

Language Difference in Virtual Communities in Cyberspace: Blogosphere, Wikis and Social Network Sites

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Abstract

As the Internet population grows worldwide, new population using minor languages keeps joining the Internet. At this point, understanding how language difference affects virtual communities on the web becomes more and more important. As virtual communities, blogosphere, wikis, and social network sites were investigated. I argue that language difference serves as a barrier in the virtual community and makes the network clustered. I then argue that the multilingual population, or those who connect the separated different language groups, diffuses information from one network to another. They are the weak ties of the entire network and help others better search new information such as job postings.

Keyword: language, blogosphere, social network, wiki, information, diffusion

1. Introduction

a. Background

The number of Internet users has worldwide tripled from 2000 to 2008. As of March 2009, 23.8% of the entire population in the world is using the Internet.¹ As the user base of the Internet has rapidly enlarged, services provided through the Internet have evolved as well. Since the concept of Web 2.0 emerged, many Internet applications have become partially or entirely related to the concept of social network. When people are using the Internet, they do not speak Esperanto. In terms of language, people basically use the same language used in their offline life even in the Internet. As the Internet penetrates the entire world, it is obvious that the portion of the population using different languages in the Internet will increase as well. The scope of this paper is language in the virtual communities in cyberspace.

b. Scope clarification

Two concepts, language and virtual community in cyberspace, should be clearly addressed before I further discuss the issue. First, the term “language” has many different meanings and contexts. In this paper, “language” is the natural language people use to communicate with each other in daily life. I clearly state here that microscopic linguistic analysis such as deconstructing language syllable by syllable or computer programming language such as C, Java, Python is especially out of this paper’s scope.

¹ Internet World Stats - <http://www.internetworldstats.com/stats.htm> (visited on 11 May 2009)

Second, virtual community and cyberspace need to be defined. I would simply define it as the interconnected network of computers, i.e. the Internet. However, the concept of virtual community needs to be clarified. Virtual community is the opposite concept of offline community. Since the relationships in offline community are person-to-person, I would define virtual community as a community formed by non-face-to-face interaction. Therefore, if there is a social network whose relationships are mediated through telephone communication, it is virtual community. Consequently, “virtual community in cyberspace” means a community whose relationships within it are mediated through the Internet.

One can come up with many different types of virtual communities in cyberspace. Either a membership-based exclusive club such as a school intranet or an anonymous board-based community such as 2-channel in Japan can be an example. I chose three types of virtual communities as target domains of the research. They are the blogosphere, wikis and social network sites. A blog is a representative medium usually run by one person, and primarily contains the opinion of that person. Therefore, the blogosphere is a collective network consisting of individual opinions. Wiki is usually run in the multi-user context. The common theme of the blogosphere and wikis is that they are focused on the opinions relatively heavier than saying hello. On the contrary, social network sites are not only multi-user-based services but are also highly focused on light interactions between members rather than the sharing of opinions. Lastly, a virtual community operated by one person and focused on interactions is conceptually a contradiction, because interactions assume more than one entity. The reason why I chose these three domains is that they can thoroughly represent virtual communities in

cyberspace. Figure 1 shows the framework for dividing the concept of virtual communities in the Internet.

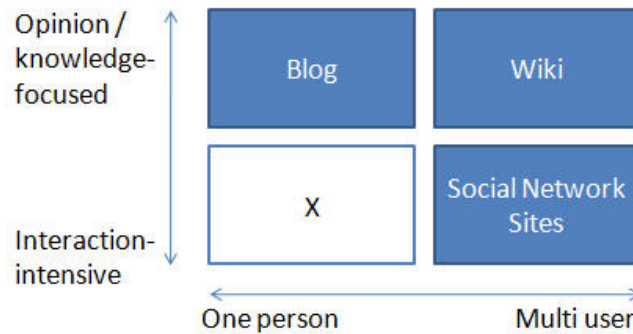


Figure 1. Virtual community division framework

c. Research questions

I raise three research questions within the scope explained previously. These three questions are sequentially linked. The second question assumes that the first question is answered and the third one supposes that the second one is answered.

The first question is whether language difference is really a barrier within a virtual community especially in the blogosphere, wikis and social networking sites. If the language difference serves as a barrier in a community, it means language difference divides a community into several subgroups.

Assuming that the answer for the first question is yes, the second question is who diffuses information across networks using different languages. This problem relates to the concept of “weak ties” presented by Granovetter. Granovetter argued that the degree of overlap of two individuals’ friendship networks varies directly with the strength of

their tie to one another. (p.1360) It means that friends of yours may also be friends of a friend who is strongly connected to you. As a result, for example, when we search for a job or new information, our weak ties rather than strong ties are useful because a person connected via weak ties has a much different friendship network than a strongly connected friend does.

The last question is how language difference in the Internet affects the directionality of information flow.

d. Problem justification

The last thing to be done before the main arguments are presented is to justify why these questions are of great importance. To illustrate the points, the same problems outside the context of the Internet are to be presented.

First, language barriers can have resources wasted and customer satisfaction lowered. Some studies were conducted on the language barrier problems in emergency rooms at hospitals. Hampers et al. found that if there is a language barrier between physician and patient family, more resources are used to diagnose the patient, and the family visits the emergency department more frequently. (p.1253) David and Rhee also pointed out that the language barrier between doctor and patient was correlated negatively with patient satisfaction. (p.393) Translating the significance of language barrier problems at the hospital directly into the context of the Internet should be thoughtfully considered, because people do not usually die or develop a fatal condition because they cannot communicate with those using different languages in the Internet. However, the implications of these studies can be thought of as resource waste as well as

issues in customer satisfaction. These concepts can be applied to the Internet context. In addition, for the Internet, there may be additional opportunity cost of not obtaining information expressed in different languages.

Second, identifying weak ties between different networks is an important problem. For example, the concept of weak ties is closely related to job search. Montgomery studied the effect of weak ties on job searching and argued that “(1) weak ties relay job offers more frequently than strong ties, or (2) weak-tie offers are drawn from a better distribution.” (“Job Search”, p.586)

In sum, I would argue that these three problems are of importance.

2. Language Barriers in Virtual Communities

In the real world, language divides communities. Based on this analogy, as I mentioned earlier, I created the hypothesis that language also divides the virtual community into several sub groups. As a result, I transformed the question, “whether a language barrier exists in virtual communities”, into, “whether language difference separates a virtual community into several subgroups”. In terms of research domain, three types of virtual communities will be investigated in this part. Let us take a look at three different virtual spaces: blogosphere, wikis and social network sites.

a. Blogosphere

A blog is different from wikis or social network sites in that it is run by an individual person. Nardi et al. claim that the motivations driving bloggers to operate blogs are the desire of documenting daily lives, providing commentary and opinions, expressing emotions, and articulating ideas through writing. (p.41) It is technically a personal medium expressing personal opinions. Although comment functionality gives blogs interactivity, a blog mainly functions as a documentation repository rather than an interaction-intensive system. The comment function is also one of the methods to enrich the content. Therefore, a blog itself may not qualify as a virtual community.

However, the blogosphere is different. The blogosphere is defined as a conceptual network of individual blogs. Hence, the blogosphere as a collective network can be regarded as a virtual community. Since the blogosphere is a collective mass, studies on how those who use different languages show different behavior collectively in blogging will help answer the question.

Gu et al. studied how the Chinese speaking population use a blog hosting service called Wallop and compared it the non-Chinese speaking one. (p.1) They argued that Chinese speaking bloggers show different behaviors in using blog system compared with non-Chinese speaking users. (p.1) An important point here is that they conducted their study on Chinese “speaking” users. If they had researched on Chinese people instead of Chinese speaking people, it would have been uncertain whether the behavioral differences observed were caused by language differences or by other factors such as cultural differences. Of course, since language itself interacts with culture, this study is also not free from the shadow of the effect of cultural aspect. However, there are some studies which specifically surveyed users using different languages. That is why this study exactly fits this sub section, so let us take a deeper look into the study.

They discovered two major behavioral differences from the group of Chinese speaking people. One is that Chinese speaking people demonstrated higher levels of invitation and retention. According to the study, invitation and retention are highly related to commitment of contribution according to the study. In detail, the data shows that when more than half of Chinese speaking users sent out invitations, only a third of non-Chinese speaking users did. Another difference the study found was a different adoption rate. Chinese speaking users showed the tendency to be more willing to adopt a new blogging system than non-Chinese speaking users. From the data above, we can think that different languages forms different behaviors in the blogosphere.

This study also provides a striking example which clearly shows the separation of the network based on language. Figure 2 is the visualization of invitations sent and received by users. The black area represents Chinese speaking users while the gray area

represents non-Chinese speaking users. Clear distinction between the gray area on the right-hand side and the black area in the middle is shown. Even inside the dark side on the left, a few small white clusters are located.

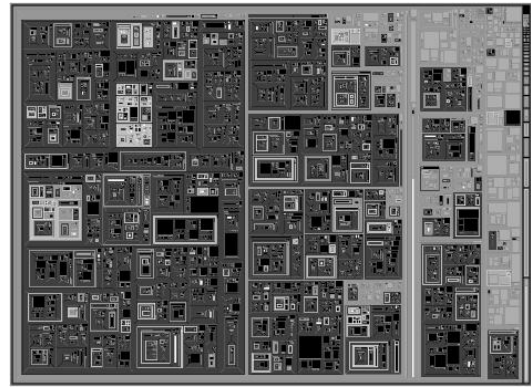


Figure 2. Visualization of invitation sent and received by users

The study above separates user group dichotomically into Chinese speaking or not. Since this paper is not language specific, we need another case focusing on a different language than Chinese. Norman et al. studied the question, “Are bloggers a global community?” They examined whether bloggers are more influenced by local cultures or by a universal Internet culture. It concludes that the blogosphere is more likely to be governed by a universal Internet culture, while there is a small difference between Eastern and Western cultures and an exception for Japanese bloggers. (p.171) Although the conclusion seems to conflict with the argument of this paper, it should be taken into consideration that Norman et al. focused not on the “language” difference but on the “culture” difference. Therefore, their conclusion may be different from the argument of this paper. Figure 3 shows the primary content type of blogs over the world. The study categorized the world into North America, Western Europe, Japan, China, Taiwan, Southeast Asia, and Australia. Coincidentally, most of these areas use different languages except for the pair of China and Taiwan and the pair of North America and Australia. The fact that primary contents of blogs differ from language to language also supports the argument of this section.

So far, we have looked at two different studies. The first research directly supports the argument by using a Chinese-speaking user sample. In addition, one data included in the second study supports the argument in a sense that contents of the blogosphere differ in different language areas.

b. Wikis

Wikis differ from blogs because of its nature multi-user base. On the other hand, wikis distinguish themselves from social network sites because wikis focus on accumulating knowledge through collaborative editing. When we think of wikis as virtual communities in this paper, it means the communities of contributors not viewers. Wikis are usually considered a knowledge base rather than a community, so little studies have focused on the language differences in wikis as a virtual community. Inevitably, a framework addressing two types of language barriers is devised. One is a language barrier for content, and the other is for the wiki system itself.

First, in order to address the language barrier of wiki content, we need to look at how the biggest wiki deals with content in different languages. The biggest wiki system is Wikipedia. Wikipedia has separate sites for each language. Content in a certain language solely depends on users who can use the language. There is no aggregation effort observed. To simply demonstrate how different content in various languages are, I

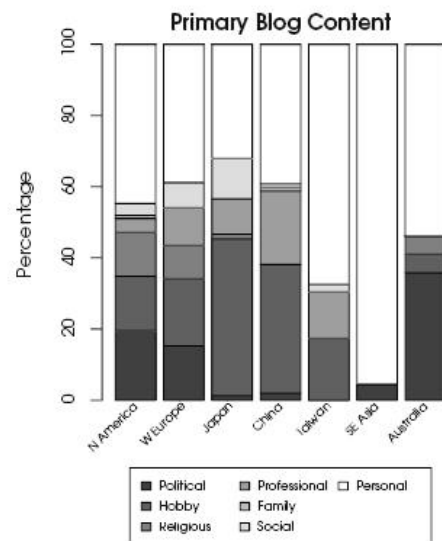


Figure 3. Primary content of blogs

searched the term “wiki”² at three different Wikipedia sites: English, Japanese, and Korean.³ Figure 4 briefly summarizes the results.

Metric	English Wikipedia	Japanese Wikipedia	Korean Wikipedia
# of items	18	23	8
# of paragraphs	145	289	58

Figure 4. Search results of the term "wiki" in different languages

As shown above, contents about the same concept quite drastically differ from one another.

Another language barrier of wikis are system attributes such as user interface and database character set. Honegger studied the language barrier from the perspective of a German-speaking school community. He addressed three language barriers of the current wiki system: user interface, documentation, and errors on handling special characters. (p.115) However, at the end of the study, he concluded that such language barriers were getting lower through various efforts such as adoption of a WYSIWYG editor. (p.116)

In sum, it is clearer to judge if language difference is a great barrier for wikis as a virtual community, compared with the blogosphere case. This is because even if the language barrier problem is severe in terms of contents, but the problems caused by language differences in using wikis are being actively handled.

² Equivalent in Japanese = “ウィキ”, Equivalent in Korean = “위키”

³ English - <http://en.wikipedia.org>, Japanese – <http://ja.wikipedia.org>, Korean – <http://ko.wikipedia.org> (visited on 11 May 2009)

c. Social network sites

Social network sites can be defined as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system”. (p.211) The first social network site, “SixDegree.com”, was launched in 1997. However, the idea of social network has existed even when the concept of social network sites did not exist. People used different languages to communicate with each other at that time, too. Accordingly, there is some literature dealing with the relationship between language and social network.

Milroy and Margrain wrote a paper that quantitatively suggests that loyalty to the local language of individual directly ties to the strength of the social network. (p.45) To explain the paper further, it first devised the Network Strength Scale to prove its argument. Then, it applied the scale to the dataset collected from an area called Belfast. Its conclusion by itself well supports the argument in this sub section in an indirect way, because a strong social network consists of individuals loyal to the local language. In other words, individuals are grouped by language. It means that language difference clusters a social network.

However, its conclusion cannot fully support the argument of this sub section, because Milroy and Margrain’s work is about social network not social network sites. Social network and social network sites are different. We need to find a statement that

social network sites reflects the real world social network. Fortunately, we can find a clue from Boyd and Ellison's paper. They argued that social network sites help users activate "latent ties" as opposed to meeting strangers. (qtd p.211) From this statement, it can be inferred that the network in social network sites resembles the network in the real world, which sequentially means that language divides a whole social network sites into several strong sub networks.

d. Sub conclusion

So far, whether language different can be a barrier in virtual communities is examined by looking at the blogosphere, wikis, and social network sites. For the blogosphere, Chinese speaking users show different behavior from non-Chinese speaking users in a blog system called Wallop. Primary contents of blogs in different language areas also differ from each other. For wikis, from the perspective of contents, language difference is a barrier. However, in terms of wiki system, language as a barrier keeps lowering. As a result, it is not possible to conclude that language difference is a great barrier for wikis as a virtual community. For social network sites, the Milroy and Margrain's argument combined with Boyd and Ellison's argument strongly support my claim that language difference separates social network sites. Although conclusion on wikis is unclear, other investigations on the blogosphere and social network site clearly support the argument that language difference is a barrier in virtual communities. Therefore, I would conclude that language difference in virtual communities in the Internet serves as a barrier.

3. Role of Multilingual Individuals

In the previous section, the approach to support the argument was divide-and-conquer. The concept of virtual communities was divided into three domains, and representative types of communities in each domain— blogs, wikis, and social network sites – were discussed. Then, the argument was validated for each type of communities. However, the research question for this section is who diffuses information across networks using different languages. The answer does not have to be domain-specific, so I will deal with the concept of virtual communities as a whole in this section.

Going back to the sub conclusion of the previous section, language difference is a barrier in virtual communities, which means it makes the community network clustered based on language. Each cluster is internally strongly connected. Then, connection between the clusters must be relatively weak. In the real world, who is in the place of weak ties in the real world? After answering this question, what weak ties can do in general and in the Internet context will be sequentially discussed.

a. Identifying weak ties

Granovetter claimed that the degree of overlap of two individuals' friendship networks is tied to the strength of their tie to one another. (p.1360) On the other hand, Milroy and Margrain argued that strength of social network is directly tied to the individual loyalty to local language. Combining these two claims, weak ties between clustered different language groups can be identified.

Multilingual people have lower loyalty in both languages they can speak compared to monolingual people. This is because only limited amount of time and

attention is available for a person. Then, it can be argued that multilingual people are less likely to be part of any strong social network for both languages they can speak. Since those multilingual people have no strong connections with the members within a strong social network, the friendship network of multilingual people and that of members within a strong social network will not be greatly overlapped based on Granovetter's argument. The multilingual people are the very "weak ties" Granovetter mentioned in the paper.

As a result, I would conclude that multilingual individuals serve as "weak ties" bridging different language sub groups in the community.

b. The role of weak ties in general

Before examining the role of multilingual people in virtual communities, how weak ties in a social network diffuse information across networks in more general context should be examined. It will provide implications for analyzing the role of multilingual people in virtual communities. Three different cases involving the concept of weak ties will be visited.

The first case is quite relevant to the virtual community context. Constant et al. studied on how useful weak ties are for transferring technical advice. They surveyed a global computer manufacturer. They found that information providers were willing to give a technical advice through online channel even though the providers do not know the information seekers in person. Two findings need to be noted. First, advice coming out of organizational motivation was rated as more helpful than personal benefits motivation. (p.129) Second, weak ties were not useful only if the information providers

had the very type of information that information seekers were looking for. (p.130, p.131)

The list of organizational motivations are “good organization citizen”, “important firm problem”, “part of my job to help”, and “it’s only fair to help”. On the contrary, personal benefits motivations contain “enjoy helping others”, “enjoy solving problems”, “earn respect”, and “firm rewards sharing”. If these findings are applied to the context of multilingual people in virtual communities, implications are as follow. First, motivation for diffusing information from one language network to another is an important factor decides the quality of information. Second, multilingual people are useless for the problems involving languages that they cannot speak. Although the second implication is somewhat obvious, the first implication needs to be remembered.

As the second case, Hansen investigated the role of weak ties in sharing knowledge across organization subunits. Then, he formulated the framework of search and transfer problems for knowledge sharing. He concluded that weak ties are good for searching new information but not helpful for transferring knowledge. If the knowledge is complex or tacit, so hard to be codified, then it becomes much harder to transfer the knowledge through weak ties. (p.89) Multilingual people in virtual communities are weak ties. Therefore, the implication from this study is that multilingual people may be good at transferring simple information such as news, but they may not be helpful to transfer complex knowledge from one language network to another network.

Furthermore, since multilingual people are the only bridges connecting different language groups, it can be inferred that it is almost impossible to transfer complex or tacit knowledge from one language to another language.

The third case is a micro-sociological approach on demonstrating the importance of weak ties in terms of employment and inequality. After Granovetter proposed strength-of-weak-ties hypothesis, Montgomery tried to explore macro-sociological relationship between weak ties, employment, and inequality. He concluded that an increase in the proportion of weak-tie interactions decreases inequality and also increases the employment rate. (“Weak Ties, Employment, and Inequality” p.1225) This conclusion implies that, from the entire network perspective, having more number of multilingual people improves inequality between different language networks and facilitates job searching process across different languages. However, real employment rate is not expected to be increased. That is because even if a person speaking one language finds a job through a multilingual person in the other language network, the person himself/herself is not able to speak the other language.

So far, three cases which studied on the role of weak ties from different perspectives have been covered. Leveraging the implications obtained from the course, we will discuss what the role of multilingual people in virtual communities is and the motivation driving them to diffuse information across different languages.

c. The role of multilingual people in virtual communities

Then, what does the multilingual population do as weak ties connecting networks using different languages? The first thing they are exclusively able to do is translation. Another thing they can do is spreading the news spoken or written in different language.

As pointed out in the previous sub section, the motivation why they do the work is also important factors. Among the eight motivations (Constant et al. p.130), the

following four motivations would explain why multilingual people do the work: Enjoy helping others, Earn respect, Good Organization Citizen, and It's only fair to help.

Lastly, what would be the value of multilingual people? Basically, the most fundamental value of multilingual people is that they are scarce. Multilingual people can be raised roughly in two ways. One way is moving from country to country in one's childhood. The other way is learning by education. For the first case, parents should move for reasons such as career, education or training. Opportunity of moving across different language areas frequently for adults is not usual. For the second case, only those with enough resources such as time and money can invest into learning foreign languages different than mother language. Therefore, the number of multilingual people is naturally limited.

However, scarcity does not necessarily guarantee the value. People are not interested in something only because it is scarce.

d. Sub conclusion

If language divides a network into several strong sub groups, multilingual people are the weak ties bridging two different language groups. By the definition of weak ties, multilingual people are good for searching new information. From the perspective of the entire network, as the number of them increases, problems such as inequality or job search are mitigated.

4. Directionality of Information Flow

The question addressed in this section is whether a certain direction of information flow is set by language differences. To answer the question, the dominant language in the Internet is first identified and directionalities of information flow through other channels than the Internet. Finally, implications and sub conclusion will be made by comparing those other channels and the Internet.

a. Dominant language in the Internet

Top 3 Internet languages in cyberspace are English (29.1%), Chinese Mandarin (20.1%), and Spanish (8.2%) as of March 2009.⁴ English is the top, but not dominating the second or the third. In the blogosphere, however, the most popular language is English (39%), followed by Japanese (31%) and Chinese (12%) as of June 2006.⁵ Wikipedia shows even more polarized ranking. English is the only language in which more than a million articles are written.

b. Directionality of information flow

As a proxy of information flow over the Internet across different languages, international flow of television programs is chosen. Varis studied on global traffic of television program across the world in 1974. He found that “In international TV program production, the United States led the markets in the mid-60’s by exporting more than twice as many programs as all other countries combined.” (“Global Traffic” p.103) Ten years later, he published another paper titled “The International Flow of

⁴ Internet World Stats - <http://www.internetworldstats.com/languages.htm> (visited on 11 May 2009)

⁵ ReadWriteWeb - http://www.readwriteweb.com/archives/international_blogosphere.php (visited on 11 May 2009, original data created by Technorati)

Television Programs”. In the new paper, he argued that “few overall changes since 1973 in the pattern of program flow, but [the research] does indicate a trend toward greater regional exchanges along with the continued dominance of a few exporting countries.” (“International Flow” p.143) That is, the United States was still leading the television program production industry, but regional exchanges became more active compared with the situation ten years earlier. If the conclusion is applied to the current Internet information flow, the amount of information flowing from English-speaking virtual communities to the communities speaking other languages except for Chinese is much higher than the reverse flow. Besides, even I could conclude that the finding is somewhat related to the language dominance in the Internet.

Nevertheless, comparing international television program flow mentioned in the studies above directly with information flow over the Internet has three major limitations. First, cultural effects have an impact on the television program flow. Language could be a part. However, considering other countries such as China at that time, having more people speaking a certain language does not necessarily guarantee that the information expressed in the language would prevail. Another limitation is that the data is too old to compare with the data collected in 2006. In the 70s, even the concept of the Internet was not developed. Surely, there was no cyberspace. It means that language ranking in cyberspace data itself is meaningless to compare with data in the 70s. The Last thing is that television programs in the 70s are definitely different from the information generated and consumed today. Today, cost of reading and writing a blog post or Wikipedia article is virtually zero. On the contrary, a television program

requires fair amount of money even today. Except that they are both information goods, cost for generating and consuming is totally different.

Therefore, it is reasonable to conclude that the current data is not enough to support the argument that dominance of language determines the information flow across different language networks.

c. Sub conclusion

The most popular language in cyberspace is English both in general and in the blogosphere. In Wikipedia, English is dominating. However, due to short of appropriate supporting, I conclude that there is no clear evidence to say that language difference drives the directionality of information flow between different language groups.

5. Conclusion

Throughout the entire paper, I tried to make and support three main points. First, if language is different, it does become a barrier in virtual communities even in cyberspace. This argument was supported by looking at three different virtual communities: blogosphere, wikis, and social network site. For blogosphere and social network sites, the argument was relatively better supported. Second, multilingual people are weak ties bridging different language networks. It means that multilingual people are key to diffuse information from one language to another. This argument was most sufficiently supported by existing literature. In addition, it was also implied that multilingual people transfer light information such as news very well, but they are little helpful for transferring complex knowledge. Consequently, it is basically impossible to transfer complex knowledge from one language to another. Last argument was that it is unclear whether the dominance of a certain language drives the directionality of information flow between different language groups.

One thing to acknowledge is that the line separating blogs, wikis, and social network sites are blurring. There are many applications transforming one into another. Blog system embedded in wikis highlights most recent change in the database of wikis. Many blogs are operated by a group of people rather than one person. A certain plugin changes multi-user blog system into social network sites. However, the framework dividing the virtual communities was employed in order to select which domains this paper will focus on. Therefore, blurring border does not harm the main arguments of this paper.

For the future works would be further study on directionality of information flow between different language groups. Some people translate selected English blog articles into their local languages. From my personal experience, on the other hand, blogs translating articles written in local language to English are less often observed. Hence, I gain a confident belief that information flow usually occurs from the language network having larger number of members to the network with less people, but I do not have material evident to support it so far.

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