get better at using it for expressing non-verbal cues and affect (Carlson and Zmud, 1999; Walther, 1995), thus overcoming some of the limitations assumed by media richness theory.

Second, it is much easier to join online communities than to join conventional CoPs. While conventional CoPs are open systems, membership is by no means free. Potential new members are typically sanctioned, explicitly or implicitly, by existing members before being able to participate peripherally (hence the notion of legitimate peripheral participation, Lave and Wenger, 1991). Online communities, by default, have few explicit membership criteria. As long as one is connected to the computer network and has access to the online place where the community meets, one gets access to the online community. Moreover, CMC used in online communities allow one-to-many or even many-to-many communications. There is no incremental cost for members to engage with an additional member. Virtually borderless online communities usually enjoy a much larger member base than conventional CoPs.

It remains to be seen how size exactly contributes to the forming or dissolving of CoPs (Roberts, 2006). On one hand, the larger the member base, the more knowledge can be brought to the community by its members, the more likely members will be exposed to new experiences and competencies. On the other hand, large member bases can also negatively affect a community (Butler, 2001). When each member brings to the community his or her own understanding of what the community is about, having too many members may make it difficult to converge on the joint enterprise; interactions between any subset of members may be occasional and unsustainable; shared repertoires may be difficult to build, to maintain, and to be understood. Should all these happen, members would be discouraged to participate; identity building and maintenance would be hampered, and eventually the community would demise.

Moreover, levels of member participations vary widely in online communities, typically with a small number of members being quite active and most members only participating occasionally (Baym, 1999; Finholt and Sproull, 1990). The large number of light participants may pose a hurdle for the emergence of online CoPs, as those who contribute more may be discouraged by the majority that contribute little. Nevertheless, online communities may have a better chance to overcome the large number of light participants: Although individual contributions from each light participant are trivial, the collective contributions from all light participants can still be significant simply because there are a large number of them. Their contributions are also more visible in online communities than in conventional CoPs due to the persistent nature of CMC (Erickson et al., 1999). Consequently the levels of engagement by light participants may be perceived higher than they actually are. For these reasons, the effects of light participants on online communities are yet to be better understood.

Finally, participation history in online communities can be naturally reified and stored. In conventional CoPs, due to the nature of face-to-face communication, communications and engagement history remain distributed amongst the memories of community members until they are intentionally collected and recorded, which requires interacting with involved community members who may or may not be available or reliable. An accurate history often only emerges after information is integrated across multiple sources. By contrast, in online communities the content of CMC — whether text-based or not — can easily be stored in various formats and made available for various manipulations such as browsing, searching, retrieving, analyzing, visualizing, and mining (e.g. Donath et al., 1999; Erickson et al., 1999).
In this sense, the history of an online community is recorded as the practice is enacted. This recorded history helps members to learn not only about past community practice but also about the identities of individual members because it is their participations that were recorded. This way, the recorded history becomes a great learning resource in online communities.

Some scholars doubted the possibility of online CoPs (Duguid, 2005; Schwen and Hara, 2003). Acknowledging their concerns over the impediments to CoP development in online environment, the authors notice that the online environment also offers unique facilitations to the emergence of CoPs in online communities. The rest of the paper presents a case study of an online community that demonstrated the practice and identity characteristics of CoPs as described by Wenger (1998). In so doing, the authors hope to lend an empirical support to the existence of online CoPs and thus the virtue of utilizing online communities for knowledge management. Hopefully, the online CoP under study can shed more light on how online CoPs emerge and how organizations can better utilize it and other online social structures to improve their knowledge management practice.

Methodology

Research site

The selected community is a moderated online travel forum hosted by a major internet portal company in China. It was one of dozens of online communities hosted by the company. Founded in 1998, it had evolved into one of the best Chinese online communities for backpacking. The company provided the necessary hardware and software, but was not involved in its daily businesses. Instead, a small group of moderators kept the community running. All moderators were volunteers; they were not associated with the company in any other way. Technically, the travel forum utilized a web-based bulletin board system where text-based messages were displayed in a threaded format.

The travel forum was chosen for its stability, activeness, and longevity. Members in a new community are likely to behave differently from members in a stable community. Because this community had existed for almost two years by the time of data collection, it is unlikely that observed members’ behavior could be attributed primarily to initial reactions to a new technology or to newness of the community (Rice, 1988). The forum was highly active, with a large number of new messages posted everyday. A high level of activeness is necessary to support engagement between members and consequently for the members to shape practice. Finally, the travel forum had shown no sign of slowing down. It was to our advantages to choose a community whose longevity would allow long-term assessment.

Data collection and analyses

Messages posted to the travel forum were the primary data used for this study. Because the company did not archive the posted messages, messages were downloaded periodically from the forum. The messages used for analyses belonged to threads initiated during a six-week period during which there were no national holidays. National holidays spur much travel in China and would have inflated the level of activities in the forum. The six-week period also allowed us to control for daily peaks.

In addition to the downloaded messages, artifact information from the forum and the hosting company were collected. Examples include the FAQs, the instructions for newcomers, and messages archived in the best article collection. The authors conducted an unstructured phone interview with one moderator who had actively served the forum since its inception.

“Help files and FAQs illustrated another important aspect of the shared repertoire.”
Results

Practice

Engagement. The downloaded data set included 7,853 messages in 2,123 threads. On average, 50.55 threads were initiated everyday, with a standard deviation of 13.80. Even on the quietest day, 19 threads were initiated. The average number of messages per thread was 3.70. The largest thread had 76 messages. Both the overall activity level and the average thread size exceeded those reported in some prior studies in online communities (e.g. Finholt and Sproull, 1990; Wasko and Faraj, 2005). The large average thread size suggested a fairly high level of engagement between community members.

Data analysis revealed a few patterns by which members interacted with each other. The most common pattern focused on knowledge exchange. The most prominent form of this pattern is question-and-answers. For example, one seed message read:

Subject: Regarding Dunhuang and Jiayuguan, please advise.
I plan to visit the Silk Road this summer, and have a few questions . . .
1. Can I go from Dunhuang to Yumenguan? If yes, what is the transportation, how long will it take and how much will it cost?
2. What is the best way from Dunhuang to Jiayuguan? How long will it take?
3. How can I get to see the fresco of Wei/Jin dynasty in Jiayuguan and the Qiyi glacier? How much time and expenses do I need? Have anybody been there? Is it worth a visit?

Among the replies are:

Subject: Advices.
1. Take a taxi. One day is enough. Cost: a Xiaoli [1] for around 230 yuan
2. Take a late bus from Dunhuang and get to Jiayuguan in 5 hours
3. Refer to Lonely Planet
4. Take the evening train leaving Jiayuguan and get to Lanzhou the next morning

Another form of knowledge exchange focuses on creating new travel plans. Many members had a routine for their trips. Before they left, they would create a travel plan integrating the knowledge gathered from the travel forum as well as from other sources. Sometimes they would post their travel plans to the forum asking for inputs from fellow members before finalizing them. On the trip, they would occasionally report to the forum their most recent progress and provide some brief updates on the current situations at their locations. After the trip, they would submit their trip reports in time. Embedded in these reports – called homework in the forum’s slang (see later discussions on the shared repertoire) – was most up-to-date, personal experience about backpacking to a destination.

A second common pattern concerned coordination between members who could be travel partners. Such messages often began with descriptions of the destination, schedule, personnel, and cost, followed by a call for someone to take the trip together. Those interested could reply to the original message asking for more details. For example, the original message:
Subject: Who wants to tour Xinjiang?
We are planning a trip to Xinjiang. Are you interested in joining us?
We already have 3 people (1 male and 2 female), all enjoy traveling around.
If you are interested, please tell us your gender, travel experience, as well as your suggestions on our trip.
Email: XXX@XXX.XXX Your reply is appreciated!

The following message replied:

Subject: I am also leaving for Xinjiang.
I am leaving for Xinjiang around August. I am in Beijing. One male and one female. When do you leave?

The third pattern was about social interactions between community members. One common practice among members was to report their progress to others when they were on the road. In the seed messages, the members typically would thank those who helped them make the plan, provide the most up-to-date information on their route, and describe their experiences. These messages often received many supportive responses. For a short example:

Subject: XXX (his own user name) has arrived in XXX (name of a city) safely, and still in a pretty good shape.

Consistent with findings from previous studies in online communities (Baym, 1999; Finholt and Sproull, 1990), participation levels varied among members. Over the six week data collection period, 766 members initiated threads and 1,065 members posted messages in the forum. More than half of them (412) posted only once. The two moderators each posted 122 and 262 messages respectively. The most active non-moderator member posted 160 messages. The 2 percent most active members posted 25 percent of all the messages. The uneven participation levels were shown graphically in Figure 1, and will be examined more closely later.

Joint enterprise. Although there was no written statement on the joint enterprise of the travel forum, there seemed an implicit agreement between community members that the forum serves to promote backpacking in China and to facilitate knowledge exchanging between backpackers. Reflecting this, the FAQs listed three kinds of messages that were not allowed in the forum: advertisement, chatting, and messages that are irrelevant to backpacking. Still, newcomers may impose their own understanding of the joint enterprise on the community, posting inappropriate messages.
The most powerful correction to the violations is enforced by the moderators: they simply deleted inappropriate messages. In cases when the moderators missed deleting an inappropriate message, other members would often post a reply pointing out why they thought the message did not serve the purpose of the forum and should not be posted here. Such corrective actions indirectly indicated the existence of a joint enterprise, however implicit it might be.

The negotiation of the joint enterprise was also an ongoing process in the travel forum. Occasionally members disagreed with each other on whether a message was appropriate or not. The disagreements could lead to heated debates. In the phone interview, the moderator mentioned one debate that was about what to do with advertisements posted to the forum by travel agencies. Some members believed they should be deleted because the forum was about backpacking, not organized group tours. Others insisted that they also contained useful information that could be used for backpackers and could be allowed. Finally the two sides reached a compromise, agreeing that even though advertisements were not welcome, they could be tolerated provided that they explicitly labeled themselves as advertisements. The moderators then accepted the resolution and only deleted unlabeled advertisements from then on.

Some of the most heated discussions in the travel forum transcended backpacking skills or knowledge about destinations. They were about more abstract topics such as why backpacking. An old-timer recalled in his message that the most memorable discussion topics of 2000 addressed issues such as how to appreciate different cultures, environmental protection, and the conflicts between environmental and cultural protection and development. Clearly, members were not satisfied with merely discovering where to go and how to get there. They wanted to achieve a deeper understanding of backpacking. In doing so, they demonstrated their dedications to the joint enterprise and their determinations to push it to higher levels.

To the extent that members were able to negotiate the joint enterprise, that the members converged on a process for eliminating messages that did not contribute to the joint enterprise, and that they dedicated to the deep-understanding of their joint enterprise, this online community demonstrated a shared conception of their joint enterprise.

Shared repertoire. Over time, the travel forum had developed a rich shared repertoire. It had its own languages. The members call the forum donkey pot because the two phrases are pronounced similarly in Chinese. Word big-shrimp was borrowed from other online communities to refer to members who were experienced backpackers. When members returned from a trip, they were expected to submit reports to the forum to describe their trips. Such report messages were called homework. To post a message sometimes was called to pour water, for the forum was the pot. Dinner or lunch meetings between members were called corruptions, even though they paid for food and drink with their own hard-earned money. These terms appeared so frequently in the messages that they had to be explained in the FAQs to newcomers.

Help files and FAQs illustrated another important aspect of the shared repertoire. FAQs included answers to questions ranging from the forum language to how to negotiate the user interface. There were two help files: one special survival manual targeting newcomers and one user manual for everybody. The survival manual was a quick-start manual for beginners, introducing the forum and its operations. It also defined behavioral norms by describing acceptable member behavior. The user manual covered more advanced technical aspects of the user interface, providing in-depth details on topics such as posting messages, searching messages, browsing messages, and links to related forums.

Another important item of the shared repertoire was the collection of best articles, i.e. high-quality messages that were deemed worth archiving for future reference. The collection was maintained by the moderators. The selected articles were grouped by destinations and special topics such as environmental protection and outdoor equipment. All were original works by community members. Unlike other travel guides, these articles were detailed narrations of the authors’ personal experiences of backpacking to a particular destination.
Forum members made extensive use of this collection. Many of them referred to articles in this collection when making their own travel plans. Members who posted messages asking for advice were often directed to this collection. In fact, the FAQs advised community members to search the collection first before posting their questions to the forum.

Of particular interest was that many of the articles in the collection followed an implicit message style called _gonglue_, which means “attacking strategy” in Chinese. _Gonglue_ messages embedded backpacking knowledge in personal experience, as illustrated in the message below:

…The guesthouse of the district government locates on Shangdong Road (before known as Beijing North Road), against the government hall across the street. After a long, rough way, you can take a good rest here. A standard room in the new building, with bathroom and TV, is price at RMB$80 per day in the off-season, and $100 in the peak-season. A dish with meat in its restaurant cost $7, and you can feed yourself well with $12. It is safe and quiet. Compared with other crowded hotel, this guesthouse, in my humble opinion, is really a good place for midway break.

Even though no explicit, formal definition of the gonglue style could be identified in the forum, there appeared to be implicit agreement among members regarding what kind of messages qualified as gonglue. They referred heavily to gonglue messages when making their traveling plans, as indicated in the following subject-only message:

Subject: Please advise destinations around Guangzhou to consider for a two- or three-day trip. Better with backpacking gonglue.

Identity

Community identity. A few evidences point to the existence of a collective identity of the travel forum. First, a forum logo distinguished the forum from other online communities hosted by the same portal company and communities described in previous literatures. The logo resulted from negotiations between forum members: it was the outcome of a design competition in which all members were invited to serve as designers and judges. With help from a few forum members, the logo was made available to all forum members on memo pads, post-its and stickers. Many members sewed the logo to their backpacks to show off their memberships and to attract other members (whom they had probably never met in real life). The logo and the associated artifacts enhanced the unique identity of the community.

Several interface features of the travel forum further distinguished it from other communities hosted by the portal company. The home pages of all communities used to have the same standard appearance prepared by the company. But the appearance of the travel forum was then changed: its homepage featured a faded forum logo in the background while homepages of other communities had no background image. The first page of the travel forum displayed 500 messages while those of other communities displayed only 200. The long page saved members from having to turn pages frequently – an important feature for members who had slower internet connections. As with the forum logo, these features were suggested by community members and were discussed and debated before final decisions were made.

Finally but perhaps most significantly, members identify themselves with the forum. They were proud to be members of the community. Following the nickname of the forum (donkey pot), they proudly call themselves donkeys, a name not only implying the joint enterprise of the community but also symbolizing tolerance, persistence, contribution, and modesty in Chinese literature – all desirable characteristics for a backpacker.
Member identities. In the travel forum, individual members worked to build and maintain their own identities. As members in conventional CoPs, they did so by participating in the community's practice. For example, the moderators were among the most respected members in the forum. They earned their reputations through their diligent contributions to the community, not only as a moderator but also as skilled members. Their efforts in both keeping the forum running and contributing to the forum were highly appreciated by other members. One member wrote the following message praising the moderator who accepted our interview:

Our neighbor forum is praising our moderator. To be honest, I’ve been to many forums. XXX (another moderator's user name) from another forum and XXX (the moderator's user name) are the two best . . .

Another message addressed to the moderator referred to his backpacking experience:

XXX (the moderator’s user name), seems to me that you know everything. I want to go to Yan’an. Would you please tell me if it is OK for me to get to Niulin, Shanxi first, cross the Yellow River and then get to Yan’an by bus?

There were other ways for members to build their own identities than serving as moderators. The most common one was through posting messages (e.g. homework) and demonstrating certain backpacking skills or knowledge. The following message illustrated that knowledgeable members did get recognized by other members:

Subject: XXX (member’s user name) – What should I know if I am going to XXX (a destination) in July or August?

I am leaving for XXX and want to learn something about it, such as climate and food. In the last few days I read your brilliant articles. You sure know a lot about there. Do you have anything to teach me?

Thanks a lot.

Another way identity was built was through owning certain resources such as local information. Some members disclosed the city in which they lived – in their messages. When other members planned to visit these members’ home cities, they often asked for their help:

Subject: XXX (a member’s user name), please help

… I am going to be with donkeys in Sichuan but haven't found a place to stay yet. Do you know anything about renting an apartment around YuDaQiao? . . .

The development of member identities in the travel forum appeared to be facilitated by the software environment offered by the hosting company. All members had to register with the hosting company before posting messages. No two members could use the same user name, which helped to prevent confusing one member with another. A profile was generated at the end of registration. Included in the profile were links to the member’s messages posted to all communities – including the travel forum – hosted by the company. The compilation of the links was automatically updated each time the member posted a new message. The profile page could be invoked by clicking on a member’s user name, which was displayed next to message subject. Few members disclosed their personal information in the profile, but the profile still could supply much information about the members by linking to all their postings.

The company also provided a search engine that allowed searching for messages recently posted to an online community by user names. Thus members of the travel forum could find all the recent postings by a particular forum member and learn about the member’s recent participation through reading the found messages. The best collection could also help to identify knowledgeable members, as the more messages selected into the best collection, the more knowledgeable the author would be regarded.

Nature and level of member engagement

As discussed before, the large member base of online communities and the uneven participation level among members may negatively affect the communities. To address
these concerns, the authors took a closer look at member engagement by selecting one
week’s worth of threads and coding the 1,103 messages included in the threads by their
topics. Messages contributed by light participants were compared with those contributed
by more regular participants. For this study, light participants were defined as members
who posted 30 or less messages and regular participants to those who posted more than
30 messages during the sampling period. This artificial criterion was to make the number
of messages posted by all light participants about the same as that of messages posted
by regular participants. Under this criterion, 987 members were light participants and
only 78 were regular participants (see the top half of Table I).

The coding was to put a message into one of the following four categories – social,
backpacking-related, community-related, and illegal – as follows. Previous research on
e-mail use has demonstrated two dimensions of CMC: task-related and socio-emotional
(Steinfield, 1986). Both types of communications were found in the travel forum data.
Examples of task-related use in the travel forum were making travel plans, submitting
homework, coordinating trips, and distributing/providing information. The “task-related”
was renamed to “backpacking-related” to reflect the joint enterprise of the forum. Social
use included maintaining relationships and organizing social activities. Community-related
communication occurred, for example, when members exchanged messages about
voting on the forum logo or discussing community rules. As noted before, some
messages should not have been posted to the travel forum and were labeled illegal
messages. The results of the coding are presented in the bottom half of Table I.

The majority of messages were related either to backpacking or to the social interactions
between members. More than half of all messages (51.59 percent) were related to
backpacking, confirming the existence of a joint enterprise in the community. More
interestingly, the percentage of backpacking-related messages for light participants
(55.72 percent) was even higher than that for regular participants (46.76 percent). Hence
even light participants seemed to have understood, respected, and pursued the joint
enterprise of the community. The large amount of social communication (43.70 percent of
all messages) attested to the importance of social interactions in the travel forum. Such
interactions reflect the identity development in the forum. The percentage of regular
participants’ social communication (51.47 percent) was substantially higher than that of
light participants (37.04), possibly because regular participants were more recognizable
individually and were more involved in socializing. Neither light participants nor regular
participants posted many community-related messages (1.35 percent and 0.59 percent
respectively), attesting to the maturity of the community: most administrative or normative
issues had been resolved already. Finally, the percentage of illegal messages posted by
light participants was low (5.89 percent), but higher than that by regular participants. It
seemed that overall, regular participants did understand the community better than light
participants.

### Table I Participations by light participants vs regular participants

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<td>Average number of messages posted</td>
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</tr>
<tr>
<td>Number of members</td>
<td>291</td>
<td>62</td>
<td>62</td>
<td>62</td>
</tr>
<tr>
<td>Average number of messages posted</td>
<td>2.04</td>
<td>7.68</td>
<td>2.04</td>
<td>7.68</td>
</tr>
<tr>
<td>Total number of messages posted</td>
<td>594</td>
<td></td>
<td>509</td>
<td></td>
</tr>
<tr>
<td>Number of messages that are related to</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backpacking-related</td>
<td>331</td>
<td>55.72</td>
<td>238</td>
<td>46.76</td>
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<tr>
<td>Social</td>
<td>220</td>
<td>37.04</td>
<td>262</td>
<td>51.47</td>
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<tr>
<td>Community-related</td>
<td>8</td>
<td>1.35</td>
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<td>0.59</td>
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<tr>
<td>Illegal</td>
<td>35</td>
<td>5.89</td>
<td>6</td>
<td>1.18</td>
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</table>
Discussions

Findings and implications

According to Wenger’s characterization of CoPs (Wenger, 1998), results of this study clearly suggested that the travel forum was a functional CoP. As discussed earlier, the online environment presents both challenges and opportunities for CoP development. This study demonstrated that an online community can circumvent the limitations imposed by the online environment and become a true CoP, which complements existing studies on CoPs that require co-presence for their formation and maintenance (Brown and Duguid, 1991; Lave and Wenger, 1991; Wenger, 1998).

Our analyses indicated that through exchanging text-based messages the members of the travel forum were able to maintain a high level of engagement online. The forum clearly manifested a joint enterprise. A large number of members contributed during our window of observation, but the concern that the large size of online communities might threaten engagement and joint enterprise seemed unwarranted. Even though less than 10 percent of all members contributed regularly, there were no identifiable adverse effects resulted from light participation: light participants dedicated to the joint enterprise as much as regular participants. Their total contributions to the community were comparable with those of the regular participations. On one hand, that an online CoP can survive large number of light participants is encouraging to organizations that are interested in nurturing global online CoPs but are concerned with the low participation levels from some or even most organizational members. On the other hand, how to attract and sustain a small core of regular participants apparently is a challenge that organizations must take on to seed an online community.

The travel forum had developed a rich shared repertoire that included local vocabularies, FAQs, help files, the best article selection, and the gonglue message format, which suggested that the members were able to not only adapt to the online environment but also take advantage of it. The use of Chinese homonyms in local vocabularies would be indiscernible in face-to-face communication, and maintaining the best article selection was made much easier by the persistent nature of text-based messages. The emergence of gonglue as a style or genre (Yates and Orlikowski, 1992) for knowledge sharing highlighted the community’s collective efforts to facilitate knowledge sharing between community members.

The development of the shared repertoire of an online CoP, however, is unlikely to be independent of the larger organization that hosts the CoP. As community members try to define and establish the items – such as the knowledge-sharing genre – in the shared repertoire, they draw on their existing experience and refer to items that have been institutionalized in the organization (Orlikowski and Yates, 1994). Thus organizations should assist community members to identify, develop, and deploy items that facilitate their practice, which likely will benefit the development of the shared repertoire.

Just as in conventional CoPs, community identity and individual member identities were developed during and through the practice in the travel forum. Individual identities reflecting members’ unique characteristics: moderators, skillful backpackers, expert on certain destinations, local helper, etc. Collectively members also create a community identity, as the forum was widely recognized as one premium source for backpacking knowledge. In many ways organizations can help identity development in online CoPs. For example, developing knowledge maps that enumerate employees’ skills or expertise has been a popular knowledge practices in many organizations (e.g. Microsoft in Davenport and Prusak, 1998). Linking these maps to online CoPs may help members discover certain members’ skill set or expertise, an essential part of member identity. Organizations can also invest in technologies such as the member profile in the travel forum to help community members establish their own identities and make sense of other members’ identities. While ultimately it is members’ involvements in the common practice of the community that shape their
identities, these efforts can potentially facilitate the identity development and recognition process in online CoPs.

Consistent with the notion that the theory of CoPs was first introduced as a theory of learning (Duguid, 2005), the travel forum presented an environment conducive for learning in the community, especially for newcomers. Newcomers could learn about the practice by observing how other members engaged with each other, by reading articles from the best collection, by studying the FAQs and the manuals, and eventually, by interacting with other members and contributing to the community. They had the opportunity to know who the members were and what different identities in the community entailed. Such a rich learning environment drew newcomers into the community and kept the old-timers in it, enabling the community to sustain and evolve.

More interestingly, the travel forum was as much a space for knowledge creation as for knowledge sharing. Homework messages and gonglue messages were highly valued and encouraged. In fact, the best article collection was consisted mostly of such messages. These messages recorded the authors’ personal backpacking experience and incorporated what the authors had learned first-hand from their trips. They enlarged what the community knew collectively. Knowledge creation also took the form of heated discussions on more abstract topics. In these ways, the travel forum grew beyond merely a communication platform that connected geographically dispersed members and allowed ad hoc knowledge sharing (e.g. question-and-answer). It had developed into a true knowledge management platform, which bodes well for organizations that aspire to nurture online CoPs.

Utilizing online social structures for knowledge management

While cautions should be exercised when generalizing our findings to other online communities, our observations are relevant to organizations who are interested in capitalizing on the potential for knowledge management via online CoPs. The travel forum could not evolve into a CoP without the contributions from its moderators and thousands of its contributors. It also benefited from the software infrastructure offered by the hosting company. In these senses, online communities are not “natural vehicle for CoPs” (Schwen and Hara, 2003, p. 257). Rather, online CoPs are more resource intensive than other types of online social structures, and hence are more difficult or expensive to achieve. On the other hand, different organizations have different knowledge management needs (Davenport et al., 1998). An organization may not need to invest in an expensive online CoP. For the purpose of assessing this issue, the authors propose the following hierarchical model of online social structures for knowledge management, on the basis of how difficult they are to achieve (see Figure 2):

In this model, online commonplaces refer to online spaces where participants can communicate with each other. They provide a platform that allows visitors to exchange messages, however, they are neither intended nor designed to build or support sustainable social relationships among participants. They are low cost to build; all an organization has to do is to provide the technology platform similar to email lists or Usenet newsgroups. Such technologies merely allow one visitor’s messages to reach others. They are useful for ad hoc information request and response. By enabling the “electronic weak ties” (Constant et al., 1996), online commonplaces allow access to information that is not available locally.

Traversing up the hierarchy, above online commonplaces are online communities such as the online settlements defined by Jones (1997). Online communities are online commonplaces with some additional characteristics, particularly in terms of supporting interactions and a minimal level of identity development. Technologies that support online communities vary in complexity. For example, web-based bulletin-board systems that support message archiving (i.e. with a search engine or organized storage) or other means to understand communication content and activities (e.g. visualization technologies discussed in Donath et al., 1999). Such online communities are capable of sharing knowledge because they allow the members to engage in ongoing discussions and hence to communicate the context of the knowledge.
At the top of the hierarchy are online communities of practice. Online CoPs are online communities with the characteristics of conventional CoPs. They support identity development, both for individual members and the community. The coupling between practice and identity in these communities allows them to support not only information and knowledge sharing, but also knowledge creation. More advanced technologies certainly can help the emergence of online CoPs (e.g. the Babble systems in Erickson and Kellogg, 2003), but the travel forum exhibited CoP characteristics despite the fact that the technologies it relied on were rather simple and straightforward. Thus the difficult of achieving an online CoP lies not in the technical complexity, but in the ongoing organizational support such as the active involvement of moderators as observed from the travel forum. It was the combination of an integrated set of technologies and associated organizational mechanisms that made the travel forum effective as a CoP. For this reason they are the most expensive form of online social structure to build and to maintain. Nevertheless, online CoPs are not necessarily the most appropriate means for addressing the knowledge management needs of all organizations. The authors urge organizations to examine their knowledge management needs closely and choose their online social structures accordingly.

Future research

As a single-site case study, the reported study is limited in its generalizability. Other online CoPs should be identified before it can be concluded that online CoPs are not entirely atypical (e.g. Hildreth and Kimble, 2000). It is also limited in its temporal frame, as it does not address ways that practice and identity emerge over time. However, before these issues can be investigated, research must show that, in fact, CoPs do emerge from online communities, as what have been reported in this paper.

Having done so, researchers can move forward and establish new research streams. The foremost one can be in the nature of the relationships between the domain of the online communities, characteristics of its members, and the extent that it attains CoPs status. In particular, Chinese culture is considered one of collectivism that values achieving collective goals more than pursuing personal interests and that motivates people to contribute to group accomplishments (Earley, 1989; Wagner, 1995). Research has suggested that Chinese culture has a positive influence on both offline (Michailova and Hutchings, 2006) and online (Ardichvili et al., 2006) knowledge sharing. More studies should be conducted to investigate the extent to which Chinese culture has made this particular group so engaged in its practice and how Chinese culture may limit the generalizability of the findings to other online communities.
How online CoPs evolve and change over time is another important avenue of research to undertake, because the findings would enable us to identify failing online CoPs, and to design interventions to set them back on track. For example, it would be very interesting to learn how the gonglue style in the travel forum came into being, what functions it initially served, and why it became widely adopted. With these understandings, researchers will be in a better position to help online communities to “design” the genres that are most appropriate for their knowledge sharing. Yet another issue raised by this study is the effects of technological features that support online social structures. To what extent do variations in, for example, search functionality or archive cataloging capability affect development of practice and identity in online communities, and consequently their emergence into online CoPs?

Conclusion

This paper presents a rich description of ways that one online community resembles and extends conventional CoPs. It contributes to the debate about whether CoPs can function online. This is an important and timely topic, as the proliferation of online content, the scarcity of attention resources, and increasing ubiquity of telecommunications underscores the importance of online communities for knowledge management. This research suggests that online CoPs are not simply the agenda of the technologically deterministic, but have sprung up in the online world, apparently unimpeded by limitations of the technology. Like conventional CoPs, the travel forum has organically manifested itself outside the realm of intentional design, and knowledge management scholars and practitioners have much to learn from the form that this growth has taken.

Note

1. Xiali: the model of a cheap taxi very popular in China at the time of study

References


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